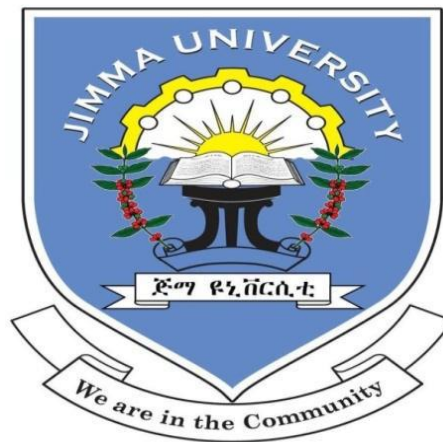


**CHALLENGES OF IMPLEMENTING WEATHER INDEX
INSURANCE IN OROMIA INSURANCE COMPANY (CASE
OF BORA AND ARSI NEGELE WOREDA)**

*A Thesis Submitted to the School of Graduate Studies of Jimma University
in Partial Fulfillment of the Requirements for the Award of the Degree of
Master of Business Administration (MBA)*

BY: SHUME BEKELE DUGO



**COLLEGE OF BUSINESS AND ECONOMICS
DEPARTEMENT OF MANAGEMENT**

MBA PROGRAM

JULY 10, 2020

JIMMA, ETHIOPIA

**CHALLENGES OF IMPLEMENTING WEATHER INDEX
INSURANCE IN OROMIA INSURANCE COMPANY (CASE
OF BORA AND ARSI NEGELE WOREDA)**

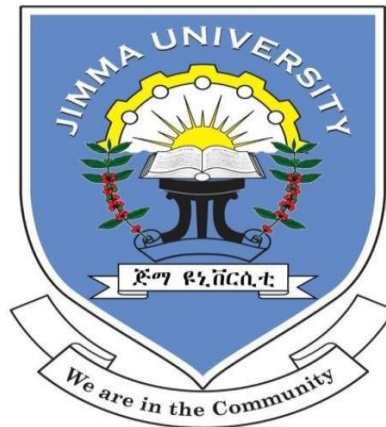
BY: SHUME BEKELE DUGO

Under the Guidance of

Mr. WENDOSSEN SIYUM (ASST.PROFESSOR)

And

Mr. ABERA JALETA



*A Thesis Submitted to the School of Graduate Studies of Jimma University
in Partial Fulfillment of the Requirements for the Award of the Degree of
Master of Business Administration (MBA)*

**COLLEGE OF BUSINESS AND ECONOMICS
DEPARTEMENT OF MANAGEMENT**

MBA PROGRAM

JULY 10, 2020

JIMMA, ETHIOPIA

Declaration

I hereby declare that this thesis entitled “Challenges of Implementing Weather Index Insurance in Oromia Insurance Company (case of Bora and Arsi negele Woreda’s)”, has been carried out by me under the guidance and supervision of Mr. Wendowesen Siyum (Asst. Professor) and Mr. Abera Jaleta.

The thesis is original and has not been submitted for the award of any degree or diploma to any university or institutions.

Researcher’s Name

Date

Signature

Shume Bekele

Certificate

This is to certify that the thesis entitles “*Challenges of Implementing Weather Index Insurance in Oromia Insurance Company (case of Bora and Arsi negele Woreda’s)*”, submitted to Jimma University for the award of the Degree of Master of Business Administration (MBA) is the outcome of my own effort and study and that all sources of materials used for the study have been acknowledged. I have produced it independently except for the guidance and suggestion of my Research Advisor.

Therefore, we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree or diploma.

Main Adviser’s Name

Date

Signature

Co-Advisor’s Name

Date

Signature

Acknowledgements

First of all I would like to praise my almighty God for giving me the potential to complete this study. Then, I wish to express my deepest and heartfelt thanks to my advisor, Mr. Wendowesen Siyum (Asst.Professor) and Mr. Abera Jaleta, for their supportive and constructive comments. My gratitude also goes to all the staff and managers micro insurance department staffs of Oromia insurance company for giving me the necessary information without which this study would have been never successfully completed. Finally, I also thank my family and friends for the technical and moral support.

Shume Bekele Dugo

TABLE OF CONTENTS

Declaration	i
Certificate.....	ii
Acknowledgements	iii
TABLE OF CONTENTS.....	iv
List of Tables.....	vi
Acronyms	vii
Abstract.....	viii
CHAPTER ONE.....	1
INTRODUCTION	1
1.1. Background of the study	1
1.2. Statement of the Problem	4
1.3. Research Objectives	6
1.4. Significance of the Study	6
1.5. Scope of the Study	7
1.6. Limitations of the Study	7
1.7. Organization of the Study	7
CHAPTER TWO.....	8
REVIEW OF RELATED LITERATURE.....	8
2.1. The concept of Insurance	8
2.2. Theoretical Review of Weather index insurance.....	9
2.2.1. Concept of Micro Insurance	9
2.2.2. Agricultural Insurance Products	11
2.2.3. Advantages of weather index insurance	13
2.2.4. Disadvantage of weather index insurance	14
2.2.5. Practical Challenges of implementing weather index insurance	16
2.2.6. Development of weather index insurance in Ethiopia	18
2.3. Empirical Review	21
CHAPTER THREE	25
RESEARCH METHODOLOGY.....	25
3.1. Research Design	25
3.2. Data Source	25
3.3. Method of Data Collection	26

3.4. Population of the study.....	27
3.5. Sampling Technique and Sample Size.....	27
3.6. Method of Data Analysis.....	28
3.7. Validity and Reliability	28
3.8. Ethical Consideration.....	29
CHAPTER FOUR	30
DATA PRESENTATION, ANALYSIS AND INTERPRETATION.....	30
4.1. Demographic Information of the Respondents.....	30
4.2. Understanding of weather index insurance	34
4.3. Trust on the insurance company and the captured rainfall data	47
4.4. Willingness to buy weather index insurance	51
4.5. Availability of Intermediaries/delivery channels.....	53
4.6. Government and Donor’s intervention	54
CHAPTER FIVE.....	55
CONCLUSION AND RECOMMENDATION.....	55
5.1. Summery	55
5.2. Conclusion.....	57
5.3. Recommendation	60
References.....	62
Appendix I: Questionnaire	67
Appendix II: Semi Structured Interview Question	69

List of Tables

Table 1 Cronbach’s alpha coefficient.....	29
Table 2 sex of the respondents.....	31
Table 3 Age of respondents.....	32
Table 4 Educational background of the respondents.....	32
Table 5 Participation of farmers in other income generating activities.....	33
Table 6 Agro climatic zone.....	34
Table 7 Awareness on the insurance company or other company that sale WII.....	35
Table 8 Participation Respondents on Training.....	36
Table 9 Participation Respondents on Training.....	36
Table 10 Number of insurance policy purchased by individual farmers.....	37
Table 11 Fairness of premium and affordable by farmers.....	38
Table 12 Subsidy given to the farmers to purchase insurance.....	38
Table 13 Types of crops the farmers purchase insurance.....	40
Table 14 Knowledge regarding to payout.....	40
Table 15 Attractiveness of the payout/ compensation.....	42
Table 16 Payout depends on the rainfall measured at the nearby rainfall station.....	43
Table 17 Payout depends on monthly rainfall or consecutive dry days.....	43
Table 18 Insurance offer good protection against weather or other problem.....	44
Table 19 near weather station is a good measure of the rain in your field.....	45
Table 20 payout was based on the rainfall in your own field or weather station.....	47
Table 21 Knowledge of measuring unit and minimum amount of rainfall to get Payout.....	47
Table 22 Insurance Company will honor the insurance contract.....	49
Table 23 Purchase insurance individually or through group.....	50
Table 24 Trust on the reading captured from the weather station.....	51
Table 25 willingness to buy Weather index insurance.....	52
Table 26 Satisfaction with the service of the company.....	53

Acronyms

ACET	African Center for Economic Transformation
CCAFS	Climate Change, Agriculture and Food Security
EDRI	Ethiopian Development Research Institute
EIFS	Ethiopian Institute of Financial Studies
ESSP-II	Ethiopian Strategic support Program two
HARITA	Horn of Africa Risk Transfer Adaptation
IFAD	International Fund for Agricultural Development
JICA-RI	Japan International Cooperation Agency
LAFUCU	Lume Adama Farmers' Cooperative Union
MPCI	Multiple Peril Crop Insurance,
NASA	National Aeronautics and Space Administration
NBE	National Bank of Ethiopia
NISCO	Nyala Insurance Company
OIC	Oromia insurance company
REST	Relief Society of Tigray
RREP	Rural Resilience Enhancement Project
TOT	Training of trainers
WFP	World Food Program
WII	Weather Index Insurance

Abstract

Index insurance is a relatively new tool that farmers can use to help manage risk. It pays out based on an index, such as rainfall, measured at a local weather station or by satellite, rather than based on a consequence of weather, such as a farmer's crop yield. The purpose of this research was to identify the challenges of implementing weather index insurance in oromia insurance company and the mechanisms in which the company uses to minimize these challenges. The study covered micro insurance department of oromia insurance company and two weredas from east shewa and west arsi zone of oromia regional state. The target population of the study was the users of weather index insurance from randomly selected kebeles . In order to get relevant data from the target population questionnaire and interviews were used. The questionnaire was administered to the users of weathe index insurance and the interviews were conducted with the manager/staffs of micro insurance department of oromia insurance company. The data collected through questionnaire were analyzed using frequency and percentage values and the qualitative data were analyzed using textual explanations. Furthermore, the qualitative data (data from interview) were analyzed together with the quantitative one to triangulate the results found from the questionnaire. The findings generally indicate that lack of trust, poor compensation policy, and lack of understanding and low willingness to buy the insurance product were the major challenges of the company to implement and expand WII. As a result, the study presented some possible recommendations so as to minimize the challenges. These include, providing consecutive training programs to increase the awareness of farmers on WII, the payout should be attractive and paid to the farmers on time, the company should be transparent and build trust in the mind of the farmers, the government should give attention and work in collaboration with the company to manage weather risk, and government and international organizations should provide financial and technical assistance to the company.

Key Words: Index insurance, Challenges, Training, Trust, Willingness, Affordability, Payout

CHAPTER ONE

INTRODUCTION

1.1. Background of the study

Agriculture is the main productive sector of the Ethiopian economy. It accounts for a little under 50 percent of the gross domestic product, provides employment for 80 percent of the population, generates about 90 percent of the export earnings, and supplies about 70 percent of the country's raw materials to secondary activities. Crop production is estimated to contribute on average around 60 percent, livestock accounts for around 27 percent and forestry and other subsectors around 13 percent of the total agricultural value of production. Over 95 percent of the cultivated land is under smallholder peasant agriculture. High total fertility rates and low input use have resulted in the exposure of small-holders to natural resource degradation, soil erosion, and food insecurity, and over the long run will likely damage the prospects for agricultural productivity growth. Nevertheless, in recent years the agriculture sector has been growing fast; 5.9 percent annually between 2010 and 2014 (Shukri, 2017). Most of Ethiopian agricultural production takes place under rain-fed conditions and is subject to considerable weather variations (McIntosh, 2013).

Risk is inherent in agriculture. Farmers face a variety of market and production risks that make their incomes unstable and unpredictable from year to year. Input prices may increase out of reach, crops may be destroyed by drought or pest outbreaks, selling prices may plummet and harvests may rot in poor storage facilities. In many cases, farmers also confront the risk of natural catastrophe. Assets and lives may be lost due to severe droughts, hurricanes, earthquakes and floods. The type and severity of the risks confronting farmers are particularly burdensome to small-scale farmers in the developing world. Unless adequately managed, agricultural risks slow economic development, hamper poverty reduction and contribute to humanitarian crises (IFAD, 2010).

Due to this a financial innovation that has been proposed and piloted in several countries, in order to alleviate the consequences of risk exposure of smallholder farmers is weather index insurance (Sarris, 2013).

Weather index insurance (WII) is a relatively new type of financial risk transfer product, which could help to overcome some of the problems with traditional insurance schemes. Unlike indemnity-based crop insurance, where an insured farmer receives compensation for the verifiable loss at the end of the growing season, WII makes claim payments based on the realization of an objectively measured weather variable (e.g., rainfall) that is correlated with production losses. Neither the insured farmer nor the insurer can easily manipulate rainfall measurements, which reduces issues of information asymmetry. Moreover, instead of reducing effort to increase chances of compensation, farmers with WII actually have an incentive to make the best farming decisions. In comparison with traditional insurance, WII is less expensive to administer, which can lead to more affordable contracts and faster payments to farmers, who often need the funds for timely planting in the subsequent season (Sibiko, 2018). Because with weather index-based insurance contracts, an insurance company doesn't need to visit the policyholder to assess damages and arbitrate claims. Instead, if the rainfall recorded by gauges is below a previously agreed threshold, the insurance pays out automatically (CGIAR, 2013).

Weather index insurance principles were initiated by Halcrow (1948) and further developed by Dandekar (1977). Skees et al. (1999) theoretically proposed these principles for developing countries and later on empirically tested in Morocco. Mahul (2001) provided a more formal framework for weather index insurance in agriculture. Using historical rainfall and temperature data, Turvey (2001) illustrated how weather index insurance could be used to address specific-event risks measured at the local level and how rainfall and heat insurance could be priced in practice (Tadesse et al.2015).

The World Bank initiated an index insurance program for farmers in Ethiopia in March of 2006 in collaboration with the state-owned Ethiopian Insurance Corporation (EIC). Because of their strong outreach to the rural sector and the greatest business incentive in becoming involved in the pilot, cooperatives were chosen to act as intermediaries and

deliver the index insurance product to prospective farmer clients. EIC selected two potential pilot areas where they had clients who had expressed interest in index insurance and where there were National Meteorological Agency weather stations with adequate historical weather data. Based on preliminary assessments, EIC elected to work with the Alaba woreda of the Southern Nations, Nationalities and Peoples Region for the pilot program. The objective of the pilot was to develop a deficit rainfall index insurance contract aimed at maize production. EIC worked with local cooperatives to market the product since cooperatives were engaged in service provision to farmers, including input supply, and credit and saving facilities (ACET, 2016).

In response to the 2011 East Africa drought, the Japan International Co-operation Agency (JICA) and the Ethiopian Ministry of Agriculture launched the Rural Resilience Enhancement Project in 2012 to enhance the resilience of Ethiopian rural communities to climate change and drought. One of the project components was the introduction of weather index insurance for farmers in low rainfall areas of Oromia Region. The insurance pays insured farmers when rainfall amounts fall below a certain level and to insulate themselves from the effects of drought. The introduction of insurance was complemented by capacity-building training on basic principles of insurance, agriculture risk management and the concept weather index insurance directed at unions, cooperatives and development assistants, as these will be the first level contact for farmers. Weather index insurance was introduced in 8 districts in Oromia region in collaboration with partners such as the Oromia Insurance Company and various farmer cooperatives and unions (Mulangu, 2016).

The pilot program encountered a number of difficulties. While suitable data was found for a number of stations in Ethiopia, there was a lack of sufficient data for the development of weather insurance contracts on a large scale. In addition, the reporting capabilities for many existing stations were found to be weak, indicating that long-term investment in new technology, leaning of data, and upgrading of infrastructure would be necessary for expansion of the pilot project. The cooperatives also were found to be poor partners and ultimately became an obstacle to marketing. (ACET, 2016).

Oromia Insurance Company S.C. (OIC) provides complete and dependable insurance services under one roof: Life, non-life and micro insurance. OIC gives priority to customer-centered product development initiatives. For instance, Micro insurance is a new product being widely introduced to the Ethiopian insurance market by OIC. The Company started micro insurance activities in December 2009 with the objective of delivering micro insurance products primarily to farmers' cooperative unions who are mostly OIC's shareholders with over 1.6 million constituencies of individual farmers and pastoralists. In broader terms, the major purpose is to extend the outreach of insurance services to the low-income people, particularly the farming and pastoralist communities at large, and serving such customers with appropriate products that would properly address their needs and premium-paying capabilities (<http://www.oromiainsurancecompany.com.et.>).

The mission of OIC is rendering efficient insurance service at competitive prices by using up-to-date technology and trained manpower to fully satisfy all its stakeholders (<http://www.oromiainsurancecompany.com.et.>).

Although there are many Efforts have made to introduce and expand weather index insurance in Ethiopia by different international organization like world bank and WFP and local insurance companies like oromia insurance company, nyala insurance and EIC, significant challenges still remain for development of scalable and sustainable weather index insurance in Ethiopia (ESSP II, 2013). Before starting the actual study the researcher also collects some information informally from oromia insurance company micro insurance department, the growth of weather index insurance is at infancy stage. Availability of this information motivated the researcher to conduct the actual study on challenges of WII in oromia insurance company in case of Arsi Negelle and Bora Wereda.

1.2. Statement of the Problem

Weather-related perils such as droughts, floods, hail, cyclone, and hurricanes present pervasive risks for agriculture throughout the developing world, with adverse consequences not only for farmers but for other stakeholders in the agricultural marketing chain, including lenders, processors, exporters, and consumers (Mulangu, 2016).The

effects of weather risk are felt most acutely at the household level, particularly by poor, vulnerable agricultural households, the majority of which are subsistence farmers. (Mushfiqur, 2014).

The government of Ethiopia agriculture policy aim to achieve rapid agricultural growth through adoption of modern inputs and commercializing smallholder's agriculture. To realize this Ethiopia government introduces weather index insurance (Desta, 2015). In Ethiopia there are about 15 insurance companies mainly offering life, property, motor and medical policies. Agricultural insurance was not common in Ethiopia, even though around 83% of the population survive on agriculture. (Dula, ND).

Many rural households in Ethiopia have a limited understanding of crop insurance. For instance, 64 % of households reported that they perceived insurance as something designed for rich people who can afford to pay insurance premium as is the case of motor insurance (many people in the survey areas are aware of motor insurance). A few others (5 %) thought drought was too infrequent. Other reasons include the lack of trust in insurance providers. Thus, focusing only on bigger, but infrequent, shocks may allow households to buy time and save a little money year after year (Tadesse, 2015).

Therefore some studies are conducted on weather index insurances in Ethiopia. For example Eleni (2011) had conducted the study on the title of Factors that affect adoption of Weather index insurance and its intensity. According to Eleni the study finds that households who participate in the Productive Safety Net Program, who have oxen and other domestic animals and who owned rain fed farm land are more likely to participate in the WII program as a climate adaptation strategy.

On other hand Dereje (2018) had also conducted the study on the title of farmers' perception and willingness to pay for weather index based insurance. He had illustrated that age, family size, habit of saving money and farm size of the household has an important factors that influences the farmer's willingness to pay for weather index insurance.

None of the above studies didn't consider about challenges of WII regarding with farmers trust on the insurance provider, level of education of the farmers, level of understanding of

the farmer about WII, ability to pay the premium by the farmers, payout by the insurance company in terms timing and amounts and copying mechanisms of the insurance company and as per researcher knowledge there is no research conducted in Arsi negele and Bora weredas on challenges of implementing WII. Hence, this study intends to fill this gap by undertaking an investigation of the challenges of implementing WII in Oromia Insurance Company in the case of Arsi negelle And Bora woredas.

Research Questions

- What are the challenges of implementing weather index insurance in oromia insurance company?
- What mechanisms that the company uses to overcome the challenges?

1.3. Research Objectives

The main objective of this study is to identify and examine the challenges of implementing weather index insurance. Specifically, the study aims to:

- To identify the challenges in implementing weather index insurance in the study area
- To examine the mechanism in which the company uses to manage the challenges.

1.4. Significance of the Study

A study of identifying challenges of implementing weather index insurance is important, because it provides information that will enable to take effective measures to improve the weather index insurance performances and their success in the rural financial markets. It will also help insurers and policy makers towards informed policy makings in relation to where and how to guide efforts in order to protect drought risk. The study may also serve

as a source material for researchers who would like to make further study in the subject matter.

1.5. Scope of the Study

The researcher believes that it would be appropriate to conduct the study in large scale. However, the limited time and other resources do not allow doing so. The study basically covered only challenges of implementing weather index insurance products i.e. high transaction costs, poor understanding of the farmers towards WII, lack of trust on the insurance product, lack of government intervention and lack of weather infrastructure. Therefore, accordingly, the research was limited to oromia insurance company and the study did not cover other insurance companies because other insurance companies did not implement weather index insurance. The study also did not cover non users of weather index insurance. The conclusion that will be drawn from this research is based on the above circumstances.

1.6. Limitations of the Study

This study was conducted on identifying and examining the challenges of weather index insurance and examine the mechanism in which the company uses to manage such challenges. The geographical coverage of the study was bora and arsi negele woredas of oromia regional state. Therefore, did not cover the entire country and the region as a whole. The other limitation is lack of secondary data from the company and lack literature regarding weather index insurance. However, efforts were made to minimize the limitations associated with the methodology.

1.7. Organization of the Study

This paper is organized into five chapters. Chapter one is the introduction which deals with background, problem statement, objectives, scope and significance of the study. Chapter, two and three deal with review of literature related to weather related insurance (rainfall) and the research methodologies, respectively. Chapter four presents results and discussion of the study. Finally, chapter five summarizes the finding of the study and gives recommendation.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1. The concept of Insurance

With the majority of the population of the developing world living in rural areas, agriculture can be a key driver of economic and human development. However, agriculture is a risky business, especially in developing countries where small-scale farmers often have to deal with a series of risks related to the weather, market, production, and political environment (Sandmark, 2013). Risk and vulnerability to risk are fundamental causes of underdevelopment (Mosley, 2007). It has both positive and negative aspects.

According to Singh, (2010) Risk, refers to the impact of the uncertain outcome on the quantity or value of some economic variable. Repeated events would result different outcomes having a range of values. Thus risk refers to the variations in value of an economic variable resulting from the influence of an uncertain event. As such, risk (variations) may be measured in terms of standard deviation or coefficient of variations for yield, prices and income (Cited by Dereje, 2018).

Insurance is one way of managing risk but not everyone will be able or want to use insurance as means to manage their risk. Some people may choose not to use insurance even though it is available to them. Insurance protects farmers from crop losses due to bad weather and encourages them to innovate (CGIAR, 2013).

Insurance is a financial arrangement that is intended to provide protection from risk. This risk can be for any number of things, including death, a car accident, or even for crop losses. Insurance is not a gift or a subsidy, but a way in which a person can pay a small amount in good years and receive protection in bad years. However, you should expect that over time the amount that you pay will always be more than the amount you receive to pay for the profit of the insurance company that holds your risk for you (IRI, 2015).

Insurance is an agreement where, for a stipulated payment called the premium, one party (the insurer) agrees to pay to the other (the policyholder or his designated beneficiary) a defined amount (the claim payment or benefit) upon the occurrence of a specific loss. This defined claim payment amount can be a fixed amount or can reimburse all or a part of the loss that occurred. The insurer considers the losses expected for the insurance pool and the potential for variation in order to charge premiums that, in total, will be sufficient to cover all of the projected claim payments for the insurance pool. The premium charged to each of the pool participants is that participant's share of the total premium for the pool. Each premium may be adjusted to reflect any special characteristics of the particular policy. The larger the policy pool, the more predictable its results (Anderson, 2005).

In general Insurance services categorized under: - Life, non-life and micro insurance.

2.2. Theoretical Review of Weather index insurance

2.2.1. Concept of Micro Insurance

Different writers define micro insurance in different ways some of them are as follows.

Churchill, (2007) Insurance industry play vital role in the economy. Successful operation of insurance industry sets impetus for other industries and development of an economy. Micro insurance programs provide insurance services to the low-income population and small businesses in developing countries (Cited by Abel, 2018).

“Micro-insurance is the protection for the low -income population against specific dangers in exchange for regular payments of proportional premiums to the probability and costs of the involved risks”. Micro insurance is thus designed with the objective of protecting poor people and also designed with the environment that surrounds them, their needs, and possibilities. It is necessary that the product is developed for people ignored by traditional insurance markets. (Bansal, 2015).

Micro insurance is regarded by some as a risk management mechanism that the poor can use to compensate for lack of appropriate state-sponsored social protection programs and it promotes financial inclusion. The term micro insurance is comprised of two words “Micro” which means “Affordable of the poor” and “Insurance” means “Risk pooling to

compensate to individual and group” (Paramasivan, 2016). Alternatively, it is viewed by others as not only the mechanism for reducing vulnerability but also ensures social and economic security to the poor (Paramasivan, 2016) and an opportunity to provide financial services to the low-income market at a profit (Abel, 2018).

Micro insurance refers to insurance products that offer coverage to low-income households. A micro insurance plan provides protection to individuals who have little savings and is tailored specifically for lower valued assets and compensation for illness, injury or death. This is insurance which is accessed by low-income earners, provided by a variety of different entities, but managed in accordance with generally accepted insurance practices (Louw, 2017).

According to Roth (2007) Micro insurance is a risk management mechanism under which individuals, businesses, and other organizations or entities, in exchange for payment of a premium, distribute the risk of potential financial loss by indemnifying for losses resulting from certain peril under specified situation.

The International association of insurance supervisors (IAIS) (2007) also defined Micro insurance as it covers a variety of different risks, including illnesses, accidental injuries, and death and property loss basically any risk that is insurable, and is designed to be appropriate in terms of affordability and accessibility to low-income households. They can be offered as a single risk product or as a bundled risk product. Coverage can also be provided on an individual or group basis (cited by Eleni, 2011).

Micro insurance schemes are programs and institutions that adapt traditional insurance mechanisms (pre-payment, risk-pooling, and coverage guarantees) to the informal sector, providing services to beneficiaries that are commonly excluded from formal insurance. Micro insurance schemes can include life, health, disability, property, and other kinds of insurance products such as crop (Global Risk Forum, 2010).

Under new micro insurance business directive #1/2015 definition, the following are main micro insurance products which allowed by NBE: - As life insurance product: - term insurance for insured policy holders or family members of the holder, accidental death and

/or disability of insured policy holder or family member, credit life, medical expense, investment linked, other categories of micro insurance that may be authorized. Under general micro insurance:- loss of / damages to property including crops and livestock and on an indemnity basis only, credit linked coverage, saving linked coverage, weather index insurance, other categories that may be authorized by NBE(Abel, 2017).

The types of micro insurance products are almost as varied as that of commercial insurance i.e. the range of micro insurance products on offer is also wide. However, in this paper the researcher is concerned with agricultural insurance products especially weather index insurance.

2.2.2. Agricultural Insurance Products

Agricultural insurance is one tool to manage the risks that may arise in agricultural production, which will actively be used by financial intermediaries to hedge the financing of agricultural products (EIFS, ND).

Crop insurance products can broadly be classified into two major groups: indemnity-based insurance and index insurance (World Bank, 2011).

2.2.2.1. Indemnity Based Crop Insurance

Indemnity based insurance products determine claim payment based on the actual loss incurred by the policyholder. If an insured event occurs, an assessment of the loss and a determination of the indemnity are made at the level of the insured party (ESSP II, 2013). There are two main indemnity products (World Bank, 2011):

I. Damage-based indemnity insurance (peril crop insurance).

Damage-based indemnity insurance is crop insurance in which the insurance claim is calculated by measuring the percentage damage in the field soon after the damage occurs. The damage measured in the field, less a deductible expressed as a percentage, is applied to the pre-agreed sum insured. The sum insured may be based on production costs or on

the expected revenue. Where damage cannot be measured accurately immediately after the loss, the assessment may be deferred until later in the crop season (World Bank, 2011).

II. Yield-based crop insurance (or Multiple Peril Crop Insurance, MPCI)

Multiple perils (yield based) provide insurance against all perils that affect production unless specific perils have been explicitly excluded in the contract of insurance. Under this type of insurance, the sum insured is defined in terms of the expected yield to the producer. Cover is normally set in the range of 50 percent to 70 percent of the expected yield. In turn, the expected yield is determined on the basis of the actual production history of the producer or the area in which the producer operates. The sum insured can be based on the future market price of the guaranteed yield if the producer has an insurable interest, or alternatively, if the producer has taken a loan to finance the crop, the sum insured may be based on the amount of the loan if the financier has an insurable interest in the crop. The calculation of the payout is based on the extent to which the actual yield falls short of the guaranteed yield at the agreed price or as the shortfall in yield as a percentage of the guaranteed yield applied to the sum insured (ESSP II, 2013).

2.2.2.2. Index-Based Crop Insurance

Currently there are two types of index product (World Bank, 2011):

I. Area yield index insurance

Here the indemnity is based on the realized average yield of an area such as a county or district, not the actual yield of the insured party. The insured yield is established as a percentage of the average yield for the area. An indemnity is paid if the realized yield for the area is less than the insured yield regardless of the actual yield on a policyholder's farm. This type of index insurance requires historical area yield data (World Bank, 2011).

II. Weather Index Insurance (WII)

Weather index insurance is a relatively recent innovation that is seen as a smooth risk for farmers in developing countries (Michael, 2011). The product is designed around the construction of an index that is highly correlated with loss experiences. The most common

index in agriculture is rainfall. Typically, an insurer will offer a contract that will specify the index (for example, rainfall), over what period and where it will be measured, the threshold, the sum insured, and any indemnity limits. If the rainfall is less than the index at the specified measurement point and over the period specified in the contract, the insurer will payout under the contract irrespective of the actual losses of the policyholder. The quantity of the payout is determined according to the provisions of the contract. A simple payout may be the total sum insured under the contract. More commonly, contracts are written so that the proportion of the sum insured that is paid out is determined by how far the actual production observed in the insured unit deviates from the index (ESSP II, 2013).

Weather insurance is not the same as standard indemnity insurance because of the presence of basis risk, the probability that the index records a good state of the world when the individual experiences a bad state of the world—it is better thought of as a hedging contract (Ruth, 2011).

2.2.3. Advantages of weather index insurance

Weather index based insurance products have a number of advantages over traditional crop insurance products (Mushfiqur, 2014).

Reduced risk of adverse selection: - Adverse selection can occur in agricultural insurance because farmers are more likely to buy insurance if they are a higher risk. Underlying this is an asymmetry of information, which places the insurer at risk (one that they need to manage through detailed, individual risk appraisal prior to premium pricing). An advantage of index insurance is that farmers subscribe based on the terms, conditions, and payout scale for all farmers in their defined area, virtually eliminating the adverse selection problem for insurers (World Bank, 2011).

Rapid payout: - Measurement of weather station data, with no field loss adjustment, allows rapid payouts (WFP, 2011).

Reduce monitoring cost: - Due to the advent of efficient product design, the industry does not depend on individual's actual losses. So it is not possible for the individual to change

or affect the probability of adverse event. It reduces ex-post and ex-ante moral hazard, and thereby reduces insurer's monitoring cost (Mushfiqur, 2014).

No on-farm loss adjustment: - Traditional micro-insurance requires high cost in determining which individuals or households suffered from loss, what is the extent of actual loss. But in rural areas, especially in case of agriculture, it is very costly and time consuming to determine the amount of loss and indemnity (Mushfiqur, 2014). This is a primary advantage of index insurance, as on-farm loss adjustment is quite complex and costly and may not be credible in many low-income countries (IFAD, 2011).

Standardized and transparent: - Index based insurance contract follows standardized and simple format (Mushfiqur, 2014). Index insurance contracts usually allow the policyholder direct access to the information on which the payouts will be calculated. Trust is strengthened by transparency (WFP, 2011). Contrary to traditional insurance, insured can easily understand index insurance (Mushfiqur, 2014).

Lack of moral hazard: - Moral hazard occurs when individuals engage in hidden activities that increase their exposure to risk as a result of purchasing insurance, or attempt to influence the claims outcome. These hidden activities can leave the insurer exposed to higher levels of risk than had been anticipated when premium rates were established. With WII, there is no benefit in individual producers trying to influence claims. All producers in the defined area are treated equally (WFP, 2011).

2.2.4. Disadvantage of weather index insurance

Basis Risk: - The most important challenge of course, is 'basis risk'. Basis risk in a way is inseparable part of any index based insurance – it can only be minimized, but not totally removed. Basis risk may arise for many reasons. In case of weather index it could mainly arise because of lack of good density of weather stations, and poor index design, though there could be other reasons (Kolli, 2010). In this context basis risk refers to the imperfect correlation between the index and the losses experienced by the policyholder. It is possible for the policyholder to experience a loss and yet receive no index insurance indemnity.

Likewise, it is possible for the policyholder to receive an index insurance indemnity and experience no loss. There are various types of basis risk (WFP, 2011):

- Spatial basis risk. Poor correlation between yield at farm level and rainfall records at the nearby weather station (Tadesse, 2015). Local variations in the peril occurrence (e.g. rainfall) within the area surrounding a weather station.
- Temporal basis risk. Inter-annual variations in seasonal crop phases, meaning that the insurance phases are not temporally aligned with the intended crop growth stage.
- Product basis risk. Crop losses can be caused by many factors. Where there is no clear-cut relationship between loss and the indexed weather peril, basis risk can be high. WII is most likely to work for rain fed crops and at severe levels of the event, when losses may be more widespread and homogeneous.

Integrity of weather stations: - Weather stations used for index insurance must be sufficiently secure to prevent tampering. Additionally, they should have automatic, as opposed to manual, recording of data. Preferably, data will also be collected from the weather stations using automatic reporting systems such as Global System for Mobile Communications (GSM) devices. Not only do these provisions increase the quality of the data, but they also reduce the potential for human error or data manipulation. The degree of integrity has a direct impact on the cost of the uncertainty loading that goes into the insurance premium (World Bank 2011).

Data availability: - WII depends on the availability and quality of weather data, which can drastically vary from country to country. In developing countries, the shortage of historical and real-time weather data is often a major obstacle. (WFP, 2011).

Need for farmer/insurer/regulator capacity building and education: - Index insurance is a new concept for farmers, and therefore any rollout of the product requires intense education programs to help them to understand the principle of the payout system and also the fact that it covers only one risk variable. To date, experience with this education requirement has provided mixed results. For insurers, this is a new type of insurance product, so they require substantial technical assistance in designing contracts and indexes and extensive

capacity building to enable them to undertake product development on a sustainable basis (World Bank 2011).

Currently limited product options for different weather risks: - The majority of WII products have been designed for rainfall risk, which is not necessarily the most serious or prominent weather risk in many areas. Experience insuring other weather risks with new indexes is needed. In many regions farm losses often result from a complex interaction of perils—for example, increased temperature that leads to pest problems. A “simple” WII product is not suitable for this and thus would need to consist of more than one index rolled into a single product or would require the farmer to take out a different type of insurance product for the other risks (World Bank 2011).

Replication: - The triggers, limits and increments of a specific product need to be adjusted to reflect the weather parameters of each weather station. Different product designs are required for different crop types (or at least generic crop types). WII requires considerable technical work in its implementation and sustaining (WFP, 2011).

2.2.5. Practical Challenges of implementing weather index insurance

Weather index based insurance has many advantages and offers great potential for farmers in low income countries to manage the production risk. At the same time, weather index based crop insurance faces several challenges, and these include non-availability of reliable and quality weather data, basis risk, complex index contract design, etc. (Kolli, 2010) ,the inadequacy of Infrastructure esp. weather Stations, the problem of the difficulty of getting Reinsurance, Technical know-how and capacity and Farmers upfront paying capacity (Dula, ND).

Demand (Ability or willingness to pay): - Most farmers in developing countries have extremely low disposable incomes (if any) and a limited awareness of financial products such as insurance. Given this, most are loath to pay insurance premiums, as many do not monetize their crop, especially if their government has a history of writing off debts or providing compensation. Add to this the complexity of explaining how WII works and on

what basis pay outs are calculated and one can see that demand is a real obstacle to scaling up (World Bank, 2011).

Demand for development index insurance will most likely come from regions where the assets and livelihood strategies of farm households are widely exposed to weather-related risks. And the demand is stimulated by multilateral agencies such as the World Food Programme (WFP) and the World Bank, and programs along these lines have emerged in a few countries (WFP, 2010).

Farmers' willingness to buy insurance may be greater when it is tied to credit. Their willingness is also greatly influenced by their knowledge of how index insurance works, socio-economic factors such as education, and their initial level of wealth (IFAD, 2010).

Complexity: - WII is a very technical product that requires a high degree of technical and financial knowledge, awareness, and capacity. These requirements are necessary not only at the design stage, but also during monitoring and product adaptation to new data and crops. This also directly affects the ease with which this product can be scaled up in new areas (World Bank, 2011).

Farmers actually want full indemnity: - Index products do not offer indemnity—you can suffer a loss and not receive a payout either because of a lack of a trigger of the index due to lack of severity or because of the loss being caused by a variable that was not covered by the index (for example, you have drought coverage and your crop is destroyed by pest). Generally, what farmers actually want is an indemnity from loss, no matter what the cause. While it is possible to structure insurance with multiple indexes, this is very complicated, would likely end in very expensive premiums, and would be plagued by basis risk issues in relation to multiple, not single variables (World Bank, 2011).

Reinsurance: - International reinsurance is already available for some natural disaster risks. The simplest form is a stop-loss contract in which the primary insurer pays a premium to get protection if its losses exceed certain levels. Other forms of reinsurance are also common. Quota-share arrangements involve sharing both premiums and indemnities. Despite significant growth in recent years, the reinsurance markets for index insurance are

still thin, with few large international firms and a limited appetite for weather index-based contracts (WFP, 2010).

Lack of capacity: - There is currently a lack of technical capacity in the insurance sectors of most developing countries, which is a constraint to the scaling up and further development of WII. While it is possible, on a pilot basis, to use external consultants to design an index product and assist in its rollout, marketing, and sales, such assistance is not possible on a wide scale (simply because of lack of qualified professionals) (World Bank, 2011).

Outreach and training: - While WII may not require local presence in respect to field level assessments, it does require local presence during product rollout and sales. To ensure that farmers understand the product (so that they will either buy it or be able to appreciate when it will pay out), extensive awareness activities and training are needed. The costs inherent in such a process are prohibitive for most local insurance companies and therefore a major constraint to product development (World Bank, 2011).

2.2.6. Development of weather index insurance in Ethiopia

The Government of Ethiopia's agriculture policy aims to achieve rapid economic growth through the development of a free market economy, with the intention of liberating Ethiopia from aid dependency. Within the Government Food Security Program, proposed development alternatives include the use of index insurance products. Index insurance was first piloted in the country in 2006 (WFP, 2010). Pilots can provide useful indications about acceptance of the product, willingness to pay and product design alternatives (IFAD, 2010). According to WFP report there are three recent pilot projects or experiments with weather-index insurance was conducted in Ethiopia.

2.2.6.1. World Bank crop insurance pilot

The World Bank implemented a pilot project on weather-based index insurance for rainfall risks associated with maize production in Alaba woreda of the Southern Nations, Nationalities and People's Region (SNNP) in 2006 (ESSP II, 2013). The Ethiopian Insurance Corporation (EIC) was chosen to give underwriting for the insurance project and product marketing was assisted by two cooperatives in the region. Farmers living close to the weather station in the Alaba woreda were identified as potential clients. While individual farmers would be the policyholders, the cooperatives were used as client representatives to facilitate the contract with farmers. Given that only 28 farmers decided to purchase the product, no reinsurance was obtained. Upon completion of the pilot, it was concluded that significant challenges still remain for development of scalable and sustainable weather index insurance in Ethiopia (ESSP II, 2013). The results of the pilot project reveal that EIC understands index based weather insurance contracts and can design contract parameters.

2.2.6.2. Nyala Insurance crop insurance pilot

In 2009, WFP gave technical support to this pilot by providing a framework for the design of the insurance contracts. Nyala Insurance Company (NISCO), with guidance from WFP, designed the contracts for smallholders in the area of Boset/Sodore near Nazareth. It insured farmers growing haricot beans in the meher season, and a rainfall deficit index was used to protect against drought (WFP, 2011).

Nyala promoted and sold the product through the Lume Adama Farmers' Cooperative Union. The Union was essential in securing farmer participation, as it is a trusted delivery channel for farmers that already buy seed and fertilizer through the union. LAFCU bought drought insurance for the rainy season (i.e. all three cultivation phases), covering a total of 137 farmers (seven of whom were women). When drought occurred in 2009, the growth of haricot beans was impeded and payouts were triggered (ESSP II, 2013).

A preliminary evaluation of the pilot indicates that the insured farmers understood the insurance policy well and were aware of its potential benefits. In addition, other farmers in the region have approached Nyala and its partners, asking to be included in the next phase of the pilot and expressing interest in a product that would cover crops such as maize and

teff. The government considered the Nyala pilot a good learning experience in providing crop insurance in rural areas, and it supports continuing the program. It believes that index insurance has the potential to increase production by sharing risks and assisting farmers in adopting new technologies (ESSP II, 2013).

2.2.6.3. **Relief Society of Tigray (REST) Initiated Weather index**

Insurance (the HARITA Project)

Oxfam America and Swiss Re, in collaboration with IRI, the Relief Society of Tigray (REST) and others, have developed an ongoing index insurance pilot in 2007 (WFP, 2010). The pilot was initially targeted on teff farmers in the village of Adi Ha in Tigray and expanded to other villages and crops. The HARITA project is taking a farmer-centered approach, and is working to integrate index insurance with other risk reducing activities by complementing the product with improved agronomic practices, conservation measures, and seasonal and daily weather forecasting. The innovations of the pilot include the extension of weather insurance to communities that are technically challenging to serve, and methods that allow cash-constrained farmers to pay premiums with their labor (ESSP II, 2013).

The HARITA project involves a farmer-designed insurance product. Farmers were deeply involved in identifying their educational and risk management needs, as well as in brainstorming how weather index insurance could be made very attractive to the target client (e.g. by suggesting that insurance be payable in-kind). They also were trained in weather-data collection, which provided additional, critical datasets for understanding the nature and degree of basis risk around the village. By integrating insurance with a food security programme, farmers' immediate concerns begin to be addressed, allowing them the luxury of thinking about longer-term issues (Dula, ND).

Given the positive results from the pilot, the HARITA model was expanded into four other villages in Tigray—Geneti, Hade Alga, Hadush Adi, and Awet Bikalsi—along with Adi Ha, the original test site. The participants of the project increased from 200 to 1,300. In its

two years delivery of weather index insurance in five villages in Tigray, HARITA has shown promising results for replication (ESSP II, 2013).

At the end of 2010, Oxfam America and the World Food Program (WFP) developed program strategies and plans to expand the pilot results of HARITA to reach smallholder farmers throughout Ethiopia and to other potential countries. The partnership is called the Rural Resilience Initiative or R4, referring to improved resource management (risk reduction), micro-insurance (risk transfer), microcredit (prudent risk taking), and savings (risk reserves). As per the agreement, HARITA will scale up to serve between 10,000 and 13,000 households in approximately 34 to 35 villages in 2011 (ESSP II, 2013).

2.3. Empirical Review

Micro index insurance products intuitively appear to have the greatest potential to help farmers, since such products provide payouts directly to farmers and in principle can be tailored specifically to their immediate risk management needs. As such, most early efforts to develop index insurance involved micro contracts designed to protect individual farmers. The results of most index insurance pilot programs, however, have been disappointing, with significant uptake of index insurance among smallholders occurring only if it is heavily subsidized or coupled with other benefits, such as low-interest loans, and with the demand disappearing as soon as the subsidy is eliminated. Although high basis risk is generally recognized as the primary cause of low or non-existence demand for micro insurance products, other problems have undermined the development of markets for micro index insurance (Mulangu, 2016)

Weather index insurance is insurance that is linked to a weather index such as rainfall, rather than a possible consequence of weather, such as crop failure. This subtle distinction resolves a number of fundamental problems that make traditional insurance unworkable in rural parts of developing countries. One key advantage is that the transaction costs are low. This makes it workable under real market conditions both financially viable for private sector insurers and affordable to small farmers. Unlike traditional crop insurance against

crop failure, the insurance company does not need to visit farmers' fields, to determine premiums or to assess damages. Instead the insurance is designed around rainfall data (for example). If the rainfall amount is below the earlier agreed threshold, the insurance pays out. Since there is no need for the insurance company to corroborate actual losses, payouts can be made quickly and distress sales of assets avoided. This process also removes the 'perverse incentives' of crop insurance, where farmers may actually prefer their crops to fail so that they receive a payout. With index insurance, the payout is not linked to the crop survival or failure, so the farmer has the incentive to make the best decisions for crop survival (Dereje, 2018).

According to output of the statistical measurement of transaction cost shows significant at 5%. It implies that transaction costs are taken as statistically as a significant challenge of micro insurance investment. Concerning its effect as per odds ratio; it shows that, it has negative relationship with micro insurance investment. This implies the odds ratio of micro insurance investment decrease approximately by .41 times, as fear of transaction costs increase by investor. Besides, in-depth interview result shows that, as there is high fear on transaction costs and this as a result hinders micro insurance investment with fear of low profit from the business (Abel, 2017).

Amos (2012) found out that the perceptions of the respondents with regard to risks faced by micro-insurance providers. It discloses most severe risks experienced by micro-insurance service providers as low penetration (mean 4.06), constrained distribution channels (mean = 3.69), rigid regulatory framework (mean=3.41) and correlation of risks (mean = 3.20). Although pricing is also considered a severe risk, the respondents did not perceive product design, adverse selection, moral hazard, fraud and premium default as serious risks in offering micro-insurance products. The respondents mentioned other micro-insurance risks as mismatch between affordability and sustainability; lack of technical expertise on micro-insurance; inaccessibility to remote areas; inappropriate tools for data collection especially in weather forecasting for index-based weather insurance; lack of capacity for early prediction of climate hazards, culture of mistrusting insurance companies, high administration and transaction costs, high lapse rates especially where

claims have not occurred; mis-selling by the agents and high exposure to catastrophic losses.

The age, gender, and education of the farmers are important in determining the willingness to pay for WII: women, older individuals, and less educated individuals are less likely to be willing to pay for insurance. In fact, women are 12 percent less likely to respond that they would be willing to pay for insurance. Having access to financial services (defined as either possessing a bank account or having access to formal-sector loans) makes an individual 11 percent more likely to purchase insurance. Individuals who somewhat agreed they had power to make decisions that change the course of their life are 15 percent more likely to respond that they would like insurance. Individuals who strongly agreed with this statement are 19 percent more likely to respond in the affirmative. These results indicate that early adopters of insurance products are likely to be households that are wealthy, educated, and with more access to credit and formal financial markets (Ruth, 2011).

Regarding group insurance, Sibiko (2018) found that small-group contracts are more likely to be chosen over individual contracts, whereas large-group contracts have a lower probability of being chosen. This implies that offering group contracts could motivate more farmers to take up WII, which is consistent with recent findings from Tanzania and Ethiopia. However, it also becomes evident that structural aspects such as group size matter, as larger groups may be associated with lower levels of group cohesion.

They also provide suggestive evidence that reduced farmer's attitude towards WII i.e. the results confirm that levels of satisfaction with the existing insurance program determine farmer attitudes: higher levels of satisfaction contribute to a higher general preference for WII. The positive and significant coefficient for insurer transparency reveals a strong farmer preference for receiving regular text messages about rainfall measurements as part of the insurance contract. This result confirms that information transparency and regular communication can increase farmers' confidence in WII products. Concerning distance to the weather station, it shows that farmers prefer shorter distances that are associated with lower basis risk. The estimation results suggest that insurance uptake could be higher with more weather stations installed.

According to Eleni (2011) shows that households who participate in the Productive Safety Net Program are more likely to participate in the WII program. The number of oxen owned by a farm household has positive and significant effect on the likelihood of farm households' participation in WII as a climate adaptation strategy. The result shows that WII adoption decision was positively related to the amount of rain fed land owned. This means that households belonging to lower amount of rain fed land have lesser probability for purchase of WII adoption. The number of oxen owned was another significant variable for the adoption decision. The results indicate that the perception of households towards drought risk was also found significant and positive in relation to adoption of WII. Understanding about insurance was found positive and significant variable which determine the WII adoption decision. This means that households with better understanding about WII have higher probability of adoption of WII.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Research Design

The main objective of the study mentioned in chapter one was to identify the challenges of implementing weather index insurance in oromia insurance company and to examine the mechanisms that the company uses to minimize those challenges in case of arsi negele and bora weredas. In order to achieve this objective the researcher used a descriptive type of research. The reason for selected descriptive type is that the researcher has no control or effect on the variables of the study.

According to Kothari (2004) Descriptive survey is defined as a scientific method which involves observing and describing the behavior of a subject without influencing it in any way. The major purpose of descriptive research is to describe the state of affairs as it exists at present. In order to achieve the intended objectives both quantitative and qualitative method were chosen.

3.2. Data Source

In this study both the primary and secondary data sources were used. Primary source of data will be used for obtaining relevant information and it was collected from respondents by using self-administered Questionnaire by interviewing the sampled respondents using telephone this is because of the emerging and expansion of COVID-19 throughout the country. According to (Kothari, 2004) telephone method of data collection has its own advantage including:- It is faster than other methods i.e., a quick way of obtaining information, Recall is easy; callbacks are simple and economical, Replies can be recorded without causing embarrassment to respondents and Interviewer can explain requirements more easily. Moreover, secondary data refer to information gathered by someone other than the researcher conducting the current study. Secondary data were used to identify the users and non-users of weather index insurance.

3.3. Method of Data Collection

Two data collection instruments were used to gather relevant information for the purpose of the study. These were questionnaire and interview.

Questionnaire

According to (Uma sakaran, 2003), a questionnaire is a preformulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives. Questionnaires are the most common method of collecting data, so we have given attention to questionnaire design. Most of the questions in the questionnaire were developed from the review of related literature. Questionnaires have advantages over some other types of surveys in that they are cheap, do not require as much effort from the respondent and often have standardized answers that make it simple to compile data. In this study the questionnaire had two parts. The first part was dealt with the personal information of the respondents. And the second part of the questionnaire was about questions related with the concern of weather index insurance which comprises of 'Yes' or 'No' type and items rated by use of likert scale; 'Strongly disagree', 'Disagree', 'Neutral', 'Agree' and 'Strongly agree'.

Interview

Interview was another type data collection instrument used in the study. The purpose of the interview was to support the results obtained from the questionnaire thereby to get a greater depth of information. The interview was prepared to the manager and staffs of micro insurance department of oromia insurance company regarding challenges of implementing weather index insurance and the method that the company used to minimize or manage this challenges and it was conducted by the researcher. The interview was conducted at the head office because weather index insurance was implemented only at the head office not at the branch level. Due to this all the staffs and the manager were participated in the interview.

3.4. Population of the study

Weather index insurance is implemented in rain fall deficit and crop producing area of Ethiopia i.e. the rift valley area. To achieve the objective of the study the researcher conveniently selects two weredas (Arsi negele and Bora weredas) which is found in the rift valley and produces cereal crops. Based on the information found from Micro insurance department of oromia insurance company, a total of 258 farmers were users of weather index insurance in the study area. All of them were taken as a target population for the purpose of this study. Among these 160 were from arsi negele wereda and 98 were from bora wereda.

3.5. Sampling Technique and Sample Size

For this study, the target population for the research were all purchasers of weather index insurance. The study areas were selected by using purposive sampling that purchase weather index insurance. To obtain representative samples, simple random sampling technique was used to select user who were willing to complete the questionnaire. The simple random sample is the most basic form of probability sample. With random sampling, each unit of the population has an equal probability of inclusion in the sample (Alan Bryman, 2012).

According to Kothari (2004) sample size refers to the number of items to be selected from the population to constitute a sample. To get the sample size, the researcher will use the following formula by Yamane (1967):

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

n= required sample size

N= total population size of the study

e = error level which is 95% of confidence level

Where n is the sample size, N is the target population and e is the level of precision. This study assumes a confidence level of 95% and hence precision of .05.

Oromia insurance company implements WII in eight kebeles of Arsi negele wereda and five kebeles of bora weredas due to this the number of the population and sample size is not the same for the two weredas. By using the above formula 155 sampled respondents were selected from the target population in the selected wereda and Kebeles. The sample size for each wereda and kebeles was determined proportionally by taking into consideration the number of users of WII. Therefore, a total of 96 questionnaires were distributed to arsi negele wereda that were around 62% of the total users WII and the rest 59 (38%) were distributed to bora wereda.

3.6. Method of Data Analysis

Once after the raw data was collected, quantitative and qualitative methods of data analysis were used. Particularly with the quantitative data collected via the questionnaire, the researcher used a descriptive statistical analysis method and SPSS to tabulate the data and present it in tables and this shows the highest number of group response. In addition, to analyze the data obtained through interview qualitative method of data analysis was employed. Perhaps, the data gained through this method was used to back the information gathered via the main tool of the research, which is the questionnaire, and, hence no separate section was dedicated to it.

3.7. Validity and Reliability

Validity

In order to ensure validity of the items incorporated the questioner, it was examined the instrument before it was distributed. Therefore, to insure the quality of the tool, a pilot study was conducted on 30 farmers in the selected kebeles who were seen as similar to the population for the study. To guarantee validity the tool adopted from literature and vital revision was to refine the questionnaire and difficulty of the language after the pilot test.

Reliability

Table1. Cronbach's alpha coefficient

Reliability Statistics	
Cronbach's Alpha	N of Items
.701	30

Source: Respondents response

Reliability of the questionnaire were checked by the help of Cronbach's alpha calculated through SPSS version 24.0 windows. Generally, Cronbach's alpha of 0.701 was obtained, thus, the items are considered reliable. This idea was supported by (Rovai, Baker and Potton, 2013 cited Koonee 2014) which states reliability testing in an alpha of .7 are generally acceptable as having high reliability. As indicated in the above table, the Cronbach Alpha test implies that the instrument's internal Consistency is 70.1%.

3.8. Ethical Consideration

Ethics in research refers to a code of conduct or expected societal norm of behavior while conducting research. The researcher addressed ethical considerations of confidentiality and privacy. The respondents participated in response of an interview and questionnaire were expressed their full consent to participate in this study and also they were not required to write their name on questionnaire, they were notified to kept their response confidential and used for only academic purpose. The response that the participants gave is analyzed without any change by the researcher. In addition the reference works of other researchers and authors are cited appropriately.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This chapter reveals the results of the study. The data collected through the means of Questionnaires are analyzed & interpreted using SPSS software. Detailed analysis of the results derived from this analysis is presented in this chapter. Two weredas are selected from two zones of Oromia regional state and 155 respondents are randomly selected from six kebeles, four kebeles from arsi negele wereda, and two kebeles from bora weredas.

4.1. Demographic Information of the Respondents

The first part of the questionnaire consists of the demographic information of the respondent. Accordingly, the following variables about the respondents were summarized and described in table 2- 6. These variables includes sex, age, and educational background of the respondents, off-farm activities and agro-ecological zone.

Table-2 Sex of the respondents

Sex of the respondents	Response	Frequency	Percent
	Male	143	92.3
	Female	12	7.7
	Total	155	100

Source: Respondents Response

Table 2 shows the sex of the sample respondents. Among the respondents, 143(92.3%) are males and 12(7.7%) are females. The number of male respondents is more than three times that of female respondents. The result indicates that most male-headed households were purchased WII insurance.

Table-3 Age of respondents

Age of the respondents	Response	Frequency	Percent
	21-30	19	12.2
	31-40	64	41.3
	41-50	49	31.6
	Above 50	23	14.8
	Total	155	100.0

Source: Respondents Response

Table 3 indicates the age of the respondents that purchase weather index insurance.

As presented in table 2, the researcher divided the age of the respondents into four age ranges. Accordingly, 64 or 41.3% of the respondents fall 31-40 years old, whereas 49 or 31.6% of respondent's age is between 41-50. Only 19 or 12.2% are between 21-30, whereas 23 or 14.8% of them are above 50 years old. This implies that younger farmers were more participated in the purchase of WII than older farmers. As the age of the farmers move up their attitude or their willingness to buy WII decreases.

Table-4 Educational background of the respondents

Response	Frequency	Percent
Adult literacy	29	18.7
Elementary school	98	63.2
Secondary school	24	15.5
Higher education	4	2.6
Total	155	100.0

Source: Respondents Response

The purpose of assessing the educational background of the respondents is that when the respondents are more educated they easily understand the concept of weather index insurance

As Table 4 indicates the frequency distribution of the respondents regarding educational qualification, 29 (18.7%) percent of the respondents are educated adult literacy program, 98(63.2%) of them are elementary school. 24(15.5%) of the respondents are in secondary school whereas 4(2.6%) of them are college and university graduates. From the above figure we conclude that since their level of understanding of WII is depends on or related with their educational level, so it is challenging for the company to implement the insurance product. Because insurance is a difficult concept to understand especially for farmers or for those who have low level educational background.

Based on the interview made with the manager/staffs of micro insurance department of oromia insurance company, to minimize this challenges the company conduct training for the farmers. But the training conducted for the farmers was not enough to fully understand the concept of WII.

Table-5 Participation of farmers in other income generating activities

Are you participate in other income generation activities or off farm income?	Responses	Frequency	Percent
	Yes	31	20
	No	124	80
	Total	155	100

Source: Respondents Response

This is the total income farmers generated from off own farm activities. The above table indicates that 31(20%) of the respondents have other income-generating activities whereas 124(80%) of the total respondents have not. This implies that the majority of the respondents have not off-farm activities and as a result, most of the farmers did not have the financial capacity to purchase weather index insurance for their crops.

According to the interview conducted with the manager/staffs affordability or lack of premium was one of the important challenges that affect the company to implement WII in the study area.

Table-6 Agro-climatic zone

Agro climatic zone	Responses	Frequency	Percent
	Dega	0	0
	W/Dega	25	16.1
	Kola	130	83.9
	Total	155	100

Source: Respondents Response

The Agro climatic zone is one of the important factors that determine whether to sell weather index insurance or not. Most of the time this insurance product was sold in the rainfall deficit area especially the rift valley area of Ethiopia. The Rift Valley zone is a semi-arid plain plateau area with low-land agro ecology. The area receives a very low level of annual average rainfall. Rainfall seasons are from May to August and during October and November. Moisture stress and drought frequently cause devastating crop failure, rampant livestock mortality, and herd collapse (Temesgen, 2019).

Table 6 indicates that 130(83.9%) of the respondents have lived in the “kola” area and the remaining 25(16.1%) of the respondents lived in the “weynadega” area. Therefore weather index insurance is mostly practiced in the kola area of Ethiopia.

Based on the interview with the manager/staffs, agro-climatic zone is one of the factors that determine the type of weather insurance that the company is going to sell (either multi-peril weather insurance or weather index insurance). Weather index insurance was practiced in rainfall deficit or in the “kola” area of Ethiopia on the other hand multi-peril weather insurance was practiced in the “dega” or “weynadega” area of Ethiopia.

4.2. Understanding of weather index insurance

Table-7 Awareness on the insurance company or other company that sale WII

Responses	Yes		No		Total
	Freq.	%	Freq.	%	
1. Have you heard of insurance in general?	146	94.2	9	5.8	155
2. Have you heard of Weather index insurance?	134	86.5	21	13.5	155
3. Did you know that oromia Insurance were selling Weather index insurance in this woreda in the last Five year?	108	69.7	47	30.3	155
4. Did you know anyone else except oromia insurance selling Weather index insurance in this woreda in the last five year?	44	28.4	111	71.6	155

Source: Respondents Response

The above table indicate respondents “have you heard of the word insurance in general?”, based on this the majority of the respondents 146 (94.2%) heard about the word insurance whereas 9(5.8%) of them did not heard about the word insurance.

On the other hand 134(86.5%) of the respondents have heard of the word weather index insurance but 21(13.5%) of the respondents never heard about WII. This implies that hearing the word insurance especially WII motivate the farmers and increase the willingness to buy the insurance policy.

Table-7 shows that 124(80%) of the respondents knew Oromia insurance company, 31(20%) of the respondents have never heard of the Oromia insurance company. And also 108(69.7%) of the respondents know that Oromia insurance company were selling WII. On the other hand, 44(28.4%) of the respondents have awareness of the sale of WII by other company except for Oromia insurance for the last five years. Whereas 111(71.6%)

of them have no awareness. This implies that the majority of the farmers have clearly understood the company that sells weather index insurance.

Table-8 Participation Respondents on Training

Responses	Yes		No		Total
Item	Frequency	%	Frequency	%	
1. Did you attend any training related to weather index insurance?	91	58.7	64	41.3	155
2. Did anyone else in your locality encourage or motivate you to buy crop insurance?	149	96.1	6	3.9	155

Source: Respondents Response

Table-9

Response	Only one times		Only two times		More than two times	
Item	Frequency	%	Frequency	%	Frequency	%
On average How many times did you attained training per year	60	65.2	17	18.5	15	16.3

Source: Respondents Response

Table 8 and 9 shows that the majority of the respondents 91(58.7%) attained training related to WII whereas 64(41.3%) of the respondents did not attain the training. 60(65.2%) of the respondents were attained training only one times per year, 17(18.5%) of them attained training only two times per year and 15(16.3% of the respondents attained training more than two times per year. On the other hand 149(96.1%) of the respondents are encouraged by others to purchase the insurance and the others 6(3.9%) are not. Therefore not only training but also encouragement by others is one the important factor that motivates the individual to purchase WII. This indicate that the training conducted by the

company was not enough to increase the awareness and improve the understanding of farmers regarding WII.

To ensure that farmers understand the product (so that they will either buy it or be able to appreciate it when it will pay out), extensive awareness activities and training are needed. The costs inherent in such a process are prohibitive for most local insurance companies and therefore a major challenges to product development (World Bank, 2011).

According to the interview conducted with the manager/staffs, human resource or skilled man, power is very important for the successful implementation of WII. Oromia insurance company is challenged by a lack of skilled manpower to train a large number of farmers and it incurs high costs to train the policyholders. To solve this problem, the company conducts TOT (training of trainers) for farmers’ cooperative union, farmers’ primary cooperatives and development workers of different rural kebeles, after that those who participate in TOT then give training for their respective farmers within the kebeles. The company conducts training one session per year before the sale of the insurance policy and conduct refresher training during the sale of the insurance.

Table-10 Number of insurance policy purchased by individual farmers

Response	Only one insurance policy		Two – five insurance policy		More than five insurance policy	
	Frequency	%	Frequency	%	Frequency	%
Number of insurance policy purchased by a farmer	117	75.5	30	19.4	8	5.2

Source: Respondents Response

Table 10 the illustration in the above table reveals that 117(75.5%) of the respondents purchase only one insurance policy and 30(19.4%) of the respondents purchase two- five insurance policy whereas the rest 8(5.2%) purchase 6-85 insurance policies. This indicates that the majority of the respondents have not able to buy insurance product.

Table-11 Fairness of premium and affordable by farmers

Item	Responses	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
1. The premium paid to the company was fair	Freq.	31	40	25	52	7	155
	%	20.0	25.8	16.1	33.5	4.5	100
2. I can afford the premium to buy the insurance	Freq.	17	48	17	60	13	155
	%	11.0	31.0	11.0	38.7	8.4	100

Source: Respondents Response

As shown in table 11 When respondents are asked about their level of agreeing or disagree on the fairness of the premium paid to the insurance company 31(20%),40(25.8%),25(16.1%),52(33.5), and 7(4.5%) percent of the farmers responded as “strongly agree” on the fairness of the premium, that is paid to the company “agree”, ”neutral, ”disagree” and “strongly disagree” on the fairness of the premium respectively. From the above data, most of the respondents reply that the premium is not attractive to them. This implies that since the premium was not attractive to the farmer, it affects the willingness and the capacity to buy the insurance products.

Similarly 60(38.7%) of the respondents disagree with the statement “can you afford to buy weather index insurance” and at the same time, 13(8.4%) of the total respondents strongly disagree with the statement. Yet, only 17(11%) of the respondents replied neutrally. Whereas 17(11%) and 48(31%) of the respondents strongly agree and agree with the statements.

Table-12 Subsidy given to the farmers to purchase insurance

Responses	Yes		No		Total
Item	Frequency	%	Frequency	%	

Did you have get subsidy related to weather index insurance?	2	1.3	153	98.7	155
--	---	-----	-----	------	-----

Source: Respondents Response

Regarding subsidy Table 12 indicates that the majority of the respondent's 153(98.7%) responds they did not have get a subsidy from the insurance company or other company. On the other hand, 2(1.3%) of the respondents have got a subsidy. This implies that to introduce and expand the insurance product, subsidizing WII is very important.

According to Shukri (2017), dramatic effects of index insurance on producer behavior when these products are provided at subsidized prices and many obstacles exist to launching unsubsidized WII products in developing countries.

The main drivers that influence a farmer to purchase index insurance include Incentives offered, the ability to finance the premium and other production costs through a loan, Trust in the actors involved like an insurer, and the Demonstration of timely payouts in previous seasons (IFAD, 2010).

Based on the interview made with the manager/staffs of micro insurance affordability, lack of premium and loss of subsidy is the other challenges that hinder the company to implement weather index insurance in the study area, and to solve this challenges the company agrees with the farmer to determine the premium after identifying the financial capacity of the policyholder. The total financial capacity of the policyholder is the liability for the company and 15% of that liability is the premium that is paid by the policyholder. As a result of this the insurance policy that was sold by the company did not have fixed premium for all farmers. And the company did not provide subsidy to the famers because the company did not have get profit from the sale of weather index insurance.

Table-13 Types of crops the farmers purchase insurance

For what crop did you purchase insurance?	Responses	Frequency	Percent
	Wheat	72	46.5
	Teff	13	8.4
	Haricot bean	7	4.5
	Maize	27	17.4
	All	36	23.2
	Total	155	100

Source: Respondents Response

The researcher asked the respondents to indicate for which crop they purchase WII. Therefore, among the total respondents as shown in table 13 majority of the respondents 72(46.5%) purchased the insurance for wheat. However 36(23.2%) and 27(17.4%) for all crops and maize respectively. In addition to this 13(8.4%) responds teff and 7(4.5%) responds haricot bean. This implies that farmers purchase WII for any type of crop that they are going to harvest during the insurance period.

According to the interview conducted with the manager/staffs, The Company sold the insurance policy for all types of crops based on the agreement made with the policyholder.

Table- 14 Knowledge regarding to payout

Responses	Yes		No	
	Frequency	%	Frequency	%
1. Do you know the amount of payout for one policy, if the weather station records low rain fall?	115	74.2	40	25.8
2. Did any of your insurance pay out?	94	60.6	61	39.4
3. Did you receive the payout on time?	32	32	68	68

Source: Respondents Response

Regarding the payout 115(74.2%) of the respondents know the amount of money that is paid by the company when rainfall is low, whereas 40(25.8%) did not know. Again 94(60.6%) of the respondents have got a payout from the company and 61(39.4%) of the respondents have not to get a payout. And 32% of the respondents have got the payout on time whereas 68% of the respondents' have not got the payout on time. This implies that Knowing the amount of payout and receiving of payout by the majority of the farmers will increase the willingness to buy weather index insurance. But not receiving the payout on time will discourage the farmers to buy the insurance product.

According to the interview with the manager/staffs, after knowing the financial capacity of the policyholder and make an agreement with him and the payout is determined by the software system after the weather data was collected by the satellite. The maximum payout is 100% of the agreed amount if there is no rainfall in the insured area. Otherwise, based on the amount of rainfall, the payout would be reduced from the maximum amount. So in the same wereda or even in the same kebele, the payout will differ for different individuals.

The satellite system has also its own shortcomings i.e. it determines high payout for farmers who have got adequate rainfall on their farmland and determines low or no payout for farmers who have been affected by the shortage of rainfall because the satellite captures ten days average amount of rainfall for that area. So farmers have complained about the system of determining the payout therefore this creates challenges for the company.

On other hand based on the interview made with the micro-insurance department manager/staffs of the company regarding the timing of payment of the payout, he responds that they did not pay the payout on time this is because after capturing all the data from the satellite it needs more than two months to process the data and to determine the payout. The manager/staffs also said that the processing of data and determination of payout is not worked by the insurance company it is determined by NASA in collaboration with WFP and IFAD this is because the process is very complex and costly and it is beyond the capacity of the insurance company. As a result of this, the company faces challenges to pay the payout on time.

This indicates that payment of the payout on time is one of the important factors that affect the willingness to buy WII.

Table-15 Attractiveness of the payout/ compensation

The compensation/payout is attractive to you?	Responses	Frequency	Percent
	Strongly Agree	7	7
	Agree	28	28
	Neutral	9	9
	Disagree	36	36
	Strongly Disagree	20	20

Source: Respondents Response

Table 15 exhibits the attractiveness of the compensation or the payout paid by the company 36(23.2%) and 20(12.9%) of the respondents' replies disagree and strongly disagree respectively. And 7(4.5%), 28(18.1%) responds strongly agree and agree. The remaining respondents are indifferent regarding the attractiveness of the payout. Therefore for the majority of the respondents, the payout or compensation made by the insurance company is not attractive. This indicate that for the development of weather index insurance attractive compensation to the farmers is essential, otherwise it is difficult and challenging for the company to sale and expand the insurance product throughout the country.

Interview were made with the manager/staffs, the other challenge that face the company related to compensation is that WII is very costly to design and implement and also it needs very high transaction cost, at this stage the company did not have got profit from the sale of the insurance product as a result of this, the product is still now at infancy stage this is because the compensation did not attract new customers and retain the existing customers.

Table-16 Payout depends on the rainfall measured at the nearby rainfall station

Does the insurance payout depend on the rainfall measured at the nearby rainfall station?	Responses	Freq.	%
	Yes	70	45.2
	No	28	18.1
	DK	57	36.8
	Total	155	100

Source: Respondents Response

Table-17 Payout depends on monthly rainfall or consecutive dry days

Does the payout depend on the total monthly rainfall or the number of consecutive dry days or both?	Responses	Frequency	Percent
	Monthly	22	14.2
	Consecutive dry days	44	28.4
	Both	26	16.8
	I don't know	63	40.3
	Total	155	100

Source: Respondents Response

The essential feature of WII is that the insurance contract responds to an objective parameter (e.g. measurement of rainfall) at a defined weather station during an agreed period. The parameters of the contract are set to correlate, as accurately as possible, with the loss of a specific crop type suffered by the policyholder. All policyholders within a defined area receive payouts based on the same contract and measurement at the same station, eliminating the need for in-field assessment (IFAD, 2012).

The above table indicate the respondents understanding on whether payout of WII is depends on the amount of rainfall at weather station or the rainfall at their own farm land. Based on this 70(45.2%) of the total respondents understand that the insurance payout depends on rainfall measured at the weather station, 28(18.1%) responds not depends on rainfall measured. The remaining 57(36.8%) of the respondents, do not know the insurance payout whether it depends on the rainfall measured at the nearby weather station or not.

Similarly, table 16 shows that “Does the payout depend on the total monthly rainfall or the number of consecutive dry days or both”. The majority of the respondents 63(40.6%) replies that they do not know the payout depends on monthly rainfall or consecutive dry days, 44(28.4%), 22(14.2%) respondents the payout depends on a consecutive dry day and total monthly rainfall respectively. Whereas 26(16.8%) response the payout depends on both monthly rainfall and consecutive dry days. This shows that farmers did not understanding the payout system, so they need extensive training and education to increase their knowledge and awareness on weather index insurance payout system.

According to World Bank (2011) report, to ensure that farmers understand the product (so that they will either buy it or be able to appreciate when it will pay out), extensive awareness activities and training are needed. But the costs inherent in such a process are prohibitive for most local insurance companies and therefore a major constraint to product development.

Table-18 Insurance offer good protection against weather or other problem

Item	Response	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Insurance offers good protection Against weather?	Freq.	35	74	8	37	1
	%	22.6	47.7	5.2	23.9	0.6
Insurance offers good protection Against other problems affecting crops (such as Pests, floods etc.)?	Freq.	15	48	40	25	27
	%	9.7	40.6	25.8	16.1	17.4

Source: Respondents Response

Regarding the question “Insurance offers good protection against weather?” majority of the respondents 74(47.7%), 35(22.6%) replies agree and strongly agree respectively. On

the other hand 37(23.9%), 1(0.6%) of them respond disagree and strongly disagree respectively. And 8(5.2%) have no opinion. On the same way 15(9.7%), 48(40.6%) of the respondents strongly agree and agree with the “Insurance offers good protection against other problems affecting crops (such as pests, floods, etc.). The other 25(16.1%) and 27(17.4%) respondents Disagree and strongly disagree respectively. The remaining 40(25.8%) of them have no opinion.

Index-based weather insurance not connected with the failure and survival of the crop, it is only related with the amount of rainfall recorded in the weather station and also there is no need for assessment of the farmland in other word Weather index insurance do not offer indemnity for a loss that is caused by a variable that was not covered by the index. But what farmers want is an indemnity from a loss, no matter the cause. The above tables reveal that some of the respondents have not clearly understood the index (i.e. Rainfall) that the insurance company made contractual agreement with the farmers. Lack of knowledge of insurance especially lack of knowing the index based weather insurance was one of the challenges for the company to sell the product for its customer.

Table-19 Near weather station is a good measure of the rain in your field

Do you think that the rain measured in near weather station is a good measure of the rain on your field?	Response	Frequency	Percent
	Yes	37	23.9
	No	58	37.4
	I do not know	60	38.7

Source: Respondents Response

Effective index-based weather insurance contracts require the presence of a dense, secure, and high-quality weather station network. Nearly all weather contracts are written on data collected from official National Meteorological Service weather stations. Lacking weather data satisfying these criteria, an index-based insurance program may not be feasible. Without such data, it would be challenging for the commercial risk-taker to charge appropriate premiums.

The above table indicates that 37(23.9%) of the total respondents the rain measured in the near weather station is a good measure of the rain on your field and 58 (37.4%) responds No. On the other hand, the majority of 60(38.7%) of the respondent does not know the rain measured in the near weather station is a good measure of the rain on your field. This implies that farmers did not trust the reading of rainfall at the weather station because most of the time the rain was enough at the weather station but not at the farmland.

According to the interview made with the manager/staffs, In Ethiopia, there is a shortage of weather infrastructure like rain gauge and it is only one rain gauge in one wereda so some of the farmer's farmland is near to the weather station and the other is far from the station. Therefore the distance from farmland to the weather station is the cause for basis risk and also all farmers have not equal access to information about the reading on the weather station as the distance increases. On the other hand, the distribution of rainfall is different in different kebeles of the same wereda so the rainfall data collected from the weather station is high or low relative to the farmland. This inconsistency of data create complain and leads to dispute among the farmers and the insurance company. Therefore it is challenging for the company to properly implement WII.

One weather station covers the area of 25km radius from the weather station so this is a great challenge for the company because the rainfall distribution within this radius is not the same. To minimize this challenge the company uses a satellite system to capture the amount of rainfall. Still now there is a challenge for the company to use satellite system this is due to, the system captures ten days average rainfall of that area. As a result of this, the farmer who harvests more or have got adequate rainfall can get a payout, and the farmer who loses his crop or affected by shortage of rainfall cannot get the payout.

Table-20 payout was based on the rainfall in your own field or weather station

Does the insurance pay you based on the rainfall in your own field or the rainfall received at the weather station?	Item	Frequency	Percent
	Own field	28	18.1
	Weather station	46	29.7
	Both	25	16.1
	I do not know	56	36.1

Source: Respondents Response

The biggest limitation of index-based weather risk management products is basis risk, defined as the potential mismatch between contract payouts and the actual loss experienced by individual farmers. Basis risk occurs when the weather index does not adequately indemnify the grower for his losses. As index-based risk transfer products cannot capture losses as faithfully as individual field inspections, basis risk will always be an issue with this class of Products (UN, 2007).

Table 20 shows that 28(18.1%) of the respondents responds that the payment of the payout is based on rainfall in their farmland, 46(29%) on the weather station, 25(16.1%) of the respondents says both, and 56(36.1%) of the total respondents did not know the payment of the payout is based the rainfall on their field or a weather station. This indicates that farmers did not understand the concept of WII. So this is a great challenges for the insurance company.

Table-21 Knowledge of measuring unit and minimum amount of rainfall to get payout

Responses	Yes		No	
	Frequency	%	Frequency	%
1. The rainfall at the weather station is measured in millimeters. Have you heard of millimeters	76	49	79	51
2. Do you know the minimum amount of rain fall in millimeter for each crops to have get payout?	19	25	57	75

Source: Respondents Response

Regarding the above tables, among the sample respondents, 76(49.0%) of them have heard

About millimeter. On the other hand, 79(51%) indicate that they do not know what millimeter is. Similarly, 25% of the total sampled respondents have known the minimum amount of rainfall that is needed for their crop to be insured whereas 75% of them did not know the minimum amount of rainfall. The majority of the farmers did not know the measuring unit of rainfall and the minimum amount of rainfall in millimeter for each crops to have get payout. This implies that unless the farmers understand the measuring unit rainfall and the minimum amount of rainfall to have got the payout, it is challenging for the company to expand the insurance product.

Therefore for the successfulness of the company to sale and expand this insurance product, farmers should understand the measuring unit of rain and the minimum amount of rainfall that is needed for the crop to be insured. So consecutive training was conducted by the insurance company to increase the understanding of farmers regarding weather index insurance because the concept of insurance is not easy for farmers to understand.

According to the manager/staffs, the company was conducted training for the farmers on WII since most of the farmers were not educated, it is not enough for farmers to easily understand the concept of WII. Regarding to the minimum amount of rainfall for the farmers to have get payout, the manager/staffs responds that the minimum amount of rainfall is different from crop to crop.

4.3. Trust on the insurance company and the captured rainfall data

For clients to agree to purchase an entirely intangible product like insurance, they must possess a high degree of trust in the insurance product and the insurer and/or potential intermediary. At its core, insurance is a simple promise, and anyone who is seen as unable or unwilling to honor that promise will not have a commercially viable product (Oxfam America, 2010).

Table-22 Insurance Company will honor the insurance contract

Item	Response	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Do you trust insurance company will honor the insurance contract?	Frequency	11	48	32	63	1
	%	7.1	31	20.6	40.6	0.7

Source: Respondents Response

Table 22 Presents the frequency and percentage of the trust that the respondents on the company to honor the contract on a five-point scale (strongly agree- strongly disagree). As shown in the above table 48(31%) agree on the statement “do you trust that the insurance company will honor the insurance contract”, 63(40.6%) disagree, and 1(0.7%) strongly disagree. whereas 32(20.6%) of the respondents are indifferent. This indicates that most of the farmers have no trust in the company

A typical problem that contributes to low trust in WII is that farmers often do not fully understand when exactly a payment is triggered even when the rainfall threshold is clearly stated in the contract, this refers to a weather station located at some distance to the farm, so the insured farmer is usually not perfectly informed. A larger network of weather stations to decrease the mean distance to farms may be one mechanism to reduce basis risk. Another mechanism to improve confidence is regular communication of the weather data recorded at relevant stations. Transparent communication could also help to reduce farmers’ distrust in the insurance provider (Sibiko, 2018).

According to the interview conducted with the manager/staffs lack of trust by the farmers is one the major challenges of the company to sell and to expand the insurance product so to minimize this challenge the company make regular supervision and communication with the intermediaries (like union and primary cooperatives) and the users of the insurance and make insurance contract with the farmers through those intermediaries.

Table-23 Purchase insurance individually or through group

Do you purchase insurance individually or through a group	Responses	Frequency	Percent
	Individually	25	16.1
	Through Group	130	83.9
	Total	155	100

Source: respondents Response

The above table indicate that majority 130(83.9%) of the respondents purchase insurance through their respective group whereas 25(16.1%) of the respondents purchase insurance individually. This implies that farmers develop trust to the insurance company when they purchase insurance through their group rather than purchasing insurance individually.

Groupings are being proposed as a potential mechanism to increase WII uptake in the small-farm sector. Farmer groups could influence demand for WII through several pathways. First, groups can help to reduce transaction costs. Second, groups can be efficient channels for disseminating information about innovative technologies and products. Third, and related to the previous point, groups may provide a learning platform that increases farmers' confidence in trying out unfamiliar insurance products (Sibiko et al., 2018).

According to the manager/staffs, the company prefer selling of weather index insurance through group like farmers' cooperative union and farmers' primary cooperatives rather than selling the insurance product individually. This is because the company was working with cooperatives and union to decreases transaction costs and can develop trust in the mind of the farmers. So the company can minimizes the challenges regarding untrusting of farmers on the insurance product and the insurance company itself.

Table-24 Trust on the reading captured from the weather station

Item	Response	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Do you have trust on the reading captured from the weather station?	Frequency	28	38	55	29	5
	%	18.1	24.5	35.5	18.7	3.2

Source: Respondents Response

As we can observe from the above table about 66(42.6 %) of the respondents strongly agree or agree with the statements “Do you have trust in the reading that captures data from the weather station”. Only 34(21.9%) of the respondents disagree or strongly disagree whereas 55(35.5%) of the respondents have no opinion on the statements. This implies that the majority of the respondents have not to trust the reading captured from the station. This is due to a lack of weather infrastructure and the absence of notifying weather data to the farmer. Therefore farmers did not trust the insurance product and create challenges for the company to implement WII.

According to the interview conducted with the manager/staffs of the micro insurance department of Oromia insurance company for the collection of weather data to minimize the basis risk and reduce the potential error and manipulation made by a human, the company uses a satellite system instead of a manual rain gauge system. The company did not have satellite instruments to collect weather data instead it collects the data from NASA in collaboration with WFP. And finally, it displays all the important information for example, the amount of payout to the farmers in each kebele office. So transparency between the company and the policyholder when capturing and notifying the reading of rainfall and the amount of payout can build trust on the side of the policyholder.

4.4. Willingness to buy weather index insurance

Table-25 willingness to buy WII

Responses	Yes		No	
	Frequency	%	Frequency	%
1. Would you be interested in buying an insurance product like WII?	85	54.8	70	45.2
2. Suppose you bought insurance against bad weather this year. The rains were fine this year and no payout is made to you. Would you buy insurance again next year?	89	57.4	66	42.6
3. Suppose you bought insurance each year for five years. You paid the premium each year and the rains were fine five years in a row so no payout was made to you. Would you still buy insurance again the next year?	44	28.4	111	71.6
4. Suppose you bought insurance against bad weather this year. The rains fail on your field but are sufficient at the weather station so no payout is made this year to you. Would you buy insurance again next year?	38	24.5	117	75.5

Source: Respondents Response

Table 25 Indicate that 85(54.8%) of the respondents have the interest to buy weather index insurance, whereas 70(45.2%) of them have no interest to buy.

Regarding the question “Suppose you bought insurance against bad weather this year. The rains were fine this year and no payout is made to you. Would you buy insurance again next year”, 89(57.4%) of them are willing to buy insurance next year and 66(42.6%) have no willingness to buy the insurance if no payout.

On the contrary “. Suppose you bought insurance each year for five years. You paid the premium each year and the rains were fine five years in a row so no payout was made to you. Would you still buy insurance again the next year” 111(71.6%) of the total respondents have no interest to buy the insurance next year if there is no payout for the last five years, only 44(28.4%) of the respondents have the interest to buy the insurance.

When asked “Suppose you bought insurance against bad weather this year. The rains fail on your field but are sufficient at the weather station so no payout is made this year to you. Would you buy insurance again next year” the majority 117(75.5%) of the total respondents have no interest to buy the insurance next year, only 38(24.5%) of the respondents have the interest to buy the insurance. This implies that the farmer’s willingness to buy WII was influenced by the payout they have got from the insurance company each year otherwise as the number of production years increases without a payout, the willingness to buy WII or the demand will be decreased.

According to IFAD (2010) farmers’ willingness is also greatly influenced by their knowledge of how index insurance works, socio-economic factors such as education. And Most farmers in developing countries have extremely low disposable incomes (if any) and limited awareness of financial products such as insurance (World Bank, 2011).

Based on the interview conducted with the manager/staffs, the other important challenges of the company regarding weather index insurance is that poor participation of the farmers in good production season i.e. if last year was good production season for farmers in the insured area, the demand or willingness to buy of the insurance product for the current year is decreased. To solve this problem the company invites new users of the insurance product and conducted training to increase the awareness of the farmers on weather index insurance.

Table-26 Satisfaction with the service of the company

Item		Very Satisfied	Satisfied	Neutral	Dissatisfied	Strongly Dissatisfied
In general are you satisfied with the service of the insurance company?	Frequency	0	55	34	50	16
	%	0	35.5	21.9	32.3	10.3

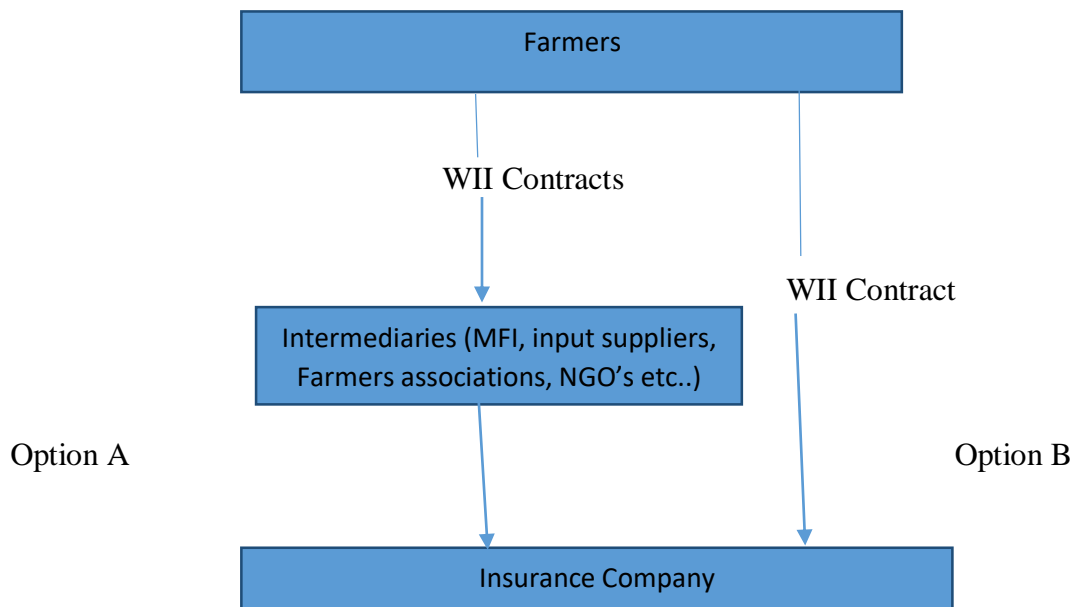
Source: Respondents Response

Table 25 Indicate the satisfaction level of the respondents on the service of the insurance company based on this 50(32.3%) and 16(10.3%) of the respondents dissatisfied and very dissatisfied with the service of the insurance company. On the other hand, 55(35.5%) of the respondents have satisfied. Whereas 34(21.9%) of them have no opinion on the service. Overall, this implies that most farmers have neutral or positive attitudes toward WII in general, but that there is scope for further improvement in the insurance products.

4.5. Availability of Intermediaries/delivery channels

As insurers normally have limited or no business (or offices) in rural areas, distribution is best organized through a party with existing links to farmers or farmer groups (e.g. a bank, processor, cooperative or MFI). What is more, embedding WII into a development programme, or into a package linked with credit, inputs or contract farming, can strongly add value to the proposition for farmers and other stakeholders and make it easier to sustain and eventually scale up (WFP, 2011).

According to the interview made with the manager/staffs, lack of adequate intermediaries and delivery channels were an important challenges that affects the implementation of weather index insurance. Using an intermediary may provide access to existing retail networks, potentially reaching a larger number of clients. Such business partners may be strongly motivated to facilitate the distribution of WII.



4.6. Government and Donor's intervention

According to IFAD (2010) For the scaling up of index insurance, governments and donors will need to intervene more actively by playing important enabling and facilitating roles and supporting the development of the sector. Key support areas for governments and donors include: providing ongoing technical assistance, training, and product development, Educating clients about insurance, Promoting innovation, Facilitating access to reinsurance, Developing national weather services, infrastructure, data systems, and research, creating an enabling legal and regulatory environment, and designing sound national rural risk-management strategies and supporting impact studies.

Based on the interview made with the manager/staffs the company is challenged by a lack of knowledge especially in product designing, pricing, and index monitoring and high costs of implementing the insurance product. So to minimize these challenges Oromia insurance company worked in collaboration with JICA and WFP for technical (in product development and management) and financial assistance and the government office for technical supports. But the supports from government and international organization was not enough to implement WII.

Generally for successful implementation of WII the company faces different challenges i.e. lack of trust on the insurance product, poor understanding of the concept of insurance by the users, low willingness to pay, lack of affordability and unattractive payout, poor weather infrastructure and lack of government intervention.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

The objectives of this study were to identify the challenges of implementing weather index insurance and to examine the mechanism in which the company uses to manage such challenges. In this chapter major findings, conclusions, and recommendations are presented based on the analysis and interpretation in chapter four.

5.1. Summery

According to the discussion and analysis of the data presented in chapter four, the following findings were drawn.

- Weather index insurance is mainly implemented in low land, rainfall deficit, and kola area of Ethiopia which is 130(83.9%) of the total respondents are lived in kola area. The demographic background of the sample indicates the age group of 31-50 years dominant in purchasing the policy and 98 (63.2%) of the total respondents are in elementary school. The majority of the respondents are male-headed households and 124(80%) of the respondents are not participated in other income generation activities.
- Majority of the respondents 146(94.2%) responds that they heard the word insurance especially weather index insurance is known by 134(86.5%) of the respondents. Whereas 108(69.7%) of the respondents knows oromia insurance company sold weather index insurance in the study area and 111(71.6%) of the total farmers responds that there is no other company that sold the insurance product.
- The company conducted training to the majority of the farmers 91(58.7%) regarding weather index insurance but the training was conducted only one times

per year. And 149(94.5%) of the total respondents were encouraged by others to purchase weather index insurance.

- Majority of the farmers were disagree with the fairness of the premium and affordability of the premium to buy the insurance whereas 153(98.7%) the respondents did not have get subsidy government and other international organizations related with weather index insurance and 117(75.5%) of the farmers in the study area purchased only one insurance policy which is 100 ETB.
- The company provide weather index insurance policy for all types of crop that are cultivated in the study area.
- Farmers understand that WII offer good protection against weather especially shortage of rainfall and the insurance do not give protection other crop problems like pests, flood etc.
- A large proportion of the households have got the payout for their crops but they did not receive the payout on time and majority of the farmers knows the amount of the payout/compensation whereas the compensation made by the insurance company is not attractive
- Majority 70(40.5%) of the respondents responds that the insurance payout is depends on the rainfall measured at the nearby weather station but 75% of them did not know the minimum amount of rainfall for each crops to have get payout.
- The payout received by each farmer varied based on the capacity or affordability of the farmer to purchase WII and the amount of the rainfall. Farmers in the same woreda or even in the same kebele have got a different payout.
- The majority of the respondents have trust on the insurance company but have not trust the reading on the weather station. Farmers purchase insurance through their group rather than purchasing individually.

- Regarding the willingness of the farmers to buy the insurance product, respondents have the interest to purchase insurance products but if there is no payout paid for the farmers for consecutive years, their interest to buy WII decreases.
- The majority of the respondents have not satisfied with the service provided by the insurance company.
- Weather index insurance is very costly for the company to expand its service to the whole part of the country due to a lack of skilled manpower, inadequate availability of weather infrastructure and high transaction costs, Lack of government intervention, Lack of adequate intermediaries/delivery channels, Affordability/lack of premium/loss subsidy, Knowledge gap: Product Design, Pricing, Index Monitoring, Lack of Trust and poor participation in good seasons.

5.2. Conclusion

The study was carried out to identify challenges of implementing weather index insurance in oromia insurance company in the case of bora and arsi negele weredas; to achieve this study, the following specific objectives have been designed.

1. To identify the challenges in implementing weather index insurance in the study area
2. To examine the mechanism in which the company uses to manage the challenges.

In order to attain these objectives, relevant data were gathered through questionnaire and interview from 155 farmers and manager/staffs of micro insurance department of oromia insurance company respectively. The data were analyzed with the aid of descriptive statistics (percentage). Based on the discussion of the data and findings the following conclusions were drawn:

- Lack of Affordability/premium by the farmers and absence of subsidy to the farmers until develop experience and demand for the insurance product. Unless

the farmers cannot afford the premium of the insurance and the government and international organization provide a short term subsidize insurance, the company could not successfully implement WII.

- Knowledge gap or lack of knowledge of the concept of insurance especially WII because it is very complex concept to easily understand by the farmers. Farmers did not understand the payout system, determination of premium and the benefit or value of insurance in general. Their willingness to buy the insurance product is greatly influenced by their knowledge of how index insurance works, socio-economic factors such as education, and their initial level of wealth.
- Lack of government and donor's intervention. Without financial and technical support of the government and international organization, Insurance Company alone cannot expand and develop the insurance product.
- Intermediaries may provide access to existing retail networks and have a potential to reach large number of clients. However the insurance company was challenged by lack adequate intermediaries and delivery channel because the company did not have outlet or office in the study area and without intermediaries the company did not successfully implement weather index insurance.
- Knowledge gap or lack of skilled man power during Product Design and Pricing. Designing the insurance product is extremely complex and very costly and it needs skilled man power and professionals. For product designing the company incur a very high costs that is not proportional to the profit that the company obtaining from the sale of the insurance policy to the farmers so the company works in collaboration with international organization like WFP, JICA etc to minimize the costs.

- For the effective implementation of weather index insurance, weather infrastructure, telecommunication service/network and other infrastructure like road is very important. So there is absence of weather infrastructure in the study area due to this the company faced challenges to properly implement weather index insurance in the area.
- For farmers to purchase an insurance product, they must possess a high degree of trust on the insurance product and the insurer and/or potential intermediary. So lack of trust in the mind of the farmers on the insurance product is the greatest challenge for the company to implement WII.
- Lack of demand or poor participation in good seasons, this is greatest challenge for the company to expand and develop WII in the study area. As the farmers did not have get payout/compensation for consecutive years due to good weather condition, the farmer's willingness to buy the insurance product will be decrease. This is because farmers did not understand the concept of insurance in general and especially weather index insurance.
- The objective of insurance company is delivering customer satisfaction and maximizing profit. So oromia insurance company must increase the quality of service that provide for farmers regarding weather index insurance to satisfy their needs and to maximize profit and expand the insurance product.
- It needs very high transaction and monitoring costs. The company incur different costs during the implementation of the insurance product like training costs, monitoring or supervision costs etc... as a result of this the company did not have get profit because weather index insurance is at infancy stage in our country, farmers understanding towards WII is low and their participation or their willingness to buy the insurance product is low. So the company is challenged to implement WII in the study area.

In order to keep the opportunities and to solve the existing challenges/problems of WII the insurance company make a great effort.

5.3. Recommendation

Based on the results and conclusions drawn in the previous section, the following recommendations are forwarded.

- Weather infrastructure should be expanded to minimize the basis of risk. Because basis risk is one of the challenges of weather index insurance.
- The insurance company should be transparent and develop trust in the mind of the farmers.
- Extensive training and awareness creation session are needed to understand the concept of weather index insurance. So the company must conduct consecutive training programs for farmers and intermediaries on the role and importance of insurance.
- The government must give attention and work in collaboration with the company to manage weather risks that affect the activity of the farmers and give technical supports in product development to the insurance company to build its capacity.
- Government or other international organizations provide a short term subsidize crop insurance for the farmer because most of the farmers cannot afford to purchase WII. Not only capacity but also they did not have the habit or experience to purchase WII due to low understanding of WII.
- Weather index insurance is very costly for the insurer due to this the government and other donors provide financial and technical assistance to the company

especially marketing and training costs for the expansion of insurance product to other parts of Ethiopia.

- Access to micro-insurance for farmers increase agricultural production and productivity. Therefore in addition to OIC other insurance companies also provide weather index insurance to the farmers for the expansion and development of the products.
- For the expansion of the insurance product and to keep the existing network the company should work in collaboration with intermediaries like farmers union and farmers cooperatives

References

- Anderson, J. F. (2005). Risk and Insurance. *Education and Examination Committee of the Society of Actuaries*, pp.21-05. Second printing, Printed in U.S.A. .
- Araya, N. (2011, January). Weather Insurance for Farmers: Experience from Ethiopia. *Conference on New Directions for Smallholder Agriculture*, 24-25.
- Asmare, A. W. (2017). Prospects and Challenges of Micro Insurance . *International Journal of Management, IT & Engineering Vol. 7 Issue 8*.
- Asmare, A. W. (2018). Determinants of Micro-Insurance Business Performance in Ethiopia. *Journal of Accounting, Finance and Auditing Studies* , Page xx.
- Asmare, A. W. (2018). Determinants of Micro-Insurance Social Performance in Ethiopia . *Horn of Africa Journal of Business and Economics* .
- Bansa, A. A. (2015). A model of micro insurance:an innovative dimension for ethiopia. *International Journal of Research in Economics and Social Sciences*.
- Belissa, T. K. (2019). Shocks, Insurance and Welfare Evidence from Field Experiments in Ethiopia.
- Bryman, A. (2012). *Social Research Methods*. New York: Published in the United States by Oxford University Press Inc., .
- CCAFS, CGIAR. (2013). *Weather index-based insurance*. Copenhagen.
- Churchill, C. (2007). Insuring the low-income market: Challenges and solutions for. *The Geneva Papers on Risk and Insurance—Issues and Practice*.
- Craig McIntosha, A. S. (2013). Productivity, credit, risk, and the demand for weather index insurance in. *Agricultural Economics*, 44.
- Dr. Md. Mushfiqur Rahman, B. C. (2014). Problems and Prospects of Weather Index Based Crop Insurance in Developing Countries: A Case for Rural Farmers in Bangladesh. *IOSR Journal Of Humanities And Social Science*, 19.

- ESSP II – EDRI. (2013). *Diagnostic study of providing micro-insurance services to low-income households in Ethiopia*. Addis Abeba.
- Financial Sector Deepening Trust Kenya. (2013). Review of FSD’s Index Based Weather Insurance Initiatives .
- Fund., A. r. (January, 2010). *Opportunities and challenges for microinsurance in Ethiopia*. : Boston, MA.: Oxfam America.
- Gebrehiwot, D. B. (2015). Impact of Weather Index Insurance on Household Demand for. *EJBE*.
- Global Risk Forum. (2010). *Microinsurance; An Innovative Tool for Risk and Disaster Management*. Davos: Global Risk Forum GRF Davos.
- Guush Berhane, D. C. (2013). 1. Insuring against the Weather: . *ESSP RESEARCH , NOTE 20*.
- Hadgu, E. (2011). *Factors that affect adoption of Weather index insurance and its intensity: The case of Kola Tembien wereda, Tigray Northern Ethiopia*. Mekele.
- Hill V.R., H. J. (n.d.). Adoption of Weather index insurance learning from willingness to pay among a panel of households in Rural Ethiopia.
- <http://www.romiainsurancecompany.com.et>.
- IAIS-CGAP Working Group. (2007). *International Association of Insurance Supervisors and Consultative Group to Assist the Poor*. Issues in Regulation and Supervision of Micro-insurance.
- International Research Institute (IRI). (June 2009). Index insurance and climate risk: . *Prospects for development and disaster management*.
- Kenneth W. Sibiko, P. C. (2018). Small farmers’ preferences for weather. *Agriculture & Food Security*.
- KOTHARI, C. (May 2004). *Research Methodology*. New Delhi : New Age International (P) Ltd.

- Louw, A. M. (2017). *Microinsurance in Africa*. The South African Insurance Industry Survey.
- Mapfumo, S. (2007, February). Weather index insurance the case of South African Micro insurance Agency, Opportunity International Network.
- McCord, M. J. (2012). *Microinsurance product development for microfinance providers*. IFAD.
- Meherrete, E. (2009). Innovations in insuring the poor, Providing weather index and indemnity insurance in Ethiopia.
- Mersha, D. (2018). *farmers' perception and willingness to pay for weather index based insurance in central rift valley of ethiopia: the case of adamitulu jidokombolcha and bora districts*. Haromaya.
- Michael Norton. (2011).
Investigating Demand for Weather Index Insurance: Experimental Evidence from Ethiopia. Pittsburgh, Pennsylvania, : Agricultural & Applied Economics Association's.
- Million A. Tadesse, B. A. (2015). Weather index insurance for managing. *Agricultural and Food Economics*.
- Mosley, P. (2007). .Assessing the success of micro insurance programs in meeting the insurance needs of the poor.
- Mulangu, Mario J. Miranda and Francis M. (2016). Index Insurance for Agricultural. *ACET, JICA*.
- National Bank of Ethiopia. (n.d.). *Agricultural insurance*. Addis Ababa: Ethiopian Institute of Financial Studies (EIFS).
- Rao, K. N. (2010). International Conference on Agricultural Risk and Food Security 2010. Agriculture and Agricultural Science Procedia.
- Roth, J. M. (2007.). *The landscape of Micro-insurance in the world's 100 poorest countries*. . The Micro-Insurance Centre, LLC.

- Ruth Vargas Hill, J. H. (2011). *Adoption of Weather Index Insurance Learning from Willingness to Pay among a Panel of Households in Rural Ethiopia*. Addis Abeba: IFPRI-CGIAR.
- S, P. a. (May, 2016). Micro insurance—a conceptual analysis. *International Journal of Recent Scientific Research Vol. 7, Issue,5,, pp. xx,*
- Sarris, A. (2013). Weather index insurance for agricultural development: introduction and overview. *Agricultural Economics* , Page xx.
- Sekaran, U. (2003). *Research Methods for Business* . New York: Hermitage Publishing Services .
- Shukri Ahmed, C. M. (August 2017). The impact of commercial rainfall index.
- Singh, G. (2010). *Crop Insurance in India*. Ahmedabad- 380 015, India: Indian Institute of Management.
- Smith, A. a. (2010). Opportunities and Challenges for Micro insurance in Ethiopia. An analysis of the supply, demand and regulatory environments. International Labor Organization and United Nations Capital Development Fund. Oxfam America.
- Society, I. R. (2015). *What is Weather Index Insurance?* New York, USA: Columbia University.
- Thérèse Sandmark, J.-C. D.-J. (2013). *The emergence and development of agriculture microinsurance*. Microinsurance Network.
- UN. (2007). *Developing Index-Based Insurance*. New York.
- WFP, IFAD. (2010). *The Potential for Scale and Sustainability*. Rome.
- WFP, IFAD. (2011). *Weather Index-based Insurance*.
- Wolday Amha, D. P. (2013). *diagnostic study of providing micro-insurance services to low-income households in ethiopia: an input to a national micro-insurance strategy*. Addis Abeba: EDRI-ESSP II.
- World Bank. (2005). *Managing agricultural production risk: Innovations in developing countries* .

World Bank, agriculture and rural development. (2011). *weather index insurance for agriculture*:. Washington, DC.

Appendix I: Questionnaire

QUESTIONNAIRE ON WEATHER INDEX INSURANCE

I. GENERAL INFORMATION

Date of interview _____

Region _____ Zone _____

Woreda _____ Kebele _____

Agro-climatic zone 1=Dega, 2= w/dega, 3= kola

II. Information on household

1. Name of the Household head	
2. Age of the respondent	Below 20 2. 20-30 3. 31-40 4. 41-50 5. Above 50
3. Sex of the respondent	1 male 2 female
4. Educational level (years completed, 0= illiterate)	1. Adult literacy 2. Elementary school 3. Secondary school 4. Higher education
5. Do you have off farm income?	1 Yes 2 No

III. Challenges

1. Have you heard about insurance in general? 1. Yes 2. No
2. Have you heard about weather index insurance? 1. Yes 2. No
3. Did you know that oromia Insurance were selling Weather index insurance in this woreda in the last Five year? 1. Yes 2. No
4. Did you know anyone else except oromia insurance selling Weather index insurance in this woreda in the last five year? 1. Yes 2. No
5. Did you attend any training related to weather index insurance? 1. Yes 2. No
6. On Average how many times do you attained training per year?
1. Only one times 2. Only two times 3. More than two times
7. Did anyone else in your locality encourage or motivate you to buy crop insurance?
1. Yes 2. No
8. How many policies did you buy?
1. Only one insurance policy 2. Two to five insurance policy 3. More than five insurance policy

9. For what crop did you purchase insurance? 1. Wheat 2. Teff 3. Haricot bean
4. Maize 5. all
10. The premium that you pay for an insurance policy was fair? 1. Strongly agree 2.
Agree 3. Neutral 4. Disagree 5. Strongly disagree
11. I can afford the premium to buy insurance? 1. Strongly agree 2. Agree 3. Neutral
4. Disagree 5. Strongly disagree
12. Did you have get subsidy related to weather index insurance?
1. Yes 2. No
13. Do you know the amount of payout for one policy, if the weather station records
low rain fall? 1. Yes 2. No
14. Did any of your insurance pay out? 1. Yes 2. No
15. Did you receive the payout on time? 1. Yes 2. No
16. If yes, the compensation/payout is attractive to you? 1. Strongly agree 2. Agree 3.
Neutral 4. Disagree 5. Strongly disagree
17. Does the insurance payout depend on the rainfall measured at the nearby rainfall
station? 1. Yes 2. No
18. Does the payout depend on the total monthly rainfall or the number of consecutive
dry days or both? 1. Monthly 2. Consecutive dry days 3. Both
19. If the weather station records low rains, how much will one policy payout? (Birr)
20. The insurance offers good protection against weather? 1. Strongly agree 2. Agree
3. Neutral 4. Disagree 5. Strongly disagree
21. The insurance offers good protection against other problems affecting crops (such
as pests)? 1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
22. I trust that the insurance company will honor the insurance contract? 1. Strongly
agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
23. Do you purchase insurance individually or through a group like Iddir or farmers
cooperatives?
1. Individually 2. Through iddir or cooperative
24. Do you think that the rain measured in near weather station is a good measure of
the rain on your field? 1. Yes 2. No

25. Does the insurance pay you based on the rainfall in your own field or the rainfall received at the weather station? 1. Own field 2. Weather station 3. Both
26. The rainfall at the weather station is measured in millimeters. Have you heard of millimeters? 1. YES 2. NO
27. Do you know the minimum amount of rain fall in millimeter for each crops to have get payout? 1. Yes 2. No
28. I trust the reading that is captured from the weather station? 1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
29. Would you be interested in buying an insurance product like WII? 1=YES, 2=NO
30. Suppose you bought insurance against bad weather this year. The rains were fine this year and no payout is made to you. Would you buy insurance again next year? 1. YES 2. NO
31. Suppose you bought insurance each year for five years. You paid the premium each year and the rains were fine five years in a row so no payout was made to you. Would you still buy insurance again the next year? 1. YES 2. NO
32. Suppose you bought insurance against bad weather this year. The rains fail on your field but are sufficient at the weather station so no payout is made this year to you. Would you buy insurance again next year? 1. YES 2. NO
33. 35. In general are you satisfied with the service of the insurance company
 1. Very satisfied 2. Satisfied 3. Neutral 4. Unsatisfied 5. very unsatisfied

Appendix II: Semi Structured Interview Question

Mechanism (Interview Question for the Staff)

1. As we know that WII is new concept for our country so how your company introduce this concept to the farmer? Did the company Conduct training regarding WII?
2. If Yes, How many times per year? (Number) _____
3. Did you conduct refresher training for the farmers?

4. Did you Provide Subsidy for those farmers who purchase WII?
5. For which crop your company sell WII?
6. How your company determine the premium?
7. What is the minimum price/premium of one insurance policy? In birr
8. Do you think that the premium for each WII policy is fair?
9. How your company determine the payout?
10. Did the company pay the payout for the farmers in the last five years?
11. How much do you pay for one WII policy? the payout in birr
12. Did you pay the payout on time?
13. Would you prefer to weather index insurance in contact with an individual or contract with social institute like iddir or other institution like cooperative union?
14. If through iddir or union, why? (Explain)
15. Did the company have get technical or financial support from the government?
16. Did the company have get Technical or financial support from non-governmental organization?
17. Does the company have enough infrastructure for weather index insurance in the rural area?
18. How the Company notify the readings to the farmers 1. Using Radio 2. Use Notice board 3. Announce to the farmer by kebele officials.
19. What are the challenges that the company faced when implementing WII?
20. How the company solve these challenges