

**INFLUENCE OF MARKETING STRATEGIES ON
IMPLEMENTATION OF WEATHER INDEX IN
INSURANCE COMPANIES IN KENYA**

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DECLARATION

This project report is my original work and has not been presented in any other university or institution of higher learning for an award of a degree.

Signature

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This project report has been submitted with my approval as University Supervisor.

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DEDICATION

This work is dedicated to my family; my parents Francis Elahuya Atino and my mother Margaret Atyang Ekirapa who have always encouraged me to aim high in my quest for knowledge; and my siblings Mercy Etago, Catherine Muyoma and Edgar Atino who have all been supportive throughout this course.

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ABBREVIATIONS AND ACRONYMS

AII	Access to Insurance Initiative
ARD	Agriculture and Rural Development
GDP	Gross Domestic Product
HARITA	Horn of Africa Risk Transfer for Adaptation
IFAD	International Fund for Agricultural Development
IRA	Insurance Regulatory Authority
KNBS	Kenya National Bureau of Statistics
NACOSTI	The National Commission for Science, Technology, and Innovation
USA	United States of America
USAID	United States Agency for International Development
WFP	World Food Program

ABSTRACT

Weather Index Insurance is a financial product associated with weather index and correlated to local yields. The contracts for this product are founded on specific perils or events like flood and/or drought that are observed by the provider of the product, in most cases insurance companies, and recorded at regional weather stations. However, the farmers who purchase the premiums for this product are indemnified at the end of the season. Therefore, this study is geared towards investigating the influence of marketing strategies on implementation of weather index in insurance companies. The objectives studied were investigating how marketing strategies of pricing, awareness, and demand influence the implementation of Weather Index Insurance products in insurance companies in Kenya. Descriptive design was used to conduct the study. This study targeted the product development manager and the marketing manager from each of 17 insurance firms offering Weather Index the sample size was 34 respondents. Data was collected using questionnaires. Simple random sampling was used to select the respondents. Both descriptive and inferential statistics were used to analyze the findings. The study found that perception of premium prices significantly influenced the implementation of Weather Index Insurance products in insurance firms in Kenya. The study concludes that premium prices and compensation terms influence uptake of Weather Index Insurance to a high extent. High-risk tolerance, positive perception of Weather Index Insurance, increased income levels and high trust in Weather Index Insurance increases demand for Weather Index Insurance and that demand influences implementation of the Weather Index Insurance to an average extent. The study did not find any correlation between increased awareness and the implementation of Weather Index Insurance. The study recommends that insurance firms offering, or aiming to offer Weather Index Insurance, should market their products such that customers perceive the premium prices as affordable and offer highly competitive in terms of compensation so as to increase uptake. Insurance firms in partnership with IRA should publicize aggressively the Weather Index Insurance to arouse increased demand as well as create awareness for enhanced implementation of Weather Index Insurance products.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The effects of climate change have had severe impact on agriculture-driven economies across the world. Most affected of the agricultural activities are those that largely depend on natural weather parameters like rainfall. Lack of or inadequate rainfall (drought) severely affects agricultural activities especially crop farming. The effects of drought are not only felt by farmers and their families but by the entire population whose economy is supported by the agricultural activities (Sinha & Tripathi, 2016). Farmers suffer crop losses, which compromise their income levels and consequently increases poverty. When a nation has majority of its citizens poor, their contribution to economic development is compromised leading to negative effects on the economy such as reduced spending power (USAID, 2006).

USAID (2006) observes that weather-related losses can also destroy household assets often accumulated over years through liquidation of part or entire assets and reduced investments in present and new assets. As such, to prevent these effects and, as a way of reducing risks associated with unfavorable weather, stakeholders and investors in the agricultural sector came up with insurance products that would see farmers compensated for their production loss to prevent their exposure to poverty risks as well as sustain their contribution on the national economy (Sinha & Tripathi, 2016).

Previously, insurance of agricultural produce has been such that payouts were totally matched to the measurable specific losses farmers incurred. This insurance product locked out many farmers as it was expensive due to the heavy premiums it demanded. To reduce this cost of insurance to farmers, the index-based insurance - commonly known as Weather Index Insurance has been proposed and is increasingly being adopted as it presents better benefits to both farmers and insurers. In index-based insurance, indemnity payments are based on the collective outcomes in an area as opposed to focusing them on individual farming losses (Burke, Janvry, & Quintero, 2010). It is also based on a provable independent measurement of a weather parameter that affects farming (Sinha & Tripathi, 2016). Despite the benefits of Weather Index Insurance to farmers, implementation of this product is marginal to a large extent in many geographies. Sinha and Tripathi (2016) explain that the marginalization is due to

the many challenges Weather Index Insurance faces in the areas it was introduced, particularly challenges related to implementation.

In three Indian states (Andhra Pradesh, Uttar Pradesh and Tamil Nadu) by Mobarak and Rosenzweig (2012), revealed that 40% of households adopted Weather Index Insurance. In Thailand, 4.16 million hectares of farms with rice were covered under free-crop insurance program in the 2016–2017 season. Sinha and Tripathi (2016) observe that implementation of Weather Index Insurance can be enhanced when insurance firms and other actors are trustworthy to farmers; payouts are made in time and are commensurate to the value of losses; farmers are offered and allowed to use loans as premiums; incentives are offered to farmers buying larger premiums and farmers are educated to lessen the risk of losing production costs. Sinha and Tripathi (2016) add that lack of accurate data particularly in India and Thailand also challenges the full implementation of Weather Index Insurance. In the study on the case of Thailand, it was also established that lack of confidence (at the farmers' and insurers' position) was the major influencing factor on implementation of the Weather Index Insurance product. In the USA, after successful piloting of Weather Index Insurance product, it was discovered that some farmers insured against drought complained that the compensation was not adequate to cover the incurred losses. However, amendments were being made to the Weather Index Insurance products to, ensure majority or all the losses are covered. This was aimed to minimize apathy and encourage implementation.

In Africa, the World Bank, in partnership with other stakeholders, introduced the Weather Index Insurance to Malawian farmers who were at a high risk of losing their produce due to the country's erratic weather. Though the initial piloting was a success, originally the financial institutions participating in the project found it unfavorable to adopt, as they could not recoup their investment. It was later established that the kind of crops involved (groundnuts and maize) did not have an open market hence selling the produce was challenging. Other challenges to the implementation of Weather Index Insurance in Malawi included the inability to communicate the insurance product in local languages, as there was no such vocabulary. This made it difficult to make majority of the farmers understand and adopt Weather Index Insurance. Additionally, the Malawian culture did not allow discussing future eventualities e.g. drought and

floods that would require insurance. This seriously challenged discussions on insurable risks (World Bank, 2012).

In Ethiopia, Tadesse, Shiferaw and Erenstein (2015) found the challenges to implementation of Weather Index Insurance to be inadequate and poorly maintained infrastructure like weather stations which compromised the quality of weather data collected; financial illiteracy among targeted farmers which limited their appreciation of the insurance product; inadequate technical expertise at the insurer's side which challenged uncompromised implementation of Weather Index Insurance distribution and farmers not being able to access the Weather Index Insurance product due to inaccessibility and/or financial inadequacy. Despite these challenges, Tadesse et al. recognizes the immense opportunity and demand for Weather Index Insurance among Ethiopian farmers to cushion them against climate risk.

In Kenya, Syngenta Foundation, in partnership with UAP Insurance, MEA Limited and AGMARK, launched the first pilot study for Weather Index Insurance product for crop farmers. This product, named *Kilimo Salama*, targeted 200 small-scale maize farmers from Laikipia District, and covered loss of inputs caused by harsh weather. That year, drought affected farmers' produce hence necessitating a payout (Sina, 2012). This product was successful in helping farmers reduce the effects of harsh weather on their livelihoods. However, several years on, a follow up study by Wairimu, Obare and Odendo (2016) established that despite the advantages of Weather Index Insurance in crop insurance the implementation rates were very low in Laikipia District (now Laikipia County).

According to the 2015 Economic Survey, agriculture is the greatest contributor to the GDP and accounts for a larger number of employment in Kenya (KNBS, 2016). Thirty percent of Kenya's population are pastoralists living in arid and semi-arid areas while another substantial number are small-scale farmers who depend on natural weather for their farming activities. About 85% of Kenya's land is arid or semi-arid and gets low rains in a year. Majority of Kenyans are small-scale farmers and majorly depend on agriculture for their daily bread. Therefore, the poor rains and in-arable land challenge Kenya's breadbasket and socio-economic development. The Vision 2030 Kenya development blueprint indicates that poor disaster preparedness and response is one of the major challenges that face the agricultural pillar of Kenya's economy. As such,

insurance products that aim to cushion farmers from such risks ought to gain high acceptance rates. However, this has not been the case (Lang, 2012; Wairimu *et al.*, 2016).

1.2 Statement of the Problem

In many countries, after successful piloting of Weather Index Insurance, farmers who took up the implementation have increased significantly. In India, 1.6 million farmers had adopted the product by 2009, with (and) the numbers were expected to double by 2014. For example, a study conducted across 42 villages in three Indian regions (Andhra Pradesh, Uttar Pradesh and Tamil Nadu) by Mobarak & Rosenzweig (2012), revealed that 40% of households adopted Weather Index Insurance. In Thailand, 4.16 million hectares of rice farms were covered under free crop insurance program in the 2016–2017 season. In Africa, Malawi and Ethiopia are some of the countries in which Weather Index Insurance is oldest. In Malawi, the product was piloted among groundnuts and after success was realized spread to other crops like maize and tobacco in subsequent years. The number of involved farmers rose from 900 in 2005-2006 to 2,500 in only one year, and this number was expected to grow exponentially as more farmers become educated on crop insurance (Leblois & Quirion, 2013). In Ethiopia, Hazell *et al.* (2010) lists many Weather Index Insurance projects being carried in the country and many farmers have implemented Weather Index Insurance.

Kenya is predominantly an agricultural country with majority of farmers being small-scale and dependent on natural weather for their farming activities. However, due to climate change, the weather conditions have become unpredictable making the farmers prone to floods and drought that affects them and the entire national economy negatively. As a way of cushioning farmers from weather related risks, insurance companies developed insurance products that would see farmers compensated for the production loss caused by poor weather.

The first index-based weather insurance products in Kenya were launched in Laikipia in 2010 (Sina, 2012). Although the pilots were considered successful, a study by Wairimu *et al.* (2016) established that, despite the advantages of Weather Index Insurance in crop insurance, and unlike other countries in Africa and elsewhere, the uptake rates were very low. It is for these reasons that this study proposes to examine

the factors that influence the implementation of Weather Index Insurance products in Kenya.

1.3 Purpose of the Study

The purpose of the study was to examine the influence of marketing strategies namely price, demand and awareness, on the implementation of Weather Index Insurance products in insurance companies in Kenya.

1.4 Objectives of the Study

The following were the objectives of the study.

- i. To determine to what extent product pricing influences the implementation of Weather Index Insurance products in insurance companies in Kenya
- ii. To assess to what extent farmer awareness influences the implementation of Weather Index Insurance products in insurance companies in Kenya
- iii. To examine to what extent farmers' demand for insurance products influences the implementation of Weather Index Insurance products in insurance companies in Kenya

1.5 Research Questions

The study was guided by the following questions:

- i. To what extent does product pricing influence the implementation of Weather Index Insurance products in insurance companies in Kenya?
- ii. To what extent does farmers' awareness influence the implementation of Weather Index Insurance products in insurance companies in Kenya?
- iii. To what extent does farmers' demand influence the implementation of Weather Index Insurance products in insurance companies in Kenya?

1.6 Significance of the Study

The study is of value to insurers and policy makers as they prepare regulations and policies on Weather Index Insurance. This study will also add to the existing body of knowledge on Weather Index Insurance and thus benefit researchers on the weather index insurance subject.

1.7 Delimitation of the Study

The study focused 34 managers from the 17 companies who have insurance products that target farmers in Kenya. As shown in 4.2, out of the 34 targeted respondents, 24 of them submitted their completed questionnaires, indicating a return rate of 70.5% that is far above the 60% one that Mugenda and Mugenda (2003) contend is acceptable for this kind of study.

1.8 Limitation of the Study

The study had foreseen three limitations: The first had to do with lack of cooperation from some respondents for fear of sharing information that gives competitive advantage to their firms or information that could be used by competitors. The researcher overcame this limitation by assuring the informants that they would certainly hold all information collected in confidence and use it only for academic purposes. (reasons). The second limitation concerned shortage of time since the researcher is on full-time employment that is often out of the country, besides the limited research period before graduation. The final limitation concerned the extra resources needed to conduct the study. The researcher endeavored to manage these last two limitations by adhering to the time and budget *allocation* highlighted in Appendix III of this document.

1.9 Assumptions of the Study

The study assumed that targeted respondents were available and willing to divulge information with honesty. As recorded in section 4.2, this limitation was overcome as 70.5% of the targeted group responded positively.

1.10 Definition of Significant Terms

These are the definitions of the significant terms of this study

Implementation of Weather Index Insurance Product	Use of Weather Index Insurance Products by farmers as well as the willingness to purchase that product repeatedly in subsequent crop seasons.
Affordability	Relates to the extent to which farmers can raise and deploy the resources, mostly in the form of cash to purchase the premiums

Attitudes	Comprise a series of beliefs about something, which affects how individuals behave.
Behavioral control	Refers to the ease or difficulty with which an individual believes the performance of a given behavior.
Compensation value	Relates to farmers' perception of the worth of the indemnity, mostly in cash, that they receive from the insurance company when they incur losses from the risks insured against
Farmer awareness	The availability and adequacy of farmer knowledge and information on Weather Index Insurance. This is influenced by farmers' culture, that is, the ideas, customs and attitudes towards insurance for a particular people or society; the information that they have on Weather Index Insurance, as well as the quantity and quality of the information that has been availed
Farmer demand	Willingness and ability to purchase Weather Index Insurance products. The ability to pay is influenced by the financial status of the farmers.
Product pricing	Refers to the cost that farmers incur in purchasing Weather Index Insurance Products and is mostly in the form of insurance premiums and highly influenced by the affordability of premiums and the value of compensation
Subjective norms	In the theory of planned behavior, subjective norms are behavioral expectations of us from significant others and our desire to meet these expectations
Volition control	The extent to which an individual can decide to do something at will.

1.11 Organization of the study

This research study is organized in five chapters.

Chapter one provides an introduction that includes; the background of the study; statement of the problem; purpose of the study; the research objectives and research questions to be addressed in the study; significance of the study; scope and limitations of the study; basic assumptions and finally definitions of significant terms used in the

study. Chapter Two presents the literature review of relevant works related to the factors influencing implementation of Weather Index Insurance in Kenya and elsewhere in the world. This section also provides the theoretical and conceptual frameworks of the study. Chapter Three is on the research methodology used in the study covering research design, target population and the methods of collecting and analyzing the collected data. Chapter Four covers data analysis, presentation and interpretation of findings, based on the three variables under investigation. Chapter Five covers summary and discussion of the findings, conclusion and recommendations. It also provided suggestions for further studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews relevant literature on the implementation of Weather Index Insurance in Kenya from global, regional, and local perspectives. The chapter also offers the theoretical and conceptual frameworks and the research gaps.

2.2 Implementation of Weather Index Insurance Products

Weather Index Insurance involves the transfer of weather-related risks that can cause events that result in loss. When a pre-determined weather risk happens during a pre-defined time, like rain shortage at a crop's critical stage of development, this scenario produces pre-determined disbursements to farmers who have purchased the insurance policy. Index denotes that the policy is founded on a proxy for loss and an objectively provable measure of weather risk (HARITA, 2009). Weather Index Insurance is one of the index-based insurance plans that offer farmers the chance to protect their production against harsh weather conditions. In traditional farming insurance plans, the insurance company had to visit the farmers' fields to determine the extent of loss upon which claims are settled. Contrastingly, since Weather Index Insurance is hinged on the weather conditions, an insurance company offering this kind of insurance only gets the weather statistics of the affected area to determine the claims to be paid. As such, farmers' claims are settled quickly, and transaction costs are reduced.

A report published by Access to Insurance Initiative (AII) (2014) points out that due to the young age of Weather Index Insurance across the world, regulatory and supervisory aspects of Weather Index Insurance have received minimal attention world over. The report mentions that Weather Index Insurance is still being piloted in many countries and lacks policy framework for its implementation and supervision. Noteworthy, is the fact that throughout the world, government policy provides the backdrop, against which insurance products are developed, introduced to the market, supervised, and regulated (Skees, 2008). Born (2014) submits that good regulations and policies should ensure loss mitigation to the insurer and the insured.

Generally, studies across the world show that there is an inevitable tension between regulatory policies governing insurance companies' prices, products and market conduct and the objectives of solvency regulation. To prove this, Born and

Klimaszewski-Blettner (2013), after studying the insurance industry of the United States, presented empirical findings that illustrated that some regulations, if not well structured and tested, can unintentionally limit insurers' willingness to offer insurance services against certain natural risks. Insurers are impeded to offer coverage in certain markets when approval of rates and policy regulatory rules has to be sought before implementation.

The study found that such "over regulation" discourage insurers from playing in certain markets as well as prevents the insurers from coming up with effective strategies to deal with risk exposures. As such, the authors propose that regulations should focus more on monitoring than on rate approval and post disaster reactions. This is because the rate regulatory stringency on the regulatory environment will tend to have a more adverse effect on certain market outcomes such as insurers' loss ratios, the supply of insurance, and the amount of capital that insurers allocate to a market (Born & Klimaszewski-Blettner, 2013). Concurring, Born (2014) observes that for regulatory responses to be successful, they should influence minimal changes to the number of licensed private insurers, the competition level of these insurers, total premiums, underwriting profitability and the surplus supporting property risk in a given market.

The government's role in weather-index insurance is critical. In most countries, particularly the developing ones, government is the main custodian of data relating to weather as it institutes and manages meteorological stations. Governments maintain a credible and large enough network that monitors weather patterns across the country and, as such, any weather-based insurance service provider must closely work with the government to access the weather data (AII, 2014).

The government also plays a role in promoting data and information collection and distribution, development of products, creation of a conducive legal and regulatory environment, ex-ante disastrous risk sponsoring (dealing with the extremely risky situations only), and suitable social reaction policies (Skees *et al.*, 2005). Considering that Weather Index Insurance is highly reliant on availability of data on weather patterns, this implies that the government support around the area of data maintenance and availability to stakeholders has a huge impact on the growth of Weather Index Insurance.

Chollet and Lewis (1997), after examining the general health insurance sector of the USA and European countries established that laws and regulations that aim to ensure a stable insurance market, offer protection to consumers, and enhance consumer participation in insurance issues encourage consumer implementation of insurance services. Additionally, the study presented that policy makers and implementers like government must ensure that insurance language in the contract is simplified for enhanced consumer understanding and implementation. Successful regulations also ensure both low risk and high-risk groups are equally targeted by insurance service providers to create a larger societal effect.

Cole (2015), based on reviews from developed and developing countries gives an analysis of how developing countries can enhance implementation of index insurance when they relax regulations. For instance, in a village where residents live and interact with each other regularly, villagers can easily screen each other on the borrowing behavior and ability to pay for insurance services hence providing information of value to insurance service providers for effective decision making. In such environments, governments can facilitate uptake of insurance by relaxing rules and regulations on underwriting processes and/or claims processing. This submission by Cole is ex-ante and majorly informed by an analysis of how the micro-credit insurance (which is different from index-based insurance) works.

Carter, De Janvry, Sadoulet, & Sarris (2014) after reviewing several cases from developing countries including south American countries, Asian countries and African countries established that most insurance firms offering Weather Index Insurance are private owned and act in the interest of their owners. As such, to ensure they act within the interests of the consumers as well, the government must be the regulator of their actions and operational environment. This, according to the authors, presents the best way to enhance the uptake of index insurance in developing nations. One of the strengths of Carter *et al.*'s (2014) study is that it reviewed cases from various developing countries upon which conclusions were made. This means that the conclusion could be easily generalized to many other developing nations. However, the demerit is that the study focused on past investigations that were conducted before most of the studied governments came up with regulatory policies for Weather Index Insurance.

Sinha and Tripathi (2016) while commenting on the case of Thailand argued that to enhance regulatory influence on the implementation of Weather Index Insurance in developing countries, the issue of subsidies should not be overlooked. Since majority of the farmers targeted by index-based insurance are poor/rural based, high premiums can deter them from purchasing insurance hence increasing the chance of them suffering weather-related risks. Thus, relaxing regulations as proposed by Cole (2015) to advocate for subsidies will ensure premiums are kept within affordable realms for the targeted people.

In Africa, the regulation of the insurance sector is also important towards successful implementation. For instance, a study done in Accra, Ghana investigating the low implementation of insurance among home and small business owners found that people did not purchase insurance when the laws and regulatory enforcement mechanisms were inefficient. Perhaps inefficient laws diminished the trust people would otherwise put into insurance. Other than having regulations and laws to guarantee fair play, the study further found that government was expected to come up with laws that would force home and business owners to purchase insurance. Additionally, these laws were to enhance awareness creation in order to reach majority of the home/business owners across the country. It is worth noting that only the most educated participants found laws and regulations to be critical towards their purchase on insurance. The less educated home/business owners did not associate implementation of insurance with the regulatory environment (Stevens-Benefo, 2015).

In Ethiopia, Hadgu (2011) submits that agricultural policies aim to relieve the country from dependency on relief foods by creating a free market-a market where production of food is enhanced among all farmers in the country particularly those in regions prone to weather risks like drought. This means that agricultural policies in Ethiopia are designed to ensure alleviation of weather risks. However, the study is silent as to whether the design of policies enhances implementation of Weather Index Insurance.

The Kenyan insurance market appreciates that index-based insurance is a new form of insurance that does not yet have policy guidelines that govern its administration and regulation. However, an Insurance Regulatory Authority (IRA) (2015) policy paper is tentatively used to control the market. According to the paper, index-based regulations should allow diverse economic interests in that policyholders are only required to prove

that occurrence of certain risks could be harmful to them; use an index that is objective-easily observable and measurable and its value should be verifiable. This should be intended to enhance trust and agreement with the payouts; ensure insurers reporting and capital requirements mirror the distinctive risks and nature of the products. As such, the regulator must demand that the insurer modifies the valuation techniques used and holds suitable risk-based capital and ensure the contract is designed such that the insurer initiates the pay-out process reviewed by an independent arbitrator to indicate that the knowledge of where a benefit emanates from the insurer and not the insured (IRA, 2015).

Even though policy is a critical factor in the implementation of Weather Index Insurance, many governments particularly in Africa (including Kenya) are still very slow in instituting and implementing relevant policies that can increase implementation of weather insurance. However, this is disheartening given that Africa is one of the most food insecure continents and it therefore follows that Africa should be on the forefront of embracing any measures that reduce the risk of harsh weather to farmers. As such, this underscores the need for adequate government policy alignment to support implementation of weather-related insurance (AII, 2014).

2.3 Product Pricing and Implementation of Weather Index Insurance Products

The pricing of index-based insurance is exceptional since it addresses autonomous and objective parameters, which are expected to correlate with the (crop or animal) loss with precision. As such, when setting the premium prices for an insurance firm should ensure that the premiums paid will guarantee adequate compensation on the insured's side as well as minimize the insurance cost incurred on the insurer's side.

In the USA Showers and Shotick (1994) investigated to what extent household characteristics influence demand for insurance in the USA. The researchers used Tobit analysis method whereby key items investigated were the marginal change in demand for insurance and the change in likelihood of buying insurance. The 1987 data from USA Consumer Expenditure Survey was used. The findings show that the amount of income and the number of household earners correlate positively with insurance demand. This indicates that the more the income a household earned, the greater the chance of demanding and paying the price of insurance. Additionally, the findings showed that single earner households have higher marginal effect from increased

income than do households with more than one earner. Even though this study was not on index-based insurance, it gives insight on the effect of price on implementation of insurance services.

Marquis *et al.* (2006) conducted a study in California, USA on the factors that influenced consumer decision-making and established that affordability was a major reason why some people failed to purchase insurance products. It was also established that consumers purchase of insurance products was price-inelastic indicating that many of those purchasing the product were not affected when prices changed. These results show that price has a small effect on the decision to buy insurance. Additionally, the study found that low premium charges reduced the likelihood of consumers quitting from insurance products as well as increased the chances of insurance companies acquiring new insurance enrolments. Marquis *et al.* (2006) study sampled three largest insurance companies offering health insurance. As such, the generalization of the findings to this study is limited by the fact that Marquis *et al.* focused more on health insurance rather than index-based weather insurance.

Marquis *et al.*'s study was an in-depth literature review of insurance information of 3,964 subscribers sampled for the period of 1996-2002. Using interviews, the study sought primary information from 409 Californians who were uninsured. Based on the difference in samples of the insured and uninsured, it is clear that the study majorly dwelt on past rather than the present state on insurance. Information reviews give the facts of a given point in the past and they formed the biggest portion of sample (3,964 subscribers) studied. The case state used California- is one of the biggest states in the USA and has majority of residents with high incomes (United States Census Bureau, 2016). It is therefore possible that a target from an area with low average incomes could present varying results. Though Marquis *et al.*'s (2006) study presents important findings on how premium prices affect implementation of insurance; its focus on health insurance makes it not entirely generalizable to.

Studies done across various countries in Western Europe, Ulbinaite and Le Moullec (2010) concluded that the affordability of insurance is one of the major factors that shape the insurance purchase decision of people. More so, the authors found that for the first time, affordability is critical to the demand for insurance services. However, on subsequent purchases, affordability fails to be a major consideration as consumers

resort to factors like quality and usefulness of the insurance services. The study established that affordability was determined by two factors-the consumer's purchasing power and the income. This study used agent-based modelling framework to investigate the consumer behavior in the insurance sector. The study did a literature search from various authors presenting agent-based modeling in consumer behavior. No primary research was conducted. Content analysis was done to the reviewed literatures to arrive at the said conclusions.

Kaczala and Wisniewska (2015) did a study in Poland whose main objective was to establish variables that can elaborate the extent of acceptance of index-based crop insurance and forecast degree of willingness to buy the product. The study collected data from a group of 500 Polish crop farmers operating in drought prone regions of Poland. A structured questionnaire was used to survey the participants. Descriptive statistics like percentages and inferences like Pearson's chi-square test, ANOVA, and nonparametric Wilcoxon–Mann–Whitney (WMW)/Kruskal-Wallis (KW) tests were used to analyze the findings. Results indicate that price was not a determinant of implementation of index-based insurance. The study's conclusions were based on ex-ante demand rather than on ex-post demand indicating that the conclusions are based on forecasts rather than on facts hence cannot be factually generalized to other situations. The results also fail to give a clear indication of what is actually happening in real world as it focused on forecasts to make conclusions.

Ulbinaitė, Kucinskiene, and Moullec (2013) conducted a study to establish the explanations for the non-consumption or low consumption of insurance products in Lithuania. One of the key items investigated in the study was the effect of income on the consumption of insurance. The researchers used survey design and purposive sampling to identify 65 experts working in insurance or insurance related companies in Lithuania. Data was collected by questionnaires. The study used opinion content analysis and descriptive statistics to analyze the collected data. The results indicated that income greatly influenced consumers' intent to purchase insurance services. Consumers with low incomes could not justify the need for insurance and, when the income was insufficient; insurance was not on the list of things the consumers demanded. The study also found that when consumers' inclination to purchase insurance services was high, product price of the insurance service(s) was given

significant importance. From these findings, price takes a two-way role. First, the amount of income a consumer has determines whether they can spend on insurance or not. Perhaps, consumers in Lithuania consider it important to first address their basic needs before they consider purchasing insurance services. As such, insurance is not a mandatory item to them but rather one that can be acquired when the basic things are met to make life better. Second, price determined the kind of insurance product to be purchased once the intention to buy insurance was made.

A study by Cole, Jagnani, Nestor, and Tobacmanet (2013) in rural Gujarat, India established that price of insurance products was a major determinant of purchase. It was also found that price significantly correlated with demand for insurance products. The aim of Cole *et al.*'s (2013) study was to investigate the factors that facilitate or hinder implementation of index-based insurance. Sinha and Tripathi (2016) also found that farmers in Thailand were hesitant to buy Weather Index Insurance due to high premiums required. Most of them considered the insurance unaffordable and expected the government to subsidize the rates in order to increase their willingness to buy.

Alam, Nazneen, and Chowdhury (2010), using the case of Bangladesh established that perception of price was dependent on people's economic status where households with high incomes showed high willingness to pay for insurance services while those with low economic status showed difficult in willingness to pay the price for insurance. As such, people perceived the price of insurance based on their present economic status. Depending on their economic status, people will perceive the same price differently. For instance, price of insurance is high for those with low economic status and affordable for those whose economic status is high. Alam *et al.*'s (2010) study surveyed 480 households faced with weather related risks that can be mitigated by weather-based insurance.

Hill, Hoddinott and Kumar (2013) did a study on how willingness to pay among Ethiopia's rural households influenced the implementation of Weather Index Insurance. The study surveyed 1400 Ethiopian households whose demographic data had been tracked by the Ethiopian Rural Household Survey for 15 years. The target households originated from the major agro-climatic zones of the country. Findings were collected by a questionnaire while regression and descriptive statistics were used to analyze findings. The collected results indicated that educated wealthier and proactive farmers

were highly willing to buy Weather Index Insurance and that demand for Weather Index Insurance falls when price rises. The study also found that changes in insurance price have no influence on group insurance. Farmers with high-risk aversion had little interest in purchasing insurance. When the price of the insurance contract was high, increase in basis risk lowered the demand for insurance services. The main limitation of this study is its hypothetical nature- The interviewed farmers were not consumers of Weather Index Insurance neither had they shown demand for the insurance services. As such, though useful in shading some light on perception of Weather Index Insurance the findings given were more theoretical than practical (Hill *et al.*, 2013).

In Uganda, an industry survey by Agroinsurance (2017) established that the unpredictable weather in Uganda had motivated the growth of weather-based crop insurance products for farmers. Nevertheless, the survey notes that uptake of these products has remained low as majority of the farmers in the country cannot afford paying the heavy premiums required. As such, majority of the farmers consider insurance a luxury and not a necessity to cushion them from future weather risks.

Sina (2012) reviewed index-based studies done in Kenya and came up with the case done in Marsabit in 2009 by Mude *et al.* (2010). In this study, Sina established that farmers in Kenya were price sensitive and could only afford insurance products that were not high in cost. As such, the packaging and pricing of index-based insurance products significantly correlated the incomes of the target clients. However, this study was a pilot study hence the fact that the idea was new could have influenced farmers to want to commit fewer financial resources. In the study piloting Weather Index Insurance product among crop farmers in Kenya, Sina (2012) did not test the price aspect hence the need for it to be studied. Wairimu *et al.* (2016) did a study on the “factors affecting weather index-based crop insurance in Laikipia County” but did not investigate price as a marketing strategy influencing implementation of weather index insurance in insurance companies in Kenya.

2.4 Demand and Implementation of Weather Index Insurance Products

According to Kunreuther and Pauly (2005), many people to whom insurance can be a worthy investment are not covered. Several factors inform this lack of coverage but notable is the inability of the people to demand insurance services-mostly because of inadequate information and knowledge on the benefits of insurance.

On a general scale, Clarke (2010) developed a model of demand for Weather Index Insurance products where he established that demand for Weather Index Insurance will decrease when the basis risk and price increases. Additionally, highly risk averse people will demand low Weather Index Insurance, as they perceive weather risk to grow. The study also established that poor people are likely to be risk averse more than wealthy people are, even though the poor have more to gain if they purchase Weather Index Insurance. It was also found that, with respect to wealth, demand for Weather Index Insurance was ambiguous in that when index insurance was considered inferior, demand would decrease as wealth increased and demand would increase as wealth increased when index insurance was normal.

Ulbinaitė and Le Moullec (2010) established that the insurance demand shapes the insurance purchase decision of people in Western European countries. Several relational factors like consumer awareness and knowledge on insurance products, people's insurance culture, global social interactions, and the perception of need for insurance all shape the need for insurance. Demand for insurance in return determines the urgency with which one purchases insurance.

Kaczala and Wisniewska (2015) while focusing on the case of Poland established that demand for index-based insurance shaped farmers' uptake of the product, as demand statistically related to implementation in a positive manner. However, demand was determined by product-specific factors that cultivated farmer trust towards the products. Economic factors were not causes of demand for index-based insurance in this country.

Marr, Winkel, Van Asseldonk, Lensink, and Bulte (2016) did a study on the determinants elucidating index-insurance demand and the impact of that form of insurance and the prevailing associations amongst insurance and credit in developing countries. The study reviewed literature from 45 papers from recent scientific studies in Scopus and Web of Science. Three themes were looked for in the sampled papers- impact of insurance, implementation of insurance and link between credit and insurance. The findings showed that there was low demand for index-based insurance even though willingness to pay was high. Several factors were identified to affect demand for index-based insurance: risks of the product; behavior of consumers; and credit and liquidity constraints that consumers go through. On risk, it was established

that index insurance largely suffers from basis risk, which affects demand. Risk appetite (extent of risk averse) also shapes demand for index-based insurance. These make index insurance a highly uncertain venture hence influencing demand for the product. The risk factors also affect the other factors mentioned-ultimately impacting demand (Marr *et al.*, 2016).

A large-scale randomized field experiment study by Cole *et al.* (2007) investigated the effectiveness of index-based rainfall insurance as an instrument that enabled farmers manage risk in India. The study collected findings from 1,500 households offered weather insurance in rural Gujarat-India. It was found that demand for insurance among farmers determined insurance purchase behavior. The study also found that marketing strategies use by insurance companies such as price shaped the demand for insurance services. The analysis of panel data on households from five villages in North Arcot district of Tamil Nadu (South India) for a period of two-year established that though they may use variety of risk mitigating strategies, agricultural households show substantial risk-avoidance behavior. The findings also indicated that there exists unmet demand for weather-related insurance to cushion against drought risks (Gautam, Hazell, & Alderman, 1994).

Sakurai and Reardon (1997) did a study that purposed to estimate demand for formal drought insurance as well as find out the determinants of insurance demand. The study used data from farm households in Burkina Faso and found that that there was high demand for drought insurance across all targeted zones, as the insurance strategies at play were inadequate. Supply of public food aid lowered demand for drought insurance.

Bryan (2010) using data collected from Malawi established that ambiguity averse farmers (farmers who prefer known risk than unknown risk) showed low demand for Weather Index Insurance. Perhaps these farmers associated Weather Index Insurance with increased risk hence exhibiting low need for such riskier investments. Ambiguity neutral farmers, on the other hand, show high demand for Weather Index Insurance in increased risk aversion.

In a study covering Ethiopia, Malawi and Kenya, Tadesse, Shiferaw, and Erenstein (2015) found that basis risk and price influence demand for Weather Index Insurance among Sub-Saharan countries. This study reviewed recent advances and challenges in

Weather Index Insurance in empirical studies done on the subject. This study was based on secondary data hence its findings may not have taken care of the prevailing market factors affecting Weather Index Insurance at the time of study. Additionally, some of the studies reviewed were pilot meaning they were done to test applicability of Weather Index Insurance. The findings and recommendations of such pilot study vary from those of a real study since pilot studies do not benefit from farmers' experience, as the idea is new.

On the Kenyan case, Sina (2012) argues that because Weather Index Insurance is fairly new in the market compared to other insurance products it has seen low demand for the product particularly due to inadequate awareness. Since 2012 when Sina's study was done, several publicity initiatives and awareness programs have been carried out on Weather Index Insurance in the Sub-Saharan Africa where Kenya lies (Fisher *et al.* 2015).

2.5 Awareness and Implementation of Weather Index Insurance Products

Insurance companies may find it difficult to increase uptake of Weather Index Insurance to farmers who do not understand and comprehend contract information. Low financial literacy among most rural farmers and especially in developing countries put them at a disadvantage as it puts them in a position of unawareness towards the insurance market. The fact that index-based insurance is difficult to understand owing to how its payouts are calculated makes things even harder for these farmers.

A study by Alam *et al.* (2010) in Bangladesh investigated how weather index based micro insurance could enable poor coastal dwellers to minimize climate risks. The study sampled 480 households from the targeted 16 villages of coastal regions. Tobit model was used to analyze the findings. The study revealed that awareness on insurance was among the major drivers and determinants of insurance implementation. The study also found that awareness and perception of cyclone occurrence (weather risk) influenced people's willingness to pay for insurance services.

In rural Gujarat in India, Cole *et al.* (2007) did a study investigating the effectiveness of index-based rainfall insurance as an instrument that enabled farmers manage risk. The study also aimed to identify factors that facilitate or hinder implementation of index-based insurance. The study was a large-scale randomized field experiment on a

sample of 1,500 households offered weather insurance. The findings showed that education and awareness had a significant effect on household decisions to purchase insurance. An increase in awareness increased the percentage uptake of insurance by 12 units. Kumar, Barahb, Ranganathana, Venkatrama, Gurunathana and Thirumoorthya (2011) analyzed farmers' awareness and perception towards Crop Insurance as a way of mitigating risk. (A sample of 600 farmers from 27 districts of Tamil Nadu state, India was chosen.) The sample comprised farmers who were beneficiaries of risk mitigating programs offered by the government namely the National Agricultural Insurance and weather index-based crop insurance plans.

Findings showed that generally less aware farmers had low interest and demand for index-based crop insurance. Specifically, awareness of risk mitigating schemes was minimal among marginal farmers compared to non-marginal farmers. Farmers who have risk mitigating measures like those with alternative source of water to rainfall (irrigation), crop diversification, and those who have planted perennial crops were less aware of the weather-based crop insurance schemes. This implies that awareness of crop insurance schemes depended on the extent to which the farmer is exposed to weather risk. Two major factors influenced awareness in this study: -farmers' education level and their participation in social events. Highly educated farmers had high awareness about crop insurance schemes. Increased participation in social events also increased farmers' awareness in agricultural insurance schemes offered by government (Kumar *et al.*, 2011).

Sinha and Tripathi (2016) assessed the huddles towards successful implementation and implementation of Weather Index Insurance in Thailand using an explorative study that interviewed rice and insurance experts and rice farmers. The study revealed mixed reactions concerning the understanding of Weather Index Insurance. Large scale farmers admitted being aware of Weather Index Insurance but were not interested in purchasing the product. It was argued that the reason for this reaction was the perception that Weather Index Insurance offered low payouts yet it required higher premiums. On the other hand, farmers with small lands were aware of Weather Index Insurance but did not purchase it due to affordability concerns and lack of adequate understanding of how compensations are calculated. These farmers expected government to fully subsidize the insurance for them to purchase it.

A study whose aim was reviewing recent progress and drawing future expectations of index based agricultural insurance across the developing world proposes that adequate education and awareness programs be offered to farmers across the developing countries to inform them more on how to tap on the benefits of index-based insurance when their produce underperform due to poor weather (Burke, Janvry, & Quintero, 2010). This study is a good presentation of how awareness affects implementation of index-based insurance in developing world. However, a major weakness underlies it. The study was based on secondary data collected from index-based insurance studies conducted in 15 developing countries across the world. As such, the literature was reviewed from case studies whose findings and recommendations may not be generalized to other cases with certainty. For instance, implementation of Weather Index Insurance in Malawi was at a pilot stage while that of India was past the pilot stage. These differences make the findings and recommendations of each study specific to the environment where the study was done hence cannot be generalized to the case of another country.

The IFAD and WFP (2010) reviewed 36 index-insurance case studies from countries in Eastern Africa, Southern Africa, and South East Asia and established that awareness creation was one of the factors that needed boosting to enhance sustainability and scalability of Weather Index Insurance. Based on experience, farmers were better placed to adopt Weather Index Insurance when they were aware of its benefits in reducing the risks they faced. As such, the study proposed education and marketing of Weather Index Insurance as a way of increasing awareness among farmers to influence attitude and perception change towards Weather Index Insurance thus, increase implementation.

A study by Hadgu (2011) in Northern Ethiopia presented awareness as one of the significant factors influencing the implementation of Weather Index Insurance. A significant number (78.9%) of those who adopted Weather Index Insurance had been trained. Those who had adopted Weather Index Insurance without training were less than a quarter. Among the non-adopters of Weather Index Insurance, 17.5% had been trained on weather-based index insurance. Generally, the large number of adopters was credited to the high awareness farmers claimed to have. The weakness of this study was

that it was difficult to directly link implementation to awareness as the study did not model this relationship but just speculated it.

As much as awareness is a critical strategy that insurance companies use to of enhance implementation of Weather Index Insurance products, in some instances creating that awareness is a problem due to lack of adequate vocabulary and language barrier issues. For instance, World Bank (2012) established that it was challenging to communicate to Malawian farmers about Weather Index Insurance since their language did not have a vocabulary that refers to insurance. Additionally, the Malawian culture condemned publicly discussing future eventualities like crop loss, drought, and floods among others and all these cultural aspects influenced the level of awareness on insurance could be reached.

In Kenya, though index-based insurance is not new- having been piloted in 2009 for the first time – it has not attracted significant researches interest from scholars. Few notable studies like Wairimu *et al.* (2016); Sina (2012) are available and none of them explores the influence of awareness on implementation of Weather Index Insurance. However, Sina (2012) speculated that low demand for index insurance could be attributed to inadequate awareness.

2.6 Theoretical Framework

The theory that guides this study are the utility theory and the theory of planned behaviour.

2.6.1 Utility Theory

This study utilizes the Utility Theory that, according to Nyman (2001) and Briggs (2014) states that, when faced with risky or uncertain situations, people ought to choose the option with the highest utility. People's risk appetites differ world over- they can be risk averse, risk neutral or have a risk attitude (risk seekers). Risk averse people refuse to engage in a fair gamble and as a result go for the less risky option with lower utility-concave utility. Risk seekers go for higher utility outcomes as they are not led by the fear of the gamble-convex utility. Risk neutral people fail to choose a position for their outcomes and go for the option that seems to cut across-marginal utility (Nyman, 2001; Briggs, 2014)

According to Briggs (2014), three entities are pertinent in this theory: -outcomes, states, and acts. Outcomes are the results of the choices made. They can be positive or negative depending on the actor's interest. States are environmental factors that influence the outcomes. Acts are the actions the player will take in order to attain certain outcomes. For instance, in the context of the implementation of Weather Index Insurance products, the outcomes of a farmer's actions could be compensation or no compensation

Applying this theory, the choice acts that a farmer takes should be those that are likely to lead to the best outcome - i. e. purchase Weather Index Insurance product- and, when the state is unfavorable, the farmer will get compensation for their production loss. Thus, the theory best explains the independent variables and how they influenced the dependent variable in this study. The utility theory is mathematically well placed to predict the course to be taken to attract certain outcomes. However, the mathematical accuracy of the theory and the salience of its basic ideas do not assure that the theory is a dependable reflection of human behavior or natural human practice. Additionally, though the theory alludes to satisfactory utility for certain acts, in reality satisfactory utility is also determined by other personal and environmental factors of the actor. This compromises the generalization of the theory to persons and situations (Kahneman & Tversky, 1979). Despite these shortfalls, the expected utility theory will be useful to enable this study to explain how farmers risk perceptions and actions can lead to implementation or not-adopting Weather Index Insurance products.

2.6.2 Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour (TPB), derived from the Theory of Reasoned Action (TRA) is premised on the belief that by critically appraising the information available to them, people make logical and well-thought choices to behave in certain specific ways (Brahmana, Brahmana, & Memarista, 2018). Behavioral performance is shaped by an individual's objective (attitude) to engage in it based on the significance the individual associates with the behavior (volition control), the ease with which the behavior can be achieved (behavioral control), the opinions of important others (subjective norms), and the perception of the behavior being within the reach of the actor. Summarily, the theory holds that behavior is achieved based on the motivation and ability of the actor. When the two factors intersect, they lead to behavior change in

the direction favored by the actor. The theory holds that a given behavior will be performed when the behavioral intention is stronger (Afzaal, 2017).

This theory is critical in enabling the study explain the dependent variable (implementation of Weather Index Insurance products) as a decision that farmers make based on the information availed to them. The theory highlights the circumstances within which the decision to adopt the insurance product can be made and goes further to shade light on the possible extents when the farmer may not make the decision to adopt the insurance product. For instance, while applying the TPB theory, we can argue that farmers who have negative attitude towards WII, do not consider the product significant to them, and have a lower behavioral control over the decision to adopt the product will not adopt it. Simply put farmers who are not motivated to adopt the WII and/or have no ability to do so will not adopt the product.

Several drawbacks are tied to this theory. One holds that the theory assumes an actor has access to resources and opportunities relevant to behave in a given way regardless of the intention. It is also difficult to conceptualize and capture attitudes, which challenges their successful use as behavior predictors. Additionally, the theory does not consider other variables like economic factors and environmental factors, and others like fear, threats, past experiences and moods, which also shape behavior. Decision-making process is dynamic and not linear as the theory suggests. It changes over time regardless of the availability of the constructs mentioned above (Afzaal, 2017). However, just like any other theory, weaknesses are inevitable for TPB but regardless; the theory's applicability to explaining farmers' behavior in this study is critical.

2.7 Conceptual Framework

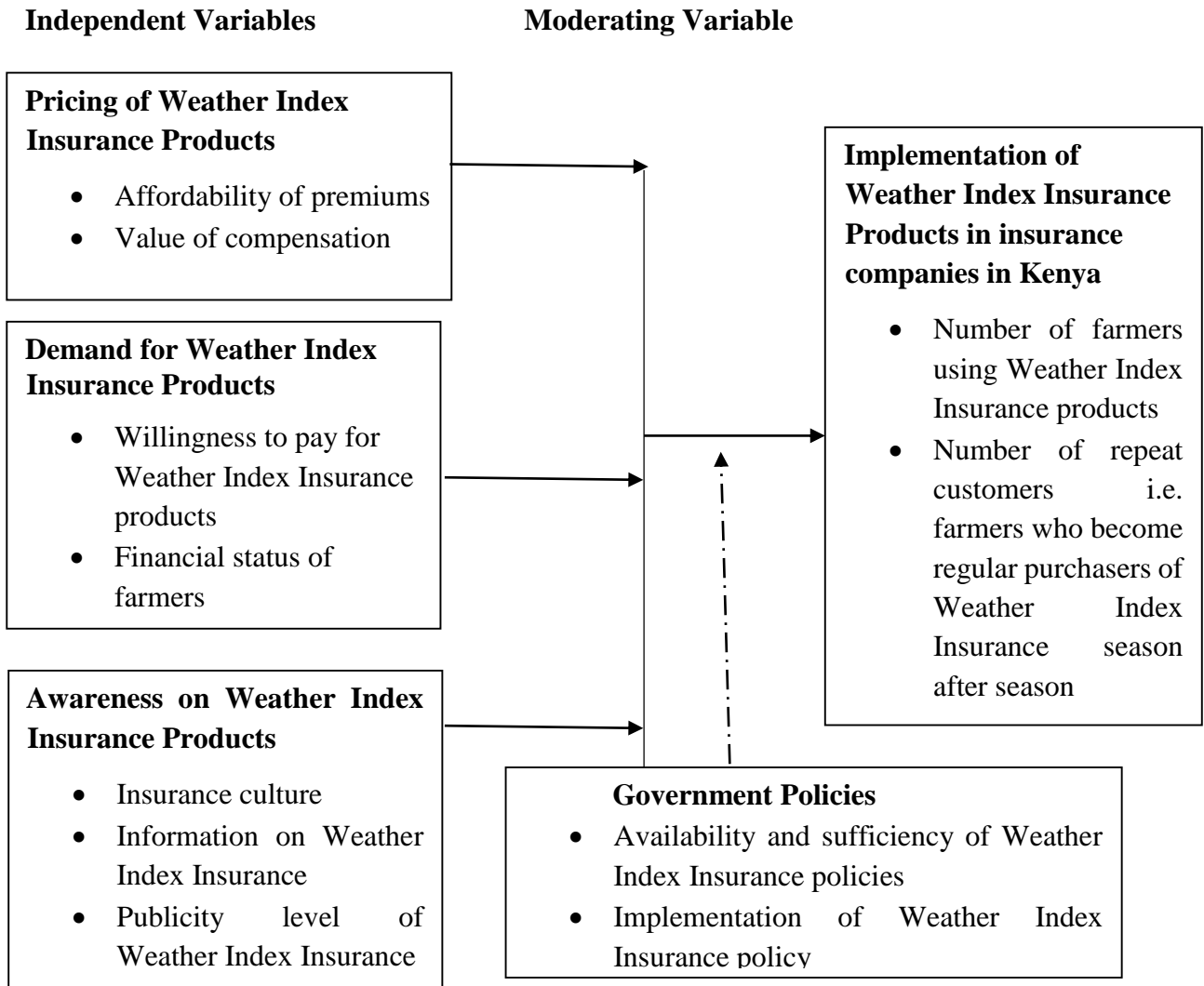


Figure 1: Conceptual Framework of relationship of marketing strategies and implementation of weather index in insurance industry

2.8 Research Gap

Table 2.1: Research Gaps

Variable	Researcher	Title	Finding	Knowledge gap	Focus of the current study
Implementation of Weather Index Insurance products	AII (2014)	Agricultural Insurance and Regulatory Implications	Weather Index Insurance is young and still under piloting world over hence lacks strong empirical evidence on implementation	Weather Index Insurance is less researched (new)	To inform implementation of Weather Index Insurance products hence provide relevant research
Pricing of Weather Index Insurance products	Shotick (1994)	Extent household characteristics influence demand for insurance in the USA	Households with higher incomes purchased Weather Index Insurance	Poor households (like most of Kenyan rural farmers) are disadvantaged to adopt Weather Index Insurance	To establish exactly what local farmers consider in adopting Weather Index Insurance products
	Marquis et al. (2006)	Factors that influenced consumer decision-making	Affordability is a major determinant of implementation of Weather Index Insurance	Study general to the case of Kenya It is possible to afford and still not adopt.	Provide a locally researched case that is applicable locally.
	Ulbinaitė and Le Moullec (2010)	Towards an ABM-based framework for investigating consumer behaviour in the insurance industry	Price was not a determinant of implementation of index-based insurance.	Study general to the case of Kenya Conclusions made based on forecasts rather than on facts hence cannot be factually generalized to other situations.	Establish the factual influence of price on implementation of Weather Index Insurance.
Kaczala and Wisniewska (2015)	To establish variables that can elaborate the extent of acceptance of index-based crop insurance and forecast				

		degree of willingness to buy the product.		Study not generalizable to local case.	
	Cole et al.'s (2013)	To investigate the factors that facilitate or hinder implementation of index-based insurance.	Price significantly correlates with demand or insurance	Study specific to case of India, not generalizable successfully to Kenya	Identify how price affects local implementation of Weather Index Insurance
Demand of Weather Index Insurance products	Clarke (2010)	A Theory of Rational Hedging	Demand increases with risk in some cases while in others it reduces with risk	It is unclear whether in Kenya demand would increase or reduce with risk	Establish how farmers' risk exposure influences demand
	Ulbinaite and Le Moullec (2010)	Towards an ABM-based framework for investigating consumer behaviour in the insurance industry	Consumer awareness, knowledge on insurance products, people's insurance culture, global social interactions, and the perception of need for insurance shape demand for Weather Index Insurance products	There is need to establish whether these factors also shape demand for Weather Index Insurance products in Kenya	Investigating how the relational factors influence demand using the case of Kenya.
	Kaczala and Wisniewska (2015)	Factors influencing farmers' decisions on drought index insurance in Poland	Demand has a minor positive statistical significance to implementation	No evidence that this can also apply to Kenya	Establish the statistical significance of demand on implementation of Weather Index Insurance products in Kenya
	Tadesse et al. (2015)	Weather index insurance for managing drought risk in smallholder agriculture: lessons and policy	Demand influences implementation	The study reviewed pilot studies which tested applicability and whose result could differ from a study that is not pilot	To investigate relationship between demand and implementation in practice (Not for piloting)

		implications for sub-Saharan Africa			
Awareness to information on WII	Alam et al. (2010)	Demand for weather index insurance in coastal Areas of Bangladesh	Awareness and perception of weather risk influences implementation of WII in Bangladesh	The findings specific to Bangladesh (not adequately generalizable to Kenya). Study investigated insurance against a natural calamity that has high predictability than the risk of bad weather	Investigate influence of awareness to implementation of WII in Kenya.
	Cole et al. (2007)	Weather Insurance: Managing Risk Through an Innovative Retail Derivative	Awareness strongly influences decision to purchase agricultural insurance.	Study specific to Indian household	To establish how awareness influences local customers of WII
	Sinha and Tripathi (2016)	Assessing the Challenges in Successful Implementation and Implementation of Crop Insurance in Thailand	Awareness does not lead to purchasing of WII	Relationship between awareness and implementation is unexpected	Establish whether awareness leads to implementation using a Kenyan case.

2.9 Summary of Chapter

The chapter has presented the reviewed literature on implementation of Weather Index Insurance products in Kenya and elsewhere in the world. It has also presented both theoretical and conceptual frameworks on which the study is based and finally identified a research gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focuses on research methodology that is used in carrying out the study; whose sub sections include research design, target population and sampling procedures, research instruments and their validity and reliability, methods of data collection and analysis, and operationalization of study variables.

3.2 Research Design

A research design is a blueprint of how research will be conducted (Leedy & Ormrod, 2001). This study uses quantitative research design that, as Creswell (2003) states, is scientific and efficient. Besides, it provides immediate results and easily explains what is observed during research: in this research's case, through the questionnaire that was administered and answered by the research participants themselves.

3.3 Target Population

Mugenda & Mugenda (2003) define a study population as the whole group of subjects, or objects whose characteristics are under observation/study. Accordingly, this study target population is the 17 insurance firms, all with their headquarters in the City of Nairobi. The list of the target population in the 17 insurance companies that offer weather insurance products to farmers is attached to this document as Appendix IV.

3.4 Sampling Techniques

Under sampling, the sampling procedures, sample size and sampling frame used were studied. A sample size refers to the number of respondents targeted for data collection while sampling procedures shows the process of choosing the sample size. A sampling frame refers to the list of the respondents who will participate in the data collection exercise.

3.4.1 Sample Size

The target population was 17 insurance firms. However the total number of employees in these insurance company is 115. In the determination of the sample size Sekaran's (2003) criterion was considered where only 30% respondents are selected. This gave a sample size of 34.

3.4.2 Sampling procedure

To ensure equal representation, the study stratified the 17 insurance into two departments namely product and marketing. Then the researcher randomly sampled one respondents from marketing and the other from product development. This was repeated for the 17 insurance companies thereby giving a sample size of 34.

Table 3.1 Sampling frame

Target	Numbers	Department -strata		Respondents		Total
Companies	17	17 Product development	17 Marketing	17 Product development	17 Marketing	34
Sample size						34

3.5 Data Collection Instruments

3.5.1 Questionnaire

Mugenda and Mugenda (2003) inform that questionnaires provide detailed answers to multifaceted problems besides being cost-effective and relatively easy to construct and administer. The study used questionnaires with both closed and open-ended questions that gave respondents the chance to offer explanations/elaborations to their answers. Besides, the questions were structured in a likert format, thus allowing respondents to choose the best answer that explains their position to the question asked.

3.5.2 Validity of the Instruments

Validity is the extent to which the data collection tool gathers information it is expected to collect (Mugenda & Mugenda, 2003). To test the research instruments validity, expert's opinion from three insurance companies through interview was sought. At this point the precision, importance and correctness of the objects were deliberated on. While shaping the validity of the objects of the research instruments, the guidance on whether instrument measures the content and construct from three companies member was followed as recommended (Kothari, 2004).

3.5.3 Reliability of the Instrument

A research instrument is reliable when its results are duplicable over time (Mugenda & Mugenda, 2003). It is reliable when it can accurately quantify a variable and present

similar results over time. This study used test-re-test method to check the reliability of the instrument. The first draft of the instrument was tested on a pilot sample and repeated at a different time in future to establish the score consistency with the questionnaire. A Cronbach's alpha of 0.7 was preferred for a reliable instrument according to Oladimeji (2015). Retest results whose score had an alpha of less than 0.7 were re-edited by deleting the items whose scores lowered the overall instrument reliability until a reliability of 0.7 or above was achieved. For this study, after deleting items whose scores were leading to a lower alpha reading, the resulting Cronbach's Alpha (0.721) was achieved. See Table 3.1.

Table 3.1: Reliability Statistics

Cronbach's Alpha	N of Items
0.721	23

3.5.4 Pilot Study

The study conducted a pilot study aimed at testing the relevance and applicability of the research methods chosen. The study was conducted among four respondents chosen purposively from the two insurance companies offering Weather Index Insurance products (these respondents/companies were not participants in the final study). The pilot study intended to establish whether the questions addressed the need of the research and whether the responses matched all possible choices. The pilot study would also inform whether purposive sampling was fit to gather the desired data. The initial instrument was piloted as an interview with each of the chosen participants. Interviews allowed the researcher to establish whether the questions were well understood and whether the response choices given reflected the intention of the questions.

The researcher implemented the findings established from the pilot study by incorporating them in the final methodology and research instrument.

3.6 Data Collection Procedures

The researcher sought for a letter of introduction from the Director of Open, Distance and eLearning (ODEL) Campus of the University of Nairobi and a permit to collect data from the National Commission for Science, Technology and Innovation (NACOSTI). The researcher then visited the targeted insurance companies, identified the target

population and explained the purpose of study and ethical considerations to be adhered to. The researcher then set dates for data collection and implemented the activity.

3.7 Data Analysis

The researcher first sorted the questionnaires to ensure that majority of the questions were answered. Partially answered questionnaires were not analyzed. Analyzable questionnaires were serialized for analysis. The analysis process continued with the coding of data collected in SPSS software. Descriptive statistics (percentages and frequencies and measures of central tendency) and correlation analysis were used to analyze the data in line with the research purpose. Tables were used to present summarized results. (Initially the study intended to conduct binary logistics regression but since the number of responsive cases were fewer than would be computed for robust results (due to the challenge of COVID-19) regression was not possible. Although correlation did not model the relationship between the independent and dependent variables, it enabled the researcher indicate the kind of relationship and whether it was significant or not. Thus, Pearson's two-tailed correlation matrix was used to indicate the kind of association between the variables under study. The independent variable used was 'Implementation of Weather Index Insurance products in insurance companies in Kenya' while the dependent variables were three marketing strategies namely, pricing of Weather Index Insurance products, demand for Weather Index Insurance products and farmer awareness of Weather Index Insurance products.

3.8 Ethical Considerations

The researcher observed ethical considerations during this study. To this end, confidentiality, voluntary participation, and non-harm effect to participants were observed so as not to limit respondents' participation. Confidentiality was ensured by using random numbers, as opposed to real names, to identify participants. These considerations were to enhance respondents' confidence in participating in the research. Voluntary participation was implemented by not coercing respondents into participating but rather by informing them of the intent and purpose of study and given them the chance to decide whether to participate or not. Non-harm effect was implemented in several ways including not taking up most of the respondents' time in answering the questionnaire at the expense of their work (the questionnaire was reduced as per the findings of the pilot study) and considering any concerns respondents had against participating in the study.

3.9 Operationalization of Variables

Table 3.2: Operationalization of Variables

Objective	Variable	Indicators	Measurement	Measurement scale	Tools of analysis	Type of data analysis
To determine to what extent the product pricing influences the implementation of Weather Index Insurance in insurance companies in Kenya	Independent: Product pricing	Affordability of premiums	Perception of price of premium	Nominal	Percentage	Descriptive/ correlation/ regression
		Amount of payouts against premiums	Change in price of premiums	Nominal	Percentage	Descriptive
		Value of compensation	Perception of value of compensation	Nominal	Percentage	Descriptive
To determine to what extent the demand influences the implementation of Weather Index Insurance in insurance companies in Kenya	Demand for Weather Index Insurance Products	Interest to purchase the Weather Index Insurance product	High risk tolerance	Nominal	Percentage	Descriptive
		Willingness to pay for/usage of Weather Index	Income levels	Nominal	Percentage	Descriptive
			Trust in the product	Nominal	Percentage	Descriptive
			Perception of insurance products	Nominal	Percentage	Descriptive
		No of customers/purchases of the			Descriptive/ correlation/ regression	

		Insurance products	insurance products			
To determine to what extent the awareness influences the implementation of Weather Index Insurance in insurance companies in Kenya	Awareness	Adequate knowledge and/or information on Weather Index Insurance	Insurance culture	Nominal	Percentage	Descriptive
			High financial literacy rates	Nominal	Percentage	Descriptive
			Availability of information on the product	Nominal	Percentage	Descriptive/ correlation/ regression
			Understanding of the benefits of insurance	Nominal	Percentage	Descriptive
To assess the factors that influence the implementation of Weather Index Insurance in insurance companies in Kenya	Dependent: Implementation of Weather Index Insurance product	Farmers who purchase or use Weather Index Insurance products	Farmers choice (Implementation/ not adopting) on Weather Index Insurance products	Categorical	Percentage/p-value/coefficient	Descriptive/ correlation/ regression

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

In this chapter of the report, the data collected from the field have been analyzed and presented in form of tables in both frequencies and percentages as per objectives of the study. Finally, an interpretation of the data under each objective has been done.

4.2 Response Rate

The study targeted 34 participants from whom 24 responses were received. This indicates a return rate of 70.5% that is far above the 60% one that Mugenda and Mugenda (2003) contend is acceptable for this kind of study.

4.3 Background Information

This section presents the length of respondents' experience working with the Insurance products besides the regions/counties where these customers hailed from.

4.3.1 Experience of Respondents with Weather Index Insurance Products

The study investigated how long respondents had interacted with the weather index insurance product. Table 4.1 presents their responses.

Table 4.1: Length of Time Working with Weather Index Insurance products

	Frequency	Percent (%)
Under 5 Years	10	29
5-10 Years	14	42
11-20 Years	10	29
Total	34	100

As Table 4.1 indicates, majority of the respondents, at seventy-one (71%) had over 5 years' experience working with the Weather Index Insurance products. This finding proves that not only were the respondents familiar with the subject matter, but also that Weather Index Insurance as a business has been around for quite some time now in Kenya.

4.3.2 Distribution of Weather Index Insurance Customers

Table 4.2 shows the results of respondents' distribution by gender

The study further investigated both the distribution of Weather Index Insurance products companies and that of their customers. From the records at the Association of Kenya Insurers (2019), there were 17 companies offering Weather Index Insurance products (Appendix IV). The distribution of their customers, per region, is in Table 4.2.

Table 4.2: Distribution of Weather Index Insurance Customers

Regions	Freq.	%
Eastern Kenya (Machakos, Meru, Embu)	22	29.7
Central region (Kiambu, Mt Kenya, Nyeri)	20	27.0
Rift Valley region (Uasin Gishu, Nakuru)	14	18.9
Nairobi	8	10.8
Western region (Kakamega, and Nyanza areas)	6	8.1
Coastal region	4	5.4
Total	74	100

From Table 4.2, it is noted that 29.7% of Weather Index Insurance implementation is in Eastern Kenya, 27% in central Kenya, 18.9% in Rift valley, 10.8 in Nairobi while 5.4% from coastal region. This result indicates that WII is appreciated in many parts of agricultural Kenya, mainly due to the risks associated with erratic weather all over the country. Such an erratic phenomenon is demonstrated, for example, by the recently recorded changes in rainfall seasons and patterns that have affected everyone negatively, with farmers being first in the list.

4.4 Product Pricing and Implementation of Weather Index Insurance Products

The first objective of the study investigated the extent to which product pricing influences the implementation of Weather Index Insurance products in Kenya. The findings are presented under the following three subsections: Affordability of Premiums, Number of Payouts against Premiums, and Value of Compensation.

4.4.1 Perception on Affordability of Premium Prices

Regarding the opinion customers had on affordability of premium prices of Weather Index Insurance products, the results collected were as indicated in Table 4.3.

Table 4.3: Affordability of Premium Prices

	Agreed		Strongly agree		Disagreed		Strongly disagree		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Premium prices for Weather Index Insurance products are affordable	14	58	4	17	2	8	4	17	24	100

Based on evidence from Table 4.3, majority of the respondents (75%) agreed that their customers considered their Weather Index Insurance products affordable. This indicates that insurance companies had done good research on farmers' ability to purchase the set premiums before they set the premium prices. This caused many farmers to perceive the prices as affordable.

4.4.2 Premium Prices and Uptake of Weather Index Insurance Products

The study investigated the extent to which customer perception of premium prices influenced the implementation of Weather Insurance. The result is as indicated in Table 4.4.

Table 4.4: Extent to Which Premium Prices Influence Implementation of Weather Index Insurance Products

	Responses (frequency)	Percent
High extent	24	100
Total	24	100

Based on Table 4.4, all the respondents agreed that customers' perception of premium prices influenced their uptake of Weather Index Insurance products. Such a perception is not misplaced noting that respondents knew that their customers were small-scale farmers, whose level of income was generally low.

4.4.3 Influence of Changes in Price of Premiums on Implementation of Weather Index Insurance Products

The study investigated the opinions of the managers on how changes in price of premiums would influence the implementation of Weather Index Insurance products by their customers. Their opinions are as shown in Table 4.5.

Table 4.5: Influence of Changes in Prices of Insurance Products

	Lowering premium prices would lead to many customers adopting WII products				Increasing prices would lead to many customers rejecting WII products			
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Agreed	10	42			2	8		
Strongly agree	8	33			0	0		
Total	18	75			2	8		
Disagreed			4	17			10	42
Strongly disagree			2	8			12	50
Total			6	25			22	92

As information in Table 4.5 reveals, majority (75%) agreed that lowering product prices would lead to many customers adopting Weather Index Insurance product. On the other hand, a large majority (92%) agreed that increasing the prices would lead to many customers rejecting Weather Index Insurance products. This is because lowering premium prices makes them affordable to many farmers who are mostly small scale with low incomes.

4.4.4 Perception of Value of Compensation

The study enquired on the opinion customers have towards the adequacy of the value of compensation that they get in case of loss related to Weather Index Insurance products. The findings are as indicated in Table 4.6.

Table 4.6 Value of Compensation was Adequate

	Responses (Frequency)	Responses (%)
Agree	22	92
Disagree	2	8
Total	24	100

As Table 4.6 shows, a large majority of respondents (92%) agreed that their customers considered the value of compensation for Weather Index Insurance products, paid by insurance firms, as adequate indicating that the compensation was worth committing to adopt the insurance. The calculation of the compensation rates was well calculated to benefit farmers.

This alludes to the sentiments of some players in the industry that many people in Kenya perceive insurance to be a savings plan or an investment plan which is not the case. In

some instances, farmers would not renew their premiums in subsequent periods if they did not incur any loss and hence did not receive an indemnity in the prior period.

4.4.5 Extent to Which Value of Compensation Influences Implementation of Weather Index Insurance

The study enquired on the extent to which the value of compensation influenced implementation of Weather Index Insurance and the findings are as shown in Table 4.7.

Table 4.7: Extent to Which Compensation Influences Implementation of Weather Index Insurance Products

	Responses (Frequency)	Responses (%)
Limited extent	2	8
High extent	22	92
Total	24	100

From Table 4.7, 92% of the respondents thought that compensation value of the products influenced customers' uptake of Weather Index Insurance. The findings by majority show that, although certainly there were other important factors, compensation value still influenced uptake of the Weather Index Insurance to a very high extent.

4.4.6 Influence of Increasing or Lowering Compensation Value on Implementation of Weather Index Insurance

The study inquired on the influence of increasing or lowering the anticipated compensation value on implementation of Weather Index Insurance Products in case loss occurred. The results are as shown in Table 4.8.

Table 4.8: Influence of Increasing or Lowering Compensation Value on Implementation of Weather Index Insurance

	Lowering compensation value would lead to fewer customers				Increasing compensation value would lead to more customers			
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Agreed	2	8			20	84		
Strongly agree	0	0			2	8		
Total	2	8			22	92		
Disagreed			12	50			0	0
Strongly disagree			10	42			0	0
Total			22	92			0	0

As information in Table 4.8 reveals, a large majority (92%) agreed that lowering compensation value would cause many customers to reject Weather Index Insurance product. Similarly, an equally large majority (92%) agreed that increasing the compensation value would lead to more customers accepting these products. In insurance, naturally, people want the best returns for their losses hence are attracted to products that promise the highest returns and would spend on insurance products whose value of anticipated compensation is highest in case the loss occurs.

4.5 Influence of Demand on Implementation of Weather Index Insurance

The second objective investigated the extent to which demand for Weather Index Insurance influenced implementation of Weather Index Insurance. The results on this objective are as presented in the subtopics that follow.

4.5.1 Factors that Increase Demand of Weather Index Insurance

Table 4.9 shows factors that increased demand for weather index insurance.

Table 4.9: Factors that Increase Demand for Weather Index Insurance

	High Risk tolerance		Increased Income				Positive Perception			
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Agreed	20	84			16	67			16	67
Strongly agree	2	8			4	17			2	8
Total	22	92			20	84			18	75
Disagreed			2	8			2	8		
Strongly disagree			0	0			2	8	4	17
Total			2	8			4	16	6	25

As per Table 4.9, 92% of the respondents agreed that high-risk tolerance by farmers increased demand for Weather Index Insurance. This means that farmers who tolerated high risk were likely to adopt Weather Index Insurance. High risk means that one is likely to incur high losses in case the weather is not favorable.

Additionally, the table shows that 84% agreed that increased income levels increased demand for Weather Index Insurance. When income increases, people have more money at their disposal to spend, hence the increased likelihood to demand Weather Index Insurance.

Further, 75% of the respondents indicated that a positive perception increased demand for Weather Index Insurance. People with a positive perception of insurance understand and appreciate its benefits and, as a result, are likely to adopt Weather Index Insurance hence the finding.

4.5.2 Demand for Weather Index Insurance

The study investigated how respondents rated demand for the Weather Index Insurance based on the share of Weather Index Insurance customers compared to the total insurance market share and the findings in Table 4.10 collected.

Table 4.10: Demand for Weather Index Insurance

WII market share	Frequency	Percent
Less than 10%	13	54.2
10-20%	11	45.8
Total	24	100.0

As Table 4.10 shows, 54.2% of the respondents indicated that demand for Weather Index Insurance less than 10% of all the insurance market. This indicates that demand for Weather Index Insurance is still low based on its market share bearing in mind that agriculture is a key sector in the country and that a large part of the country has unfavorable agricultural conditions. The low demand could be attributed to low penetration of Weather Index Insurance, as it is still a relatively new product in the Kenyan market. The source regions for majority of the clientele, although receives unfavorable weather conditions, are not very arid areas.

4.5.3 Extent to which Demand Influences Implementation of Weather Index Insurance

This section explored the extent to which demand, that is, willingness and ability to purchase, for Weather Index Insurance products influenced implementation of Weather Index Insurance.. The manager's opinions appear on Table 4.11.

Table 4.11: Extent to which Demand Influences Implementation of Weather Index Insurance

	Responses (Frequency)	Responses (%)
High extent	22	92
Limited extent	2	8
Total	24	100

As is clear from Table 4.11, almost all respondents, at 92%, indicated that demand influences the implementation of Weather Index Insurance to a large extent; besides, even the remaining 8% were not negative.

4.5.4 Extent to which Insurance Firms Meet the Demand for Weather Index Insurance

Finally, in this section, the study investigated the managers opinions regarding the extent to which insurance firms met the demand for Weather Index Insurance by their customers. Their opinions are recorded in Table 4.12.

Table 4.12: Extent Insurance Firms Meet Demand for Weather Index Insurance

	Responses (Frequency)	Responses (%)
Low	4	17
High	20	83
Total	24	100

The findings in Table 4.12 show that majority of respondents, at 83%, agreed that their firms had the capacity to service Weather Index Insurance needs of clients seeking the service.

4.6 Influence of Awareness on the Implementation of Weather Index Insurance

The third objective investigated the extent to which farmers awareness influenced the implementation of Weather Index Insurance by insurance companies in Kenya. The following subtopics present the collected findings on this objective.

4.6.1 Awareness Creation Media

The study investigated the channels/media used to create awareness of Weather Index Insurance among farmers. The findings are presented in Table 4.13.

Table 4.13: Mediums used to Create Awareness on Weather Index Insurance

Medium	Frequency	Percent
Referrals	20	83%
Brochures	16	67%
One-on-one sales	12	50%
Electronic media (radio/TV)	10	42%
Extension officers	6	25%

Based on findings shown in Table 4.13, it is obvious, and as would be expected, that most of the insurance firms use several channels for awareness creation about their products. On this, referrals by those familiar with the product; brochures from the firms, besides one-on-one sales, take the leading roles.

4.6.2 The influence of Awareness on Uptake of Weather Index Insurance

The study investigated the extent to which respondents agreed that increased awareness enhanced the uptake of Weather Index Insurance. Their responses are as recorded in Table 4.14.

Table 4.14: Awareness increases uptake of Weather Index Insurance

	Responses (Frequency)	Responses (%)
Strongly agree	4	17
Agree	20	83
Total	24	100

As shown in Table 4.14, all the respondents were in agreement that increased awareness increases the uptake of Weather Index Insurance. Awareness creation involves equipping people with adequate and relevant information about the product upon which they can make the purchase decision. Based on the findings of the study, when awareness is increased, many people are better informed about the product hence increased implementation.

4.6.3 High Financial Literacy Rates

The study assessed the extent to which high financial literacy rates among farmers increased implementation of Weather Index Insurance. The findings were as indicated in Table 4.15.

Table 4.15: High financial literacy among farmers increases implementation of Weather Index Insurance

	Frequency	Percent (%)
Agree	20	83
Strongly agree	4	17
Total	24	100

Information from Table 4.15 indicates that all the respondents agreed that high financial literacy rates among farmers increases their implementation of Weather Index Insurance. This result is attributed to the fact that, with a high level of financial literacy, farmers can estimate to a fair extent the level of possible loss due to bad weather; and then compare this possible loss to the amount they pay for Weather Index Insurance products.

4.6.4 Positive Culture towards Insurance

As to whether positive culture influenced the implementation of Weather Index Insurance in Kenya, the findings in Table 4.16 were collected.

Table 4.16: Influence of positive culture on implementation of Weather Index Insurance Products

	Responses (Frequency)	Responses (%)
Disagree	2	8
Agree	22	92
Total	24	100

Findings on Table 4.16 show that a large majority of the respondents, at 92%, agreed that positive culture, that is, perception and reception of insurance among their customers, increased implementation of Weather Index Insurance.

4.6.5 Availability of information on Weather Index Insurance

The study further investigated the managers' perception on whether availability of information on Weather Index Insurance increased its implementation among their customers. The collected findings are as shown in Table 4.17.

Table 4.17: Availability of Information Increases Implementation of Weather Index Insurance

	Frequency	Percent (%)
Disagree	2	8
Agree	22	92
Total	24	100

As shown in table 4.17, majority of the respondents at 92% agreed that availability of information on Weather Index Insurance increased implementation of Weather Index Insurance. The findings by the majority can be attributed to the fact that ample information about the product exposes the benefits of adopting it, which puts farmers in a better position to make the implementation decision. Availability of information also enables the demystification of misconceptions about the product.

4.6.6 Relationship between implementation and pricing, demand and awareness

To establish the association between the dependent and independent variables, correlation analysis was done. The findings are shown in table 4.18.

Table 4.18: Correlation between Dependent and Independent Variables

		Implementat ion of WII	Pricing of WII products	Farmer Demand for WII products	Farmer Awareness of WII products
Implementation of WII	Pearson	1	1.000**	.438*	-.076
	Correlation Sig. (2-tailed)		.000	.032	.726
	N	24	24	24	24

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

As indicated in table 4.19, there is a strong correlation between the implementation of Weather Index Insurance and the pricing of Weather Index Insurance products; there is a moderate correlation between the implementation of Weather Index Insurance products and farmer demand for Weather Index Insurance and there is no correlation

between implementation of Weather Index Insurance and farmer awareness of Weather Index Insurance.

4.7 Summary of the Chapter

This chapter has presented the findings and results and analyses of the study. The chapter began with presentation of the response rate and the reliability findings. The study then presented the other findings and results according to the study objectives. The chapter has established that implementation of Weather Index Insurance is determined by perception of premium prices and demand for the product. Awareness about Weather Index Insurance does not influence implementation of Weather Index Insurance.

CHAPTER FIVE
SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSION AND
RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of findings, discussions, conclusion and recommendations of the study on “The Influence of marketing strategies on the implementation of Weather Index Insurance in insurance companies in Kenya.” The study objectives were to (1) determine to what extent product pricing influences the implementation of Weather Index Insurance in insurance companies in Kenya, (2) assess to what extent farmer awareness influences the implementation of Weather Index Insurance in insurance companies in Kenya, and (3) examine to what extent farmers’ demand for insurance products influences the implementation of Weather Index Insurance in insurance companies in Kenya.

5.1 Summary of Findings

This section presents the findings in a summarized form without the statistics. It is from these summarized findings that the study will draw its conclusions and recommendations. The summary of findings presented herein is organized according to the study objectives.

5.1.1 Product Pricing and Implementation of Weather Index Insurance Products

The first objective of study investigated the extent to which product pricing influences the implementation of Weather Index Insurance in insurance companies in Kenya. Findings have established that where the premium prices for Weather Index Insurance product are affordable, the uptake of Weather Index Insurance products is also high. As would be expected, lowering the premium prices, or increasing compensation value, in case of a loss, would likewise increase the implementation of Weather Index Insurance products. Perception of insurance prices has a strong relationship with implementation of Weather Index Insurance.

5.1.2 Influence of farmer demand on implementation of Weather Index Insurance

The second objective investigated the extent to which farmer demand for Weather Index Insurance influenced implementation of Weather Index Insurance in insurance companies in Kenya. The findings show that high-risk tolerance by farmers, positive perception of insurance, increased customer income levels and high trust in Weather Index Insurance increased demand for weather index insurance and demand was found to have a moderate relationship with implementation of Weather Index Insurance in insurance companies in Kenya.

5.1.3 Influence of farmer awareness on implementation of Weather Index Insurance

The third objective investigated the extent to which farmer awareness influences the implementation of Weather Index Insurance in insurance companies in Kenya. The study established that referrals, brochures and one-on-one sales points were the main awareness creation channels used by insurance firms to publicize weather index insurance. It was also found that increased awareness increases through high financial literacy among farmers, creation of positive culture towards insurance, availability of information on the product and understanding the benefits of the product increased the implementation of Weather Index Insurance in Kenya. The study evaluated the influence of each of the three selected indicators of awareness, namely, referrals, brochures and one-on-one sales points; electronic media and extension officers.

The study established that creation of awareness through various channels, particularly referrals, brochures and one-on-one sales points; in addition to high financial literacy among farmers; and creation of positive culture towards insurance greatly influenced their implementation of weather index insurance products. Noteworthy, the study found that there was no correlation between farmer awareness and the implementation of Weather Index Insurance in insurance companies in Kenya.

5.2 Discussions

This section presents the discussions of the study, which comprise a commentary of how the findings of this study compares to the findings presented by other researchers who tackled similar subject to the one handled by this study. By making this

comparison, this study informs on the areas value has been added to previous knowledge

This section presents discussions on the key findings of the study against literature on similar studies from elsewhere in the world. By so doing, this study adds value to existing knowledge in this crucial area. It is arranged as per the three objectives of the study.

5.2.1 Product Pricing and Implementation of Weather Index Insurance

On the influence of pricing on implementation of Weather Index Insurance in insurance companies in Kenya, the study established that premium prices for the product were affordable indicating that to many farmers the prices were not restrictive to hamper their implementation of Weather Index Insurance. Given that affordability is one of the main determinants of implementation of Weather Index Insurance products (Sina, 2012; Agroinsurance, 2017; Sinha & Tripathi, 2016), it is expected that the results that the product is affordable would translate into implementation. This analysis is confirmed in the findings when the study established that, to a high extent, premium prices were perceived to influence implementation of Weather Index Insurance.

This study also found that if insurance companies lowered the prices for the products many people would adopt Weather Index Insurance. Low prices were not associated with rejection but with adoption of the Weather Index Insurance products while increased prices were associated with rejection of the product. This was further confirmed by the finding that there was significance between farmer uptake and perception of price indicating that farmers would adopt insurance products whose prices were affordable as was established earlier. These findings confirm how affordability was a determinant to the implementation of Weather Index Insurance product by insurance companies. It is noteworthy that majority of farmers in the country who are commonly prone to weather-related risks are small-scale and have constrained earnings. To this category, lowering prices increases affordability, as many people can be able to afford paying the premiums, which then increases implementation. This finding concurs with the one presented in the reviewed literatures like those by Alam et al. (2010); Sina (2012); Hill *et al.* (2013) Cole *et al.*'s (2013); Sinha and Tripathi (2016), Agroinsurance (2017).

Besides the premium pricing, the amount of compensation paid in case of loss was also established to be a critical factor in implementation of Weather Index Insurance products as submitted by Sinha and Tripathi (2016). The study has established that farmers are satisfied that the compensation given for implementation of Weather Index Insurance products is adequate. This indicates satisfaction with the compensation paid for the product hence there is no requirement for immediate adjustment of the compensation values. The finding that compensation influenced uptake of Weather Index Insurance to an average extent means that it is not the main determinant of implementation in Kenya. For instance, while a customer may consider the value of compensation to be reasonable or attractive, they may still not take up the product if it is unaffordable to them. This slightly varies from the findings of Sinha and Tripathi (2016) who found compensation to be the main determinants of implementation in Thailand. In the case of Sinha and Tripathi's (2016) study, low compensation caused apathy despite the fact that premiums were affordable.

The study found that lowering the value of compensation would reduce the number of people adopting Weather Index Insurance and increasing the value of compensation would increase the number of people adopting it. In insurance, naturally, people want the best returns for their losses when they encounter insured risks. This means that people will be attracted to products whose returns are highest in case the insured risk occurs just as the findings of this study revealed. This finding concurs with that in Sinha and Tripathi's (2016) study where compensation values were increased to deal with apathy and enhance implementation of Weather Index Insurance in Thailand.

This study has established that affordability of the premium prices of Weather Index Insurance product leads to a high implementation of the products. And, as would be expected, lowering the premium prices, or increasing compensation value, in case of a loss, would likewise increase the implementation of Weather Index Insurance products. These findings concur with those by Sinha and Tripathi's (2016) in Thailand, in confirming that while affordability was the main determinant of the implementation of Weather Index Insurance products, it was not the only one. Besides the premium pricing, the amount of compensation paid, in case of loss, was also established to be a critical factor in determining implementation of Weather Index Insurance products. Farmers were highly interested in an assurance that the compensation paid for the

product, in case of disaster, was reasonable. It is noteworthy that majority of farmers in Thailand, as in Kenya, who were commonly prone to weather-related risks, are small-scale and have constrained earnings; besides apathy, that led to the increasing of compensation values to deal with this phenomenon in Thailand.

5.2.2 Influence of demand on implementation of Weather Index Insurance

Concerning the second objective, this study has established that farmers who tolerate high risk show increased demand for Weather Index Insurance products. The amount of risk one takes is directly proportional to the amount of loss one is likely to incur; hence the wisdom of cushioning oneself just in case. The finding is in concurrence with the study by Hill *et al.* (2013) in Ethiopia, which established that risk averse farmers showed minimal interest in purchasing insurance.

The study also established that positive perception, in terms of how they benefit the client, besides trust that the product will cushion the farmers from weather related risks of Weather Index Insurance products, increased demand for the product. This view rhymes with that of Ulbinaite and Le Moullec (2010) in their research paper and with Sinha and Tripathi's (2016) study in Ethiopia, that state that negative perception reduced farmers interest in Weather Index Insurance, hence causing minimal implementation. Likewise, Kaczala and Wisniewska (2015) study in Poland posits that demand for insurance grew when the firms and their products were deemed trustworthy. The finding that demand is statistically significant with implementation also concurs the one presented by Kaczala and Wisniewska (2015).

5.2.3 Influence of awareness on implementation of Weather Index Insurance

Awareness creation involves equipping people with adequate and relevant information about Weather Index Insurance, the benefits of their involvement, such as risk cover upon which they can make informed implementation decision. Financial literacy is crucial to enable farmers to critically deploy their limited resources.

Awareness should be created in a manner that the farmers can easily access. In Kenya, as the study reveals, brochures, leaflets, one-to-one encounters with the firms' extension officers, are preferred because they are less costly to create, distribute, and have a wider reach if well distributed, including offering the opportunity for clarification, if needed.

The study findings resonate with that of Cole *et al.* (2007); Alam *et al.* (2010); Kumar *et al.* (2011), besides those by IFAD and WFP (2010), who state that increased awareness increases the uptake of Weather Index Insurance. On their part, Tadesse *et al.* (2015), in their study on sub-Saharan Africa, concurred with these findings when they observed that financial illiteracy among targeted farmers limited their appreciation of agricultural insurance. Besides, positive culture towards insurance increased implementation of Weather Index Insurance products among Kenyan customers. However, that lack of such culture, as World Bank, (2012) in a study in Malawi records, worked against awareness creation for agricultural insurance, leading to minimal implementation which may be the reason this study found lack of any statistical significance between awareness and implementation.

5.3 Conclusion

The study concludes that affordable premium prices influence to a high extent the implementation of Weather Index Insurance in insurance companies in Kenya. Increasing compensation terms for losses related to Weather Index Insurance also increases implementation of Weather Index Insurance to an average extent. Demand influences implementation of the Weather Index Insurance products to an average extent while increased awareness has no correlation to the implementation of Weather Index Insurance in insurance companies in Kenya.

5.4 Recommendations

From the findings, it is recommended that insurance firms offering or aiming to offer Weather Index Insurance should develop and package their products with focus on how the products are affordable to the target market. This means that the firms should invest in feasibility studies that inform on customers' incomes and what they can afford to pay for weather index insurance. Insurance firms in partnership with the Insurance Regulatory Authority (IRA) should aggressively publicize Weather Index Insurance product to arouse increased demand, which would then enhance implementation extent.

The Insurance Regulatory, in partnership with insurance firms, should increase awareness creation on Weather Index Insurance through enhanced financial literacy, cultivating positive insurance culture in agriculture and provision of relevant information concerning the product particularly its benefits and why farmers should adopt it. Insurance Regulatory Authority and policy makers in Kenya should focus

weather index insurance policies on current research so as not to come up with policies that set a higher than affordable base price on weather index insurance products. As such, the policies should be able to allow penetration of the insurance product to poor but weather-risky regions like the Arid and Semi - Arid Lands areas of Kenya.

5.5 Suggestions for further study

The study suggests an empirical investigation on the factors affecting implementation of Weather Index Insurance products from a consumers' point of view to establish their points of view on the factors determining implementation of Weather Index Insurance products since this population was not within the scope of this study.

In rural areas, big insurance companies (studied in the current research) have a smaller market share compared to micro insurers. As such, a study should be carried out with consideration of micro insurers offering Weather Index Insurance products to clearly define the reach/implementation of the product to rural farmers who are the most affected with unfavorable weather conditions.

REFERENCES

- Access to Insurance Initiative (AII). (2014). *Agricultural Insurance and Regulatory Implications*. Report of the 4th A2ii – IAIS Consultation Call. International Association of Insurance Supervisors.
- Afzaal H. S. (2017). *Theory of planned behavior: new research*. Nova Science Publishers.
- Agroinsurance. (2017). *Uganda - Will the insurance subsidy revive agriculture?* Retrieved from <http://agroinsurance.com/en/uganda-will-the-insurance-subsidyrevive-agriculture/>
- Alam .J. M., Nazneen.M & Chowdhury S. F. (2010). Demand for weather index insurance in coastal Areas of Bangladesh. Retrieved from <http://www.webmeets.com/files/papers/EAERE/2011/491/Demand%20for%20Weather%20Index%20Based%20Micro-Insurance.pdf>
- Born, P. (2014). *Best Practices for Regulating Property Insurance Premiums and Managing Natural Catastrophe Risk in the United States*. Retrieved from http://www.stjohns.edu/sites/default/files/tcb/born_-_best_practices.pdf.
- Born, P. H. & Klimaszewski-Blettner, B. (2013). Should I Stay or Should I Go? The Impact of Natural Disasters and Regulation on U.S. Property Insurers' Supply Decisions. *Journal of Risk & Insurance*, 80(1), pp. 1-36.
- Brahmana, R., Brahmana, R. K., & Memarista, G. (2018). Planned Behaviour in purchasing health insurance. *The South East Asian Journal of Management* 12(1), pp. 53-64.
- Briggs, R. (2014). Normative theories of rational choice: Expected Utility. *The Stanford Encyclopedia of Philosophy*. Retrieved from <https://plato.stanford.edu/entries/rationality-normative-utility/>
- Bryan, G. (2010). Ambiguity and Insurance. *Job market paper*. Yale University.
- Burke, M, Janvry, A., & Quintero, J. (2010). *Providing index-based agricultural insurance to smallholders: Recent progress and future promise*. EGG Foundation.
- Carter, M., De Janvry, A., Sadoulet, E., & Sarris, A. (2014). Index-based weather insurance for developing countries: A review of evidence and a set of propositions for up-scaling. *Workshop on Microfinance products for weather risk management in developing countries: State of the arts and perspectives held in Paris on June 19*.
- Chollet, D. J. & Lewis, M. (1997). *Private insurance: principles and practice*. World Bank Discussion Papers.

- Clarke, D. (2010). *A Theory of Rational Hedging*. Mimeo, University of Oxford.
- Cole, S. (2015). Overcoming Barriers to Microinsurance Implementation: Evidence from the Field. *The Geneva Papers*, 40, pp. 720–740.
- Cole, S., Jagnani, M., Nestor, L., & Tobacman, J. (2013). *Marketing Weather-Indexed Agricultural Insurance to Smallholder Farmers in Rural Gujarat, India*. Policy Brief n. 35052. London: IGC.
- Cole, S., Tobacman, J., & Topalova, P. (2007). *Weather Insurance: Managing risk through an innovative retail derivative*. Researchgate. https://www.researchgate.net/publication/255582518_Weather_Insurance_Managing_Risk_Through_an_Innovative_Retail_Derivative
- Creswell, J. W. (2013). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, (4th ed.). Sage.
- Fisher, M., Abate, T., Lunduka, R.W., Asnake, W., Alemayehu, Y. & Madulu, R. B. (2015). Drought tolerant maize for farmer adaptation to drought in sub-Saharan Africa: Determinants of implementation in Eastern and Southern Africa. *Climatic Change*, 133, 283– 299.
- Gautam, M., Hazell, P. B. R., & Alderman, H. (1994). Rural demand for drought insurance. *Policy Research Working Paper 1383*. World Bank.
- Hadgu, E. (2011). *Factors that affect implementation of and its intensity: The case of Kola Tembien wereda, Tigray Northern Ethiopia* [Unpublished Masters' Thesis]. Mekelle University.
- HARITA. (2009). *Rural resilience series-Project Brief*. Oxfam. Retrieved from <http://iri.columbia.edu/~deo/HARITAUpdateAugust112009short.pdf>.
- Hazell, P., Anderson, J., Balzer, N., Hastrup, C. A., Hess, U., & Rispoli, F. (2010). *Potential for Scale and Sustainability in Weather Index Insurance for Agriculture and Rural Livelihoods*. Rome: International Fund for Agricultural Development and World Food Programme.
- Hill, R. V., Hoddinott, J. & Kumar, N. (2013). Implementation of weather-index insurance: learning from willingness to pay among a panel of households in rural Ethiopia. *Agricultural Economics*, 44(4-5), 385–398.
- IFAD & WFP. (2010). *Potential for scale and sustainability for agriculture and rural livelihoods*. Rome. Retrieved from www.ifad.org/ruralfinance/pub/weather.pdf.
- Insurance Regulatory Authority (IRA). (2015). *The Kenya index-based insurance Policy paper*. Nairobi: IRA & Kenya Vision 2030.

- Kaczala, M. & Wisniewska, D. (2015). *Factors influencing farmers' decisions on drought index insurance in Poland*. Paper submitted to the WRIEC 2015 Third World Congress, Poznan University of Economics, Poland.
- Kahneman, D. & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, 47(2), 263-292.
- Kahneman, D. (2011). *Thinking, fast and slow*. Allen Lane.
- KNBS (2017). *County Statistics*. Retrieved from http://www.knbs.or.ke/index.php?option=com_content&view=article&id=176&Itemid=645
- Kumar, S. D., Barahb, B. C., Ranganathana, C.R., Venkatrama, R., Gurunathana, S., & Thirumoorthya, S. (2011). An Analysis of Farmers' Perception and Awareness towards Crop Insurance as a Tool for Risk Management in Tamil Nadu. *Agricultural Economics Research Review*, 24(January-June), 37-46.
- Kunreuther, H. & Pauly, M. (2005). Terrorism losses and all perils insurance. *Journal of Insurance Regulation*, 23(4), 3.
- Lang, M. (2012). Protecting pastoralists against drought-related livestock mortality: the index-based livestock insurance project (IBLI) in Northern Kenya. In Gommers, R. and Kayitakire, F. (Eds.), *The challenges of index-based insurance for food security in developing countries*. Institute for Environment and Sustainability: European Commission, (pp. 85-90).
- Leblois, A. & Quirion, P. (2013). Review Agricultural insurances based on meteorological indices: Realizations, methods, and research challenges. *Meteorological Applications*, 20, pp. 1-9.
- Leedy, P. & Ormrod, J. (2001). *Practical research: Planning and design* (7th ed.). SAGE Publications.
- Marquis, M. S, Buntin, M. B., Escarce, J. J., Kapur, K., Louis, T. A., & Yegian, J. M. (2006). Consumer decision making in the individual health insurance market. *Health Affairs*, 25(3), pp. 226-234.
- Marr, A., Winkel, A., Van Asseldonk, M, Lensink, R., Bulte, E. (2016). Implementation and impact of index-insurance and credit for smallholder farmers in developing countries: A systematic review. *Agricultural Finance Review*, 76(1), 94-118.
- Mobarak, A. M. & Rosenzweig, M. (2012). Selling Formal Insurance to the Informally Insured. *Working Papers 1007*. Economic Growth Center, Yale University.
- Mude, A. G., Barrett, C. B., Carter, M. R., Chantarat, S., Ikegami, M., McPeak, J. G. (2010). *Project Summary: Index based livestock insurance for northern*

Kenya's arid and semiarid lands: the Marsabit Pilot. Retrieved from <http://mahider.ilri.org/handle/10568/494>.

- Mugenda, O. M. & Mugenda, A. G. (2003). *Research methods: Quantitative and qualitative Approaches*. Nairobi: African Centre for Technology Studies.
- Nyman, J. A. (2001). The demand for insurance: Expected Utility Theory from a gain perspective. *Discussion Paper No. 313, October 2001*. Center for Economic Research Department of Economics, Minneapolis, MN: University of Minnesota.
- Oladimeji, A. B. (2015). Principles and methods of validity and reliability testing of questionnaires used in social and health science researches. *Nigerian Postgraduate Medical Journal*, 22(4), pp. 195-201.
- Sakurai, T. & Reardon, T. (1997). Potential demand for drought insurance in Burkina Faso and its determinants. *American Journal of Agricultural Economics* 79(4), 1193–1207.
- Sekaran U. (2003). *Research Methods for Business – A Skill Building Approach*. Wiley Publishers. 4th Edition
- Showers, V. E., Shotick, J. A. (1994). The effects of household characteristics on demand for insurance: a Tobit analysis. *The Journal of Risk and Insurance*, 61(3), 492–502.
- Sina, J. (2012). *Index-based weather insurance—international & Kenyan experiences*. Adaptation to climate change and insurance (ACCI). Nairobi, Kenya.
- Sinha, S. & Tripathi, N. K. (2016). Assessing the Challenges in Successful Implementation and Implementation of Crop Insurance in Thailand. *Sustainability*, 8, 1306.
- Skees, J. R. (2008). Challenges for use of index- based weather insurance in lower income countries. *Agricultural Finance Review*, 68(1), 197-217.
- Skees, J. R., Varangis, P. Larson, D. & Siegel, P. (2005). Can Financial Markets Be Tapped to Help Poor People Cope with Weather Risks? In *Insurance against Poverty* by S. Dercon, (ed). UNUWIDER Studies in Development Economics, Oxford University Press.
- Stevens-Benefo, H. (2015). *Perceptions of Home and Small Business Owners on Insurance in Accra, Ghana*. Doctoral Study Submitted to Walden University. ProQuest LLC.
- Tadesse, M. A., Shiferaw, B. A., & Erenstein, O. (2015). Weather index insurance for managing drought risk in smallholder agriculture: Lessons and policy implications for sub-Saharan Africa. *Agricultural and Food Economics*, 3(26), 1-21.

- Ulbinaitė, A. & Le Moullec, Y. (2010). Towards an ABM-based framework for investigating consumer behaviour in the insurance industry. *Economics: Research Papers*, 89(2), p. 95–110.
- Ulbinaitė, A., Kucinskiene, M., & Moullec, Y. L. (2013). Determinants of Insurance Purchase Decision Making in Lithuania. *Inžinerinė Ekonomika*, 24(2), pp. 144-159.
- United States Agency International Development (USAID). (2006). *Index insurance for Weather Risks in Lower-income Countries*. USA: USAID.
- United States Census Bureau (2016). *Income and Poverty in the United States: 2015*. Washington, DC: USA Census Bureau.
- Wairimu, E., Obare, G., & Odendo, M. (2016). Factors affecting weather index-based crop insurance in Laikipia County, Kenya. *Journal of Agricultural Extension and Rural Development*, 8(7), pp. 111-121.
- World Bank. (2012). *Weather index-based crop insurance in Malawi : facilitating farmers' access to agricultural credit (English)*. Disaster risk financing and insurance case study Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/734611467986308477/Weather-index-based-crop-insurance-in-Malawi-facilitating-farmers-access-to-agricultural-credit>.

APPENDICES

Appendix I: Letter of Introduction

Noel Amoit Atino

EMAIL: noelmoit35@gmail.com

Dear respondent,

RE: RESEARCH PROPOSAL QUESTIONNAIRE

This is to inform you that I am carrying out a research study for my Master of Arts in Project Planning and Management at the University of Nairobi. The study is on “The Influence of Marketing Strategies on Implementation of Weather Index Insurance in insurance companies in Kenya”.

I kindly request for your assistance in filling the attached questionnaire to enable me complete my research. The questionnaire is for academic purposes only and any information given shall be treated with strict confidentiality; please give the information as accurately as possible.

Thank you in advance.

Yours sincerely,

Noel Amoit

L50/69851/2013

Appendix II: Questionnaire

A. Background Information

1. Name of the insurance company you work for:

.....

2. For how long have you worked on/with Weather Index Insurance products?

1-4 years 5-10 years 11-20 years

31-40 years 41-50 years Over 50 years

3. Which regions/counties in Kenya do majority of your clients hail from?

.....

B. Influence of pricing on the implementation of Weather Index Insurance in Kenya

1. What opinion do your clients have towards the premium prices you set for your Weather Index Insurance products?

	Strongly disagree	Disagree	I don't know	Agree	Strongly agree
Premium prices are affordable					
Premium prices are not affordable					

2. To what extent do you think your clients' perception of premium prices influence their uptake of Weather Index Insurance from your firm?

No extent	Small extent	Average extent	High extent	I don't know

3. In the table below, indicate the extent to which you agree with the factors mentioned.

	Strongly disagree	Disagree	I don't know	Agree	Strongly agree
If we lowered our prices, many people would adopt our Weather Index Insurance product					

If we lowered our prices, many people would reject our Weather Index Insurance product					
If we increased our prices, many people would adopt our Weather Index Insurance product					
If we increased our prices, many people would reject our Weather Index Insurance product					
Increasing or lowering our prices will not affect the number of customers we have.					

4. What opinion do your clients have towards the value of compensation that they are to get in case of loss, for your Weather Index Insurance products?

	Strongly disagree	Disagree	I don't know	Agree	Strongly agree
The value of compensation is adequate					
The value of compensation is inadequate					

5. To what extent do you think your clients' perception of the value of compensation influence their uptake of Weather Index Insurance from your firm?

No extent	Small extent	Average extent	High extent	I don't know

6. In the table below, indicate the extent to which you agree with the factors:

	Strongly disagree	Disagree	I don't know	Agree	Strongly agree
If we lowered our value of compensation, many people would adopt our Weather Index Insurance product					
If we lowered our value of compensation, many people would reject our Weather Index Insurance product					

If we increased our value of compensation, many people would adopt our Weather Index Insurance product					
If we increased our value of compensation, many people would reject our Weather Index Insurance product					
Increasing or lowering our value of compensation will not affect the number of customers we have.					

C. Influence of demand on implementation of Weather Index Insurance

1. Which of the following factors increase demand for Weather Index Insurance products in your firm?

	Strongly disagree	Disagree	I don't know	Agree	Strongly agree
High risk tolerance by farmers					
Positive perception of insurance					
Increased income levels					
Increased trust in products					
Others (specify and rate them).					
1.....					
2.....					
3.....					

2. How would you rate demand for Weather Index Insurance products from your firm in terms of the percentage of customers with WII compared to the total insurance customers your company has?

Share of WII customers	(Tick appropriately)
Less than 10%	
10-20%	
21-30%	
31-40%	

41-50%	
Over 50%	

3. To what extent do you think demand for Weather Index Insurance from your firm influences implementation by farmers?

No extent	Small extent	Average extent	High extent	I don't know

4. Has your firm been able to meet the demand for Weather Index Insurance Products?

Yes No

If no, what are the reasons for not meeting demand for Weather Index Insurance?

.....

D. Influence of awareness on implementation of Weather Index Insurance

1. What mediums/channels do you use to increase awareness of Weather Index Insurance products?

Radio Brochures One on one sales pitch
 Extension officers Referrals Other

If other, please specify:.....

2. To what extent do you agree with the following statement?

	Strongly disagree	Disagree	I don't know	Agree	Strongly agree
Increasing awareness increases uptake of Weather Index Insurance					

3. To what extent do the following factors increase implementation of Weather Index Insurance products?

	Strongly disagree	Disagree	I don't know	Agree	Strongly agree
High financial literacy rates among farmers					
Positive culture towards insurance products					
Availability of information on Weather Index Insurance					
Understanding of the benefits of Weather Index Insurance					

THANK YOU FOR TAKING YOUR TIME TO FILL THIS QUESTIONNAIRE

Appendix III: Tentative Budget

ACTIVITY	DESCRIPTION	COST		
		QUANTITY	UNIT COST	TOTAL COST
Stationery	Photocopying papers	4	500	2,000
	Printer cartridges	3	2,000	6,000
	Rims of foolscaps	2	500	1,000
	Notebooks	5	60	300
Research Proposal	Internet browsing			6,000
	Travel in search for Literature			4,000
	Photocopying			5,000
	Spiral Binding	20	50	1,000
Data analysis			10,000	
Miscellaneous			5,000	
				40,300
Contingencies	10%			7,030
Total				47,330

Appendix IV: List of Insurance companies offering insurance products to farmers in Kenya

	Institutions	Physical location	Contacts	Target population
1.	APA Insurance Company	Apollo Centre, Ring Rd Parklands, Nairobi	+254 (0) 20 364 1000 Email: info@apainsurance.org	2
2.	Syngenta Foundation for Sustainable Agriculture	Avenue 5 building, Rose Avenue Kilimani, 6th Floor, Nairobi	+254733622778 0703 018000 Email: george.osure@syngenta.com	2
3.	UAP General Insurance Company	UAP Old Mutual Tower, Upper Hill Road, Nairobi	254 20 2850 000 Mobile: +254 711 065 000 Call Centre: +254 711065100 / +254 711010100 E-mail: uapinsurance@uap-group.com	2
4.	Jubilee Insurance Company	Jubilee Insurance House, Wabera St. Nairobi	254 (0) 20 328 1000 0709 901 000 0719 222 111 Email: info@jubileekenya.com	2
5.	Africa Merchant Assurance Company (AMACO)	Transnational Plaza, 2nd Flr.Mama Ngina Street Nairobi		2
6.	CIC General Insurance	CIC Plaza, Mara Road, Upperhill Nairobi, Kenya	+254) 703 099 120 (020) 282 3000 Email: info@cic.co.ke	2
7.	Kenya Orient Insurance Company	Capitol Hill Towers, 6th Floor, Cathedral Road, Nairobi	(020) 2962000 Email: contactme@korient.co.ke	2

8.	ICEA LION General Insurance Company	Riverside Park, Chiromo Road, Westlands	254 (0) 20 2750000 +254 719 071000 / 730 151000 Email: info@icealion.com	2
9.	Heritage Insurance Company	LIBERTY House, Mamlaka Road, Nairobi	+254 20 2783000 0711 039 000, 0734 101 000 info@heritage.co.ke	2
10.	Madison Insurance Company	Madison Insurance House Upper Hill Close, Nairobi	20-2864 000, Cell: 0709 922 000, Email; madison@madison.co.ke	2
11.	Waumini Insurance Brokers	4 Floor, Waumini House, New Wing, Westlands, Nairobi	+254-20 222 2909; 444 6167; 444 2428 Email: admin@wauminiinsurance .co.ke	2
12.	African Merchant Assurance Co. ltd.	Next Gen Mall, Mombasa Road, Nairobi	020 2204000	2
13.	Pula GmbH	ABC Place, 2nd Floor - Block F, Waiyaki Way, Westlands Nairobi	293-00623 Email: info@pula.io	2
14.	Britam Holdings PLC	Britam Centre, Mara/Ragati Road Junction, Upperhill, Nairobi	(020) 2833000, Mobile: +254 703 094 000 Email: info@britam.co.ke	2
15.	Takaful Insurance of Africa	3rd Floor, CIC Plaza, Mara Road, Upper Hill, Nairobi	020 2725134 Email: info@takafulafrica.com	2
16.	Allianz Insurance Company Kenya	Allianz Plaza, 96 Riverside Drive, Nairobi	+254 792 284 946/ +254 709 566 000. Email: sales@online.allianz.co.ke	2

17.	Blue Shield Insurance Company	BlueShield Towers Hospital Road, Off Mara Road, Nairobi	Phone: 020-2711287	2
Total target population				34

(Source: Association of Kenya Insurers, 2019).