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# Sorghum farmers satisfaction with market specification contracts in Western Kenya.

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# SORGHUM FARMERS SATISFACTION WITH MARKET SPECIFICATION CONTRACTS IN WESTERN KENYA

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# DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the dissertation itself.



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## APPROVAL

This thesis of Hezekiel Chege Waititu was reviewed and approved by the following:

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# ABSTRACT

This research looks into sorghum farmers' satisfaction with market specification contracts in Western Kenya. The research was guided by three specific objectives which aimed to determine influence of farmer characteristics, perceived pricing, and quality standards on sorghum farmers' satisfaction with market-specification contracts. A descriptive research design was adopted targeting a population of 7,768 sorghum farmers in Busia and Siaya Counties from which 384 farmers were reached. A simple random sampling procedure was adopted to recruit respondents and a semi-structured questionnaire was administered after confirming its reliability and validity. The data was analysed using descriptive, correlation, and multiple regression analysis methods with findings presented in tables and supported by interpretations. The findings showed age had a negative and significant effect on farmer satisfaction implying that an increase in age resulted in less satisfaction with contract farming. Sorghum farming experience had a positive and significant effect on farmer satisfaction with CF and this was also observed for perceived pricing and quality standards. The study makes the conclusions that age had a negative effect on satisfaction with market-specification contracts while farming experience had a positive effect on farmer satisfaction. Perceived pricing contributed positively to farmers' satisfaction with contract farming. The research concludes that quality standards specified in farmers' contracts with East Africa Malting Limited contributed positively to farmer satisfaction with these contracts.



**Keywords: Contract farming, farmer satisfaction, market-specification contracts**

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| | |
|---|---|
| **ASALs** | Arid and Semi-Arid Lands |
| **BMT** | PT Bumi Mekar Tani |
| **FSC** | Forward Sales Contracts |
| **CF** | Contract Farming |
| **CFA** | Contract Farming Arrangement |
| **CSI** | Customer Satisfaction Index |
| **EABL** | East Africa Breweries Limited |
| **EAML** | East Africa Maltings Limited |
| **FGDs** | Focus Group Discussions |
| **KEPSA** | Kenya Private Sector Alliance |
| **SDGs** | Sustainable Development Goals |
| **SDON** | Sorghum Delivery and Origin Note |
| **SPSS** | Statistical Package for the Social Sciences |
| **SSA** | Sub-Saharan Africa |
| **SSFs** | Small-Scale Farmers |
| **TCT** | Transaction Cost Theory |
| **VIF** | Variance Inflation Factor |

# DEFINITION OF TERMS

**Contract farming –** This is the agreement between sorghum farmers in Western Kenya with EABL for the provision of resources and marketing of their produce.

**Customer satisfaction –** This refers to how satisfied sorghum farmers are with the provision of resources in their contracts with EABL for crop cultivation and production.

**Farmer characteristics –** These are the unique features of farmers that distinguish them from other farmers and include aspects like gender, agent land size, household size, access to training among others.

**Perceived pricing –** This refers to the farmer perceptions towards the output price offered by the contracting firm for each kilogram of sorghum produced.

**Quality standards –** These refer to the demands of the contracting firm to farmers in terms of the quality of products that is delivered in each farming season.

# CHAPTER ONE
# INTRODUCTION

## 1.0 Introduction

In this chapter, the reader is introduced to the importance of agricultural production and specifically in the context of sorghum. The background also introduces the concept of contract farming and its use in improving sorghum farmers' situation. The problem is presented and consequently, the research objectives and questions are stated, significance, scope, and definition of terms are also presented.

## 1.1 Background of the Study

Agricultural production is a dominant form of economic participation in Sub-Saharan Africa (SSA) with small-scale farmers (SSFs) at the lower level of the pyramid (Kanana & Mbugua, 2019). It is an important subject as it contributes to achieving Sustainable Development Goals (SDGs), notably; Goal one of no poverty, Goal two of zero hunger, Goal three on good health and well-being and Goal twelve of responsible consumption and production (Thornton et al., 2018). Sorghum is ranked as the fifth most important food crop due to its ability to adapt and thrive in arid and semi-arid lands (ASALs). It thrives in harsh, unfavourable and erratic weather conditions which are prevalent in SSA underlining its importance (Mwamahonje et al., 2021).

In East Africa, arable land covering five million hectare is devoted to sorghum cultivation (Mrema, Shimelis, Laing, & Bucheyeki, 2016). In Zimbabwe, the yield of sorghum has not increased over the years because smallholder growers lack adequate sustainable production knowledge to increase yields above subsistence level even in years of good rainfall. Productivity has stagnated below 0.5 t/ha which is below the average yield of 3–5 t/ha that can be produced under rain-fed agriculture. In Ethiopia, sorghum ranks second after maize in total production and third after wheat and maize in productivity per hectare. It is grown in almost all regions, covering a total land area of 1.8 million hectare (Amelework et al., 2016). In Tanzania, sorghum under cultivation covers 0.9 million hectares and is grown by subsistence farmers for food, feed and beer (Mwamahonje et al., 2021).

Despite its importance in food security, sorghum production is experiencing significant challenges in SSA countries including Tanzania (Mwamahonje et al., 2021) and Kenya (Kanana & Mbugua, 2019; Njagi, Onyango, Kirimi, & Makau, 2019). In a bid to reverse these challenges, corporations enter into formal agreements referred to as contract farming (CF) with farmers providing support for farmers in return for high quality production at agreed prices. In Kenya, CF is evident in avocado (Mwambi, Oduol, Mshenga, & Saidi, 2016), sugarcane (Kokeyo, 2013), and sorghum (Nyamamba, Ayuya, & Sibiko, 2022) production.

CF is considered a means of increasing farmers' welfare and is expected to have a significant role in the future of agricultural production in developing nations (Maloku et al., 2021). Farmers' satisfaction with CF however, has not yet been sufficiently understood, but studies indicate its importance in reducing dropouts and contributions to long-term collaboration among agribusiness firms and smallholder farmers (Rath, 2021). This study aims to bridge this gap by examining determinants of farmers' satisfaction with market-specification contracts by focusing on influence of farmer characteristics as well as pricing and set out standards in these contracts.

### 1.1.1 Contract Farming

Contract farming (CF) is described as a form of agricultural production undertaken based on an understanding between a buyer and farmer with set conditions for marketing and production (Arouna, Michler, & Lokossou, 2021). In practice, CF is an understanding among firms (buyers) and farmers (sellers) prior on the conditions and terms for the marketing and production of agricultural products. These agreements are based on delivery time, transport, quantity, inputs, price and quality which are provided by the contracting firm (Hoang, 2021). In general, CF is an arrangement between a company and a farmer in which product processing is done by the company who then sell the processed product to the market; institutional provisions are different in each contract (Väth, Gobien, & Kirk, 2014).

There are variants of CF that have been found in existing literature. Identifying different models of CF, scholars (Eaton & Shepherd, 2001; Ncube, 2020) described the centralized, nucleus estate; multipartite, informal, and intermediary models for CF. Using a transaction cost theory approach, Mugwagwa, Bijman, and Trienekens

(2020) identified that CF arrangements could be grouped into total, group, lean and market contracts while Ruml, Ragasa, and Qaim (2021) explicitly differentiated from simple resource and marketing contracts each having different impacts on farmer welfare.

Nevertheless, conventional classification of CF includes market-specification contracts, resource-providing and product management contracts (Rehber 2007; Arumugam et al., 2010). Market specification contracts assure farmers a time and market for sale of their produce along with pricing structures. Resource-providing contracts involve giving farmers certain physical or technical inputs with an obligation to market the farmer's produce through the contracting company. Production-management contracts involve the contracting company stipulating and enforcing conditions of production and farm-based processing. Ncube, (2020) grouped CF into market-specification contracts, production-management, resource-providing agreement from earlier definitions of contract farming. The market-specification model of CF is the focus of this research.

A market-specification based contract provides the farmer with a market outlet, specifies the quantity to be delivered and the price offered for the produce. These forms of contracts are significant to farmers who produce specialized crops such organic coy beans and high-oil corn which have fewer buyers for specialized crops. In this form of contract, farmers need to have the buyers' commitment to production (Rehber, 2019). Marketing contracts are settled before the harvest or during planting but not less than one year before marketing of products.

The buying company provides assurance and guarantees a certain premium which reduces price (income) risks that come from fluctuations in prices of commodity and guarantee that a producer can locate a market for their produce (Prager et al., 2020). According to Rehber (2019), market-specification contracts stipulate the quality of products that will be accepted by the farmer with some guidelines placed on the price and mode of payment. These contracts stipulate how much a contracting firm will buy and at what pricing; none or little of management decisions of farmers are transferrable.

In a market contract, Mugwagwa, Bijman, and Trienekens (2020) noted that quality may not be a critical issue, or the product has common quality standards, and quality specifications that can be observed. Purchase and sale conditions might be explained in a market contract which may be oral or written. Based on Repar et al. (2017) opinion, these agreements may also outline sales location and product quality; the contractor and farmer also agree on the delivery terms from timing, qualities, and quantities. Gabagambi (2014) explains that these arrangements are concluded before a harvest between contractors and farmers and govern the sale of crop. Typically, location, timing, and quality standards are specified and the contractor normally provides minimal material and technological input.

The reviewed empirical research (Andersson et al., 2015; Henningsen et al., 2015; Michelson, 2013; Rao et al., 2012) indicates a positive effect of market-specification contracts on income and productivity. Other studies (Hernández, Reardon, & Berdegué, 2007; Mwambi, Oduol, Mshenga, & Saidi, 2016) point to no effect of these contracts indicating that providing ready markets for farmer produce may not be enough to overcome redundancy in input and credit markets. Most studies (Andersson et al., 2015; Ashraf et al., 2009; Michelson, 2013; Rao et al., 2012) that found positive effect of market-specification contracts have been in vegetable production where investments needs are moderate or low. In Kenya, Andersson, Chege, Rao and Qaim (2015) found that marketing contracts between vegetable farmers and supermarket chains contributed to income gains but most farmers have dropped out of the supermarket channel due to various constraints.

### 1.1.2 East Africa Breweries Market-Specification Contract

Among ASALs, sorghum is an important crop consumed as food for humans as a staple food, as a raw material for food processing firms and also as animal feed. The crop is also used in the industrial sector in manufacturing of syrup, alcohol, gluten feed, starch, wax and edible oils (Muui et al., 2013). Sorghum production is prevalent in drought-prone zones found in the Coastal region, Nyanza and Eastern. Despite its suitability in these environments, the area under sorghum production is low and is associated with low yields among farmers (Muui et al., 2013).

In East Africa, Kenya ranks last in sorghum production compared to Ethiopia which has experienced the largest growth and its production is comparative to Southern and South-East Asia nations. Kenya still imports more than one-third of its total consumption (Njagi et al., 2019). The emergence of sorghum beer and projection in beer consumption has expanded the sorghum market. East Africa Breweries Limited (EABL) through East Africa Maltings Limited (EAML) is at the forefront of driving the commercialization of sorghum by providing support to farmers for efficient production via contractual agreements.

EAML also provides a ready market for farm produce at a competitive price as the firm also has a 60,000 metric tonnes annual requirement for sorghum which is likely to increase as beer consumption has been on an upward trajectory (Njagi et al., 2019). The annual market-specification contract states that payments shall be made by EAML or an EAML appointed third party, at the end of 14 days following the date of receipt of a correct and complete Sorghum Delivery and Origin Note (SDON) to EAML, and the subsequent acceptance of the Sorghum quality by EAML or any other EAML appointed delivery point from time to time. The recommended varieties include Sila, Gadam, Kari Mtama 1 and Hybrid 23012.

### 1.2 Statement of the problem

There is a growing demand for sorghum beer among low-income consumers as a safe and alternative choice to illicit liquors. This has provided a great market for sorghum production and actors in its value chain as approximately 40 % of regulated market is sorghum beer, employing more than 100,000 people in its value chain (The Kenya Private Sector Alliance [KEPSA], 2014). The existing literature shows evidence of farmer satisfaction (Kanana & Mbugua, 2019; Deekshitha & Shobharani, 2019) and dissatisfaction (Harshana, 2019; Sugiarto et al., 2019; Ruml & Qaim, 2021; Ndiritu, 2022) with CF arrangements. The evidence from several countries indicate that sorghum farmers experience significant challenges in marketing of produce due to lack of reliable markets (Kutyauripo & Mutombo, 2020; Chamunorwa, Nyasha, & Kugedera, 2021; Mrema et al., 2016). Other evidence shows that CF retention is a challenge in Sri Lanka (Harshana, 2019) owing to dissatisfaction with harvesting practices, income received, farm gate price, pest control practices and training.

Ruml and Qaim (2020) revealed that farmers' main problem with CF was insufficient information provided by the company. Maloku et al. (2021) revealed that farmer satisfaction did not have a significant effect on CF. Gabagambi (2014) found that a huge number of cane farmers expressed dissatisfaction with CF and lost hope to find answers to their problems in Tanzania. Locally, Ndiritu (2022) revealed that millet farmers under CF expressed dissatisfaction with prices offered, low output, misunderstanding in input provisions, and high production costs. Nyamamba et al. (2022) found that side selling was prevalent among sorghum farmers despite being in CF arrangements with EAML signaling dissatisfaction with the arrangement.

Measuring satisfaction of CF among farmers however has not been explored using a customer satisfaction model, which is new knowledge that this study contributes to existing research. Using a customer satisfaction model will add new knowledge in terms of measuring different aspects in which farmers can be better satisfied with market-specification contracts in the future. The psychological reaction of a consumer in terms of their experience with the difference among perceived and expected performance is referred to as customer satisfaction. Satisfaction of consumers with a firm's services or products is commonly viewed as the key to the success of the company and sustainable competitiveness (Suchánek & Králová, 2018).

There is ample number of studies on sorghum production in Kenya from the Eastern region (Muui et al., 2013; Chepng'etich, 2014), Homa Bay (Quinter, Ng'eno, & Anjichi, 2021); Nakuru (Ogeto et al., 2012), Kisumu (Nyamamba et al., 2022), and Meru (Kanana & Mbugua, 2019) counties providing evidence on poor performance of sorghum farming. Kanana and Mbugua (2019) study which found that annual average incomes of farmers increased after participating in CF arrangements associated to high yields and prices is one of the few studies that has examined CF in Kenya's context. Thus, there was need for further research to examine farmer satisfaction with CF among sorghum farmers.

## 1.3 Research Objectives

### 1.3.1 Main Objective

This research examined sorghum farmers' satisfaction with market specification contracts in western Kenya.

### 1.3.2 Specific Objectives

The study was guided by these specific objectives;

i. To assess the extent of farmer characteristics on sorghum farmers' satisfaction with market-specification contracts in Western Kenya
ii. To assess the extent of perceived pricing on sorghum farmers' satisfaction with market-specification contracts in Western Kenya
iii. To assess the extent of quality standards on sorghum farmers' satisfaction with market-specification contracts in Western Kenya

## 1.4 Research Questions

The study answered these questions;

i. To what extent do farmer characteristics influence sorghum farmers' satisfaction with market-specification contracts in Western Kenya?
ii. To what extent does perceived pricing lead to sorghum farmers' satisfaction with market-specification contracts in Western Kenya?
iii. To what extent do quality standards influence sorghum farmers' satisfaction with market-specification contracts in Western Kenya?

## 1.5 Significance of the Study

### 1.5.1 Policy and decision makers

The study is of importance to policy and decision makers as it provides insight into how CF strategy can be used to enhance the livelihoods of small-scale farmers and how these can be integrated into legislation and regulation to eradicate poverty among this population towards national development. The findings can foster discussion and interest for policy makers on the viability of market-specification contracts as a tool for agricultural development.

### 1.5.2 Top management

The concept of CF has been growing in practice and this study is of benefit to corporate management as it aims to show how market-specification contracts can be adopted to solve farmer issues that include minimal profits from sorghum farming and access to markets. For companies that have adopted a market-specification model, the study will be beneficial by making recommendations to enhance farmer satisfaction in other agricultural sectors such as vegetables and the supermarket channel which is

prominent in that sector. Additionally, the study will help EABL's management to spot opportunities for improvement in the existing model, especially after feedback from sorghum farmers.

### 1.5.3 Sorghum farmers

The study will be of benefit to sorghum farmers as the identification of variables that affect their farm performance can be used to improve their incomes from sorghum production if recommendations from this study are implemented by the contracting firm EABL. The study is important as it provides an opportunity for sorghum farmers to share their perceptions on what factors affect their farm performance in an effort to create more discussion about improving their productivity. The results will be shared to stakeholders involved in the Contract Farming Arrangement through various channels, notably, regional aggregators and EAML representatives during the monthly farm visits. Findings will also be communicated internally to the EABL & EAML management team via Business Performance Management meetings.

### 1.5.4 Scholars and academicians

The findings shall be resourceful to scholars and researchers interested in strategic management, furthering more contributions related to the purpose of firms and corporate responsibility. Research in developing countries is limited and owing to the unique contexts between businesses operating in developed and developing nations, it might be futile to use previous research as a frame of reference. The study will also make suggestions for future research on the subject for other scholars and researchers. To theory, the study contributes to the relevance of Transaction Cost Theory in terms of contract farming and farmer satisfaction in the context of sorghum farming.

## 1.6 Scope of the study

The study was conducted in Western Kenya, specifically focusing on Busia and Siaya Counties. Among the three forms of CF, the study is limited to the market-specification contract. The data required for this study was collected from small-scale farmers who participate in sorghum contract farming with EAML. The methodical scope is in adopting quantitative methods of data collection while using random sampling procedures to select the sample size. The study was conducted from July to December 2022.

# CHAPTER TWO
# LITERATURE REVIEW

## 2.1 Introduction

The chapter presents the theories adopted for this research as well as empirical review of research on market-specification contracts and satisfaction among farmers. This review is followed by a summary presented in a table followed by a conceptual framework and the operationalization of the variables.

## 2.2 Theoretical framework

Theoretical framework is described as a scheme that provides guidance to a researcher by relying on established, coherent explanation of specific relationships and phenomena (Eisenhart, 1991). It consists of theories that are selected to understand and guide thoughts of how a research topic and concepts can be understood and defined. In this context, the transaction cost theory is adapted for this investigation.

### 2.2.1 Transaction Cost Theory

Coase (1937) is credited with developing transaction cost theory (TCT) by showing that the management of economic dealings through markets is not for free but mostly make costs. The concept of transaction cost was introduced by Ronald Coase in explaining the presence of organizations. The hypothesis is that dealings through market approaches in incurring costs specifically to the costs of looking for partners to enforce and exchange contracts. Williamson (1979) further contributed to the TCT by arguing every market transaction among economic actors consist of costs, can lead to losses and are hazardous. Due to these aspects, norms are created to lessen the costs of allocating resources and levels of uncertainty.

According to Kherallah and Kirsten (2002), the significant contribution of TCT is its explanation of the many issues of market failure and missing markets that are caused by asymmetric information among other determinants.

Transaction costs are those associated with undertaking a contract between a seller and buyer from identifying a buyer, reaching, exchanging, delivering, payment and enforcement of contracts as well as risks associated with transactions (Coase, 1960). A contract contains costs which can be justified when a large company is a buyer and

the product is supplied in minimal quality variations, is perishable, involves technical production, a high value product is involved, there exists a favourable policy environment and market destination is ready to pay premium prices for this product attributes (Kozhaya, 2020).

There are several principles of TCT that manifest in CF. Kozhaya (2020) points out that opportunistic behaviour, uncertainty, contract frequency, asset specificity and bounded rationality have contributed to CF practice. Scholars (Simmons, Winters & Patrick, 2005) explain that bounded rationality happens when parties in a contract hurt from information absences and are not able to process all information in their possession to formulate solutions and solve complex problems in a straightforward and costless way.

According to (Wander, 2013), opportunistic behaviour is costly and hard to foresee. Actors are self-seeking and this means they are likely to steal, cheat, and lie. The uncertainty level exists due to farmers' lack of market conditions information along with the product quality needed from buyers, posing a challenge in undertaking transactions that are profitable. The major source of uncertainty is asymmetric and incomplete information on present and future conditions (Wander, 2013). A farmer who dedicates investments in contract farming has no or little value in another use, contributing to asset specificity and can lead to hold-up issues (Kozhaya, 2020). Lastly, the frequency of transactions is vivid and emanates when repeated interactions between trading partners happens in order to preserve reputation for a fair deal and to limit opportunistic behaviour, even in the absence of contracts (Klein, 2006).

One of the criticisms of TCT is on its asset specificity, which assumes that a farmer once engaging in sorghum farming has no other options for any other crops and is thus tied to the contract of cultivation of the crop, thus unlikely to switch to another crop. The limited farmer's switching power assumes they lack information on market opportunities and are thus restricted to the contract. There is, however, evidence (Nyamamba et al., 2022) showing that sorghum farmers in CF at times have resulted to side-selling. The TCT model assumes farmers are not in a position to bargain for competitive prices which may not be the case as there are brokers in the sorghum value chain who may offer tempting gate prices to farmers resulting to side-selling.

TCT augurs well with the present study where farmers are provided with contracts that allow them to achieve a premium price and ready market for sorghum. The theory explains that a contract is justified when large companies (EAML) are buyers and seek a product (sorghum) that involves difficult technical production and a ready market destination (EABL) that is ready to pay a seller (farmers) a premium price. The TCT theory is thus adopted to explain and understand the importance of pricing and standards spelt out in contracts.

## 2.3 Empirical literature

The empirical review presents studies from different agricultural production systems presenting global, regional and local perspectives on market-specification contracts satisfaction. In each of the study, the methodology and findings are presented and the contribution of the study is described.

### 2.3.1 Farmer Characteristics and satisfaction with market-specification contracts

The farmer characteristics have been an important variable to explain several agricultural outcomes including performance of CF (Kanana, 2019), sorghum farming adoption (Okeyo et al., 2020), and preference for contract attributes (Ochieng, Veettil, & Qaim 2017). In this section, the review presents findings on relationship between farmer characteristics and satisfaction with CF arrangement.

In Ethiopia, (Seba, 2016) examined details of contract farming arrangements (CFAs) in a sample of members of a cooperative union engaged in chickpea farming. The research utilized a descriptive research design employing random sampling techniques to select a sample of 95 farmers in seven counties. The respondents were required to show level of agreement with statements on their decision to participate in CF. The findings established that no conclusive evidence existed to indicate that farm size, education, gender or household labour empowerments influenced satisfaction with CF. The sample was recruited from an organisation of farmers while the present study selects respondents randomly from a sampling frame.

In Tanzania, (Gabagambi, 2014) examined CF integration among smallholder farmers using a multistage sampling procedure in selecting farmers from wards of Diongoya and Mtibwa in Turiani division in Mvomero district. The sample consisted of 90 fully integrated and partially integrated farmers into CF collecting data using structured

questionnaires and a key informant interview guide. The results showed that there were farmers who were fully into contracts and other partially involved and there was a difference on resources afforded in terms of off-farm income, size of land, and education level. The study was conducted among cane farmers and also consisted of farmers not in full participation in CF arrangement.

In a study conducted among sorghum farmers in Kenya, (Kanana, 2019) examined factors influencing performance of CF using a descriptive research design and targeting a population of 1,200 smallholder farmers in four study sites in Imenti North. Simple proportionate random sampling methods were used to identify 291 respondents to whom a questionnaire was administered. Sociological factors were found to have a strong and positive effect on CF performance but were the least among income, interlinked factors and nature of contract. The sociological factors considered included gender, age, education and land size. This investigation was determined to find determinants of CF performance and not satisfaction.

In Siaya County, (Okeyo et al., 2020) aimed to understand how selected determinants influenced farmers' propensity to adopt sorghum production in four sub-counties selecting 300 households using random selection. Semi-structured interviews were used to collect data for selected determinants which were later analysed descriptively and logistic regression models. The findings showed that land size under groundnut, beans and maize production, access to training, farm size and land ownership all contributed to sorghum farming adoption. This study did not limit its investigation to CF and also did not examine the influence of farmer characteristics on satisfaction with sorghum farming.

In a sample of vegetable farmers, (Ochieng et al.,2017) analysed farmers' preferences for supermarket contracts as a source of fresh vegetables from preferred suppliers by undertaking an observational analysis of contractual agreements between smallholder farmers and supermarkets by analysing 409 farmers sampled through stratified random sampling procedure. The results showed farmer characteristics contributed to decisions and preferences for contracts and contract design attributes. However, years in education, age, annual income, gender of household head did not have any influence on farmer attitudes toward contracts but these factors affected preferences

for personal contract attributes. The study was conducted among a sample of perishable produce which require different resources and period to come to yield from sorghum.

### 2.3.2 Perceived pricing and Satisfaction with Market-Specification Contracts

In Spain, agricultural marketing co-operatives are one option farmers can use to market their products. Hernández- Espallardo, Arcas-Lario, and Tantius (2009) aimed to determine the factors contributing to farmer satisfaction with these contract arrangements with cooperatives adopting TCT and Neoclassical Theory. The data was obtained from a sample of 320 producers of fruits and vegetables from which it was observed that liquidation price was more preferred by farmers to predict their satisfaction with cooperative contracts than their readiness to remain members. The study used a sample of producers in perishable yields which are different from sorghum farming.

Using an ex-post facto research design, Kulkarn and Grethe (2020) conducted comparative research among 41 non-contract and 52 contract potato farmers in India using structured questionnaires administered using personal interviews approach. The contract farmers were in agreement with a multinational company (Frito Lays Ltd.) while non-contract farmers adopted a traditional marketing approach. Using the Mann-Whitney U test to analyse the data, the results revealed significant variations on levels of satisfaction of non-contract and contract farmers on market prices offered. This study adopted a comparative approach to determine satisfaction among farmers in CF arrangements while the present study adopts a descriptive research design.

In Sri Lanka, Harshana (2019) conducted an analysis of satisfaction of small cucumber farmers in CF arrangements from three districts comprising a sample of 90 farmers. The study used secondary data from published sources while questionnaires were adopted to gather primary data from farmers. Satisfaction with CF was measured using small cucumber cultivation practices, harvesting practices, farm gate price and timely receipt of money, pest control practices and income. Using descriptive analysis methods, the study found that farmer dissatisfaction with CF was due to poor farm gate price and untimely payments. The study mixed both primary and secondary

sources of data while the present study is limited to primary data from sorghum farmers.

In India, Singh, Sharma, and Mahendru (2020) conducted a study on satisfaction level among CF Farmers focusing on five companies (Nahar Sugar Mill, Pepsi Co, Reliance, Mahindra, ITC) and a sample of 100 farmers from the Punjab region (Amritsar, Phagwara, Ludhiana, Fatehgarh Sahib, Patiala, Bathinda, Sangrur, Kheri and Samana). A questionnaire collected primary information from farmers while secondary data was used to gather information from the contracting firms. The crops considered in this study were vegetables, sugarcane, fruits and cereals. The major finding from the study was that farmers were satisfied with contracts from the companies. However, farmers revealed that CF has several disadvantages such as pricing of produce. The study used a sample of producers in perishable yields which are different from sorghum farming.

Limiting their investigation to tobacco farmers in Malawi, Makoka, Appau, Lencucha, Drope (2016) conducted a study on farm-level economics of tobacco production adopting different sampling methods to arrive at a sample of six leading tobacco – producing districts. The consequent sampling considered two sub-districts, three group villages (communities) from which 120 farmers were selected per district to produce an overall sample of 720 farmers. The qualitative study adopted focus group discussions (FGDs) randomly drawn from villages. The results showed that a small number of farmers were satisfied with prices offered. The findings showed that non-contract farmers received less than prices for good quality products as a means by contracting firms to influence their participation in CF the following year of harvest. The study was limited to qualitative methods while the present study aims to use quantitative methods and focus on sorghum cultivation.

Investigating on why most farmers were willing to drop out of CF, Ruml and Qaim (2020) examined smallholder palm oil farmers' dissatisfaction with CF adopting qualitative and quantitative data from 164 contract and 169 non-contract farmers selected from 13 randomly selected villages under CF with Unilever in the Ghanaian central region. Farmer satisfaction was measured using binary questions where farmers were questioned if they would go back to sign a contract and if they were

willing to resign the contracts in future. The results indicated that most farmers considered the output prices too low while input prices and interest rates were too high. The study aimed to understand dropping out of CF and not satisfaction with CF arrangements. In Indonesia, Rohani et al. (2019) investigated farmers' satisfaction level on broiler partnership system from 60 farmers in the business partnership system selected using stratified sampling from 8 villages. Interviews were used to collect data where satisfaction levels were measured on a three-point Likert scale scheme. The level of satisfaction with output price suitability, providing compensation and giving bonuses were satisfied. Broiler production is different from sorghum farming as the two modes of production required different resources and period to yield.

In Kenya, Kanana and Mbugua (2019) assessed influence of factors on CF performance from a sample of 291 farmers in Meru County selected using simple proportionate random sampling. The results indicated annual average income of farmers increased after entering CF and this was associated to high prices and high yields offered. Additionally, majority of respondents preferred the variable price option. This study's focus was on the determinants of CF participation and the study was not limited to sorghum which the present study is.

Other studies have used different groups of respondents to determine the factors that influence participation in CF. Kagwiria (2017) examined factors influencing participation in CF using a descriptive research design targeting 726 agricultural officers, farmers, state officials, county government officials and fresh produce companies from which 100 respondents were selected using stratified random sampling. The results indicated a positive effect of product pricing on participation in CF alluding to their satisfaction with product pricing. The farmers agreed that price sensitivity influenced their participation in CF and disagreed that price fluctuation minimized their participation in contract farming.

### 2.3.3 Quality Standards and Satisfaction with Market-Specification Contracts

The existing literature includes evidence (Gabagambi, 2014; Ochieng et al., 2017; Kiriveldeniya & Rosairo, 2020; Tuyen et al., 2022) about the supposed handling of quality standards in majority of contract farming schemes. Using a sample of maize farmers under CF in Sri Lanka, Kiriveldeniya and Rosairo (2020) explored

stakeholder maize value chain in examining relation between outgrower farmer loyalty and their outgrower firm based on the buying prices offered. Selecting Monaragala and Anuradhapura research sites; primary data was collected from intermediaries: collectors, ordinary farmers, stockists and out-grower farmers using interviewer administered structured questionnaires. The results revealed that farmers trusted the firms based on their increased quality of produce.

Using a quasi-natural experiment design, Väth, Gobien, and Kirk (2019) compared subjective wellbeing independent and outgrower farmers among palm oil producers in Ghana. The predictor variables considered were land related variables; property rights and contract farming. The dependent variable was measured by an overall satisfaction scale from low to high subjective wellbeing. The study concluded that a well-designed outgrower contracts benefited investors and local farmers. The study also found that farmers had a lower bargaining position on the contracts as they were not able to clearly identify the specified quality standards.

In Vietnam, Tuyen et al. (2022) evaluated choices for contract features and attribute levels among farmers, state officials, buyers adopting data triangulation approaches by adopting FGD, key informant interviews and participant observations. The largest site for rice production and export and farmer engaged in CF was selected using multi-stage sampling methods. The findings showed that significant attributes for farmers were payment, delivery, quality standards, input-use requirements, provision of inputs and price options. The study was however using information from different stakeholders and thus the findings may not be generalizable to farmer preferences. The study did not also measure association between market contracts and farmer satisfaction.

In India, Deekshitha and Shobharani (2019) did a study on CF expectation and experience using an exploratory and descriptive study design; simple random sampling was used to select 70 farm units. The farmers provided information using a questionnaire; while newspapers, journals, internet and magazines were used to gather secondary data. The major problem faced by farmers with market-specification contracts was the manipulation of quotas and quality specifications as farmers struggled to maintain quality standards and tight production schedules. The majority

of farmers indicated that farmers were dissatisfied with these contracts. In Sri Lanka, Wijesooriya and Champika (2015) assessed determinants of Forward Sales Contracts (FSCs) adoption using regression models to assess these determinants among a sample of farmers under contracts and those without. Using multi-stage sampling methods, a sample size of 236 maize and soya farmers was selected using stratified random sampling. The farmers shared needing quality standards described adequately for food and for feed as some were not able to deliver required standards of quality.

In Tanzania, Gabagambi (2014) conducted a study among sugarcane growers examining CF and smallholder farmers using a multistage sampling procedure in selecting farmers from wards of Diongoya and Mtibwa in Turiani division in Mvomero District. The sample consisted of 90 fully and partially integrated farmers into CF. The findings revealed farmers dissatisfaction with inadequate transparency in how weight of cane was determined and sucrose content measurement. Further, both groups of growers perceived that there was an absence of transparency in determining weight of sugarcane and the sucrose content.

Machimu (2020) also assessed cane outgrowers' views on CF services quality using the SERVQUAL model to measure farmer satisfaction in six wards (Kidatu, Sanje, Mkula, Ruhembe, Kidodi, and Ruaha) where six farmers' associations were involved. A cross-sectional research design was adopted where 300 farmers were selected using simple stratified sampling procedure. The respondents were interviewed using a structured questionnaire. This paper showed that farmers were highly dissatisfied (unacceptable quality) with the CF services received. There were many deficiencies in quality control, price setting as well as weighing sugarcane consignments at the firm's gate.

In Kenya, Ochieng et al. (2017) analysed farmers' choices and choice heterogeneity for supermarket contracts as a source of fresh vegetables from preferred suppliers. Mixed logit model was used to analyse attitudes toward significant contract design qualities. Farmer dropout rates were found to be high. It was established that it was costly for farmers to deliver harvests to urban supermarkets and this means they needed a large output price premium. The respondents disliked delay in payments while unpredictable product rejection was the most problematic attribute which

exposed farmers to market risk. The study found that designing contracts that were more transparent in how quality was graded and risk-sharing that was fair could improve farmer participation in supermarket procurement channels.

Using a group of avocado farmers in Kenya, Amare et al. (2019) examined impact of their participation in export markets on their labour market, income, sales prices and farm yields in Murang'a County among 790 of households engaged in avocado farming. A multistage sampling procedure was used to select the county, Sub County, villages and households. The results indicated that quality of avocado farmers' group in a sub-location contributed to their participation in these export markets and farmers that lived in sites with better-operating groups were more likely to engage in this form of contract farming.

### 2.3.4 Farmer Satisfaction

According to Sugiarto et al. (2019), measuring satisfaction of clients is important in developing business so as to determine the gap between actual and anticipated needs. Harshana (2019) emphasized that farmer satisfaction contributes to efforts of improving performance so that having a satisfied contract farmer is a crucial factor for improved production. On the other hand, maintaining organization survival is dependent on the degree to which contracting firms are able to satisfy farmer's needs (Harshana, 2019). Kagwiria (2017) agrees that the success of contract farming is dependent on satisfaction of both farmers and corporations. Farmer satisfaction has received considerable attention from scholars and several proxies have been used to measure this variable in empirical literature.

In their research, Sugiarto et al. (2019) measured the variable by the service quality model which includes the variables tangibility, responsiveness, empathy, reliability and assurance. Using a different approach, Väth, Gobien, and Kirk (2014) adopted the eight domains of subjective well-being to measure farmers' satisfaction with contract farming. Maloku et al. (2021) adopted measured satisfaction on a five-Likert scale where farmers replied to their degree of satisfaction with level of information exchanged, prices offered, sales levels and earnings distribution fairness. This approach was also adopted by Harshana (2019) on satisfaction with harvesting and

cultivation practices, income received, farm gate price, pest control practices and training.

Further, Tanaya (2022) used a six-Likert scale Customer Satisfaction Index (CSI) on items that consisted of inputs pricing, production and mode of payment, prices, technical assistance provided and transparency. The service quality (SERVQUAL) model of consumer satisfaction proposed by Parasuraman, Zeithaml, and Berry (1985) which is based on five dimensions of reliability, responsiveness, assurances, empathy, and tangibility was used and has also been successfully adapted by Machimu (2020) to measure farmer satisfaction with contract arrangements. However, the concept of tangibility was excluded as the market-specification contract does not deliver any tangibles to sorghum farmers.

### 2.4 Literature Review Summary and Knowledge Gap

The evidence shows that there has been interest from researchers on farmer satisfaction with CF arrangements. Nevertheless, there are some gaps identified from the empirical review that place the importance and timeliness of this study. One of these gaps is farmer satisfaction with CF has been done in production of perishable produce (Hernández-Espallardo et al., 2009; Ochieng et al., 2017), sugar cane (Gabagambi, 2014; Singh et al., 2020) and oil palm (Väth et al., 2019; Ruml and Qaim, 2020) showing less focus on sorghum production which is a gap the study aims to fill.

Different samples have been adopted to examine farmer satisfaction with CF including adopting comparative research which included both CF and non-CF farmers (Kulkarn & Grethe, 2020), cooperative farmers (Hernández-Espallardo et al., 2009), and different stakeholders engaged in crop production (Tuyen et al., 2022); however, this study aims to use sorghum farmers under CF as the primary and sole source of information. Farmer satisfaction has also been measured using various dimensions; however, this study adopts the SERVQUAL model of client satisfaction which has been widely used in other fields but has also been successfully adopted in measuring farmer satisfaction (Machimu, 2020) and was thus adapted for this research. Table 2.1 summarizes the author, topic of study, gap and the study filling gap. The gaps in

reviewed literature are presented in terms of the sample used, methodology adopted, conceptualization of variables and context of the studies.

**Table 2.1: Summary of Literature Review**

| Author | Topic | Main findings | Gaps | Study filling gap |
|---|---|---|---|---|
| Harshana (2019) | Analysis of satisfaction of small cucumber contract famers in predominantly agriculture areas in Sri Lanka | The study found experience and job status had a positive effect on satisfaction and retention but age negatively affected satisfaction | The study was conducted among chicken pea farmers in contract arrangements with farmer cooperatives | This study focuses on CF agreements with a corporate entity limiting its investigation to sorghum farming |
| Seba (2016) | Impact of Contract Farming on Smallholders in Ethiopia: The Case of Chickpea Growers | Gender, education, farm size or household labour endowments did not show influence on participation | The study was limited to descriptive analysis of variables | This study aims to go further and use inferential analysis of variables |
| Kanana (2019) | | Sociological factors have a strong and positive influence on performance of CF | The dependent variable in the study was CF performance | This study is interested in CF satisfaction as the dependent variable |
| Okeyo et al. (2020). | Analysis of determinants of farmer participation in sorghum farming among small-scale farmers in Siaya County, Kenya. | Farm size, land size, land ownership, and access to training significantly affected adoption of sorghum farming. | The dependent variable was adoption of sorghum farming | This study is interested in CF satisfaction as the dependent variable |
| Hernández-Espallardo et al. | Farmers' satisfaction and intention | The liquidation price was more important to | The study focused on farmer contracts with | This study focuses on CF agreements with a |

| | | | | |
|---|---|---|---|---|
| (2009) | to continue as members of agricultural marketing co-operatives: A test of the neoclassical and transaction costs theories | predict the farmers' satisfaction with the co-operatives | cooperatives rather than a corporate entity; the study also sampled vegetable farmers | corporate entity limiting its investigation to sorghum farming |
| Kulkarn & Grethe (2020) | Does vertical integration benefit farming community: A comparative study of contract and non-contract farmers in India | There was significant difference between satisfaction level of the CF and non-CF farmers on extension services provided | The study adopted an ex-post facto study and conducted comparative analysis | The study aims to describe the relation among variables and only include CF farmers in its sample |
| Singh et al. (2020) | A study of satisfaction level among farmers regarding contract farming – a case of North India. | The farmers revealed that CF has several disadvantages such as the pricing of the produce | The crops considered in this study were vegetables, sugarcane, fruits, and cereals | This study focuses on CF agreements with a corporate entity limiting its investigation to sorghum farming |
| Makoka et al. (2016) | Farm-Level Economics of Tobacco Production in Malawi. | Non-contract farmers received less than prices for good quality products as a means by contracting firm | The study focused on tobacco farmers | This study is conducted among sorghum farmers with CF |
| Ruml & Qaim (2020) | Smallholder farmers' dissatisfaction with contract schemes in spite of economic | The main problem in the contract scheme is insufficient information provided by the | Farmer satisfaction was measured using binary questions | Farmer satisfaction will be measured using a 5-point Likert scale |

| | | | | |
|---|---|---|---|---|
| | benefits: Issues of mistrust and lack of transparency | company | | |
| Rohani et al. (2019) | Farmer's satisfaction level on broiler partnership system in Tompobulu District, Maros Regency, South Sulawesi Province, Indonesia | The farmers were satisfied with output price suitability, giving bonuses, and providing compensation | The sample consisted of broiler farmers which means livestock CF was the interest of this study | This study is conducted among sorghum farmers with CF |
| Kanana & Mbugua (2019) | Factors influencing performance of contract farming in Kenya: A case of sorghum smallholder farmers in Imenti North, Meru 32 County, Kenya. | Farmer's annual average income increased after joining CF and this was linked to high yields and high prices | The study did not focus on the market-specification component of CF; the sample was not in contract with EAML | This study is limited to market-specification component of CF; the study focuses on farmers in contract with EAML |
| Kagwiria (2017) | Factors Influencing Contractual Farming in Kenya. A Case of Buuri Constituency, Meru County, Kenya | Positive effect of product pricing on participation in CF indicating their satisfaction with product pricing. | The respondents included farmers, agricultural officers, fresh produce companies, county government and national government officials | The sample size of the study is limited to farmers in contracts with EAML |
| Kirivelden iya & Rosairo (2020) | Value chain actors, farm-gate price and | The farmers trusted the firms of their high quality of | The study was conducted among maize farmers which | This study focuses on sorghum farmers and their |

| | | | | |
|---|---|---|---|---|
| | farmer loyalty in strategic vertical coordination in the maize out-grower farming in Sri Lanka. | inputs and services; | requires different inputs from sorghum farming | satisfaction from their resource-provision contracts |
| Tuyen et al. (2022) | Stakeholder's Preferences towards Contract Attributes: Evidence from Rice Production in Vietnam. | The input requirements which were highly ranked among farmers were herbicide use and chemical fertilizer use | The various stakeholders perspectives may not be generalizable to farmer preferences | The present study collects information from sorghum farmers' satisfaction with CF |
| Deekshitha & Shobharani (2019) | Contract Farming Expectation and Experience of Farmers. | Manipulation of quotas and quality specifications as farmers struggled to maintain quality standards determined by the company | The study was focused on CF expectation and experience | This study is interested in CF satisfaction as the dependent variable |
| Väth et al. (2019) | Socio-economic well-being, contract farming and property rights: Evidence from Ghana | The farmers' bargaining position was strong due to lack of specified quality standards | The study adopted a comparative research design | The study adopts a descriptive research design with no comparisons conducted |
| Gabagambi (2014) | Contract Farming and Smallholder Farmers in a Global Economy: The Case of | Farmers were dissatisfied with lack of transparency in determining the weight of cane and measuring | The sample consisted of farmers fully and partially integrated in CF | The focus of this study is farmers fully integrated in CF |

| | | | | |
|---|---|---|---|---|
| | Mtibwa Cane Growers in Mvomero, Tanzania | sucrose | | |
| Wijesooriya and Champika (2015) | agricultural Forward Contracts as Pre-harvest Commodity Marketing: Problems and Prospects. | The farmers found it difficult to meet the quality standards required from the company | The study was conducted among maize and soya bean farmers | The present study collects information from sorghum farmers' satisfaction with CF |
| Machimu (2020) | Sugarcane outgrowers' views on contract farming services quality in Kilombero valley, Tanzania. | This paper showed that farmers were highly dissatisfied (Unacceptable quality) with the CF services received. | The study was focused on a sample of cane growers | The present study collects information from sorghum farmers' satisfaction with CF |
| Ochieng et al. (2017) | Farmers' preferences for supermarket contracts in Kenya | Farmers did not appreciate delay in payments | The crops considered in this study were vegetables, sugarcane, fruits, and cereals | This study focuses on CF agreements with a corporate entity limiting its investigation to sorghum farming |
| Amare et al. (2019) | The impact of smallholder farmers' participation in avocado export markets on the labour market, farm yields, sales prices, and incomes in Kenya | The results indicated that quality of the main avocado influenced participation in CF | The study was limited to avocado farmers and the supermarket contract scheme | This study focuses on CF agreements with a corporate entity limiting its investigation to sorghum farming |

## 2.5 Conceptual framework

A conceptual framework is a structure which best explains the natural progression of a phenomenon to be studied (Adom, Hussein, & Adu-Agyem, 2017). Figure 2.1

shows farmer characteristics, perceived pricing and quality standards as predictor variables for which indicators to measure these variables are in their respective boxes. The SERVUAL model of consumer satisfaction is adapted by applying its four dimensions to measure farmer satisfaction. The SERVQUAL model was adapted to measure farmer satisfaction and has been used successfully by (Tanaya, 2022; Machimu, 2020). However, the concept of tangibility was excluded as the market-specification contract does not deliver any tangibles to sorghum farmers.

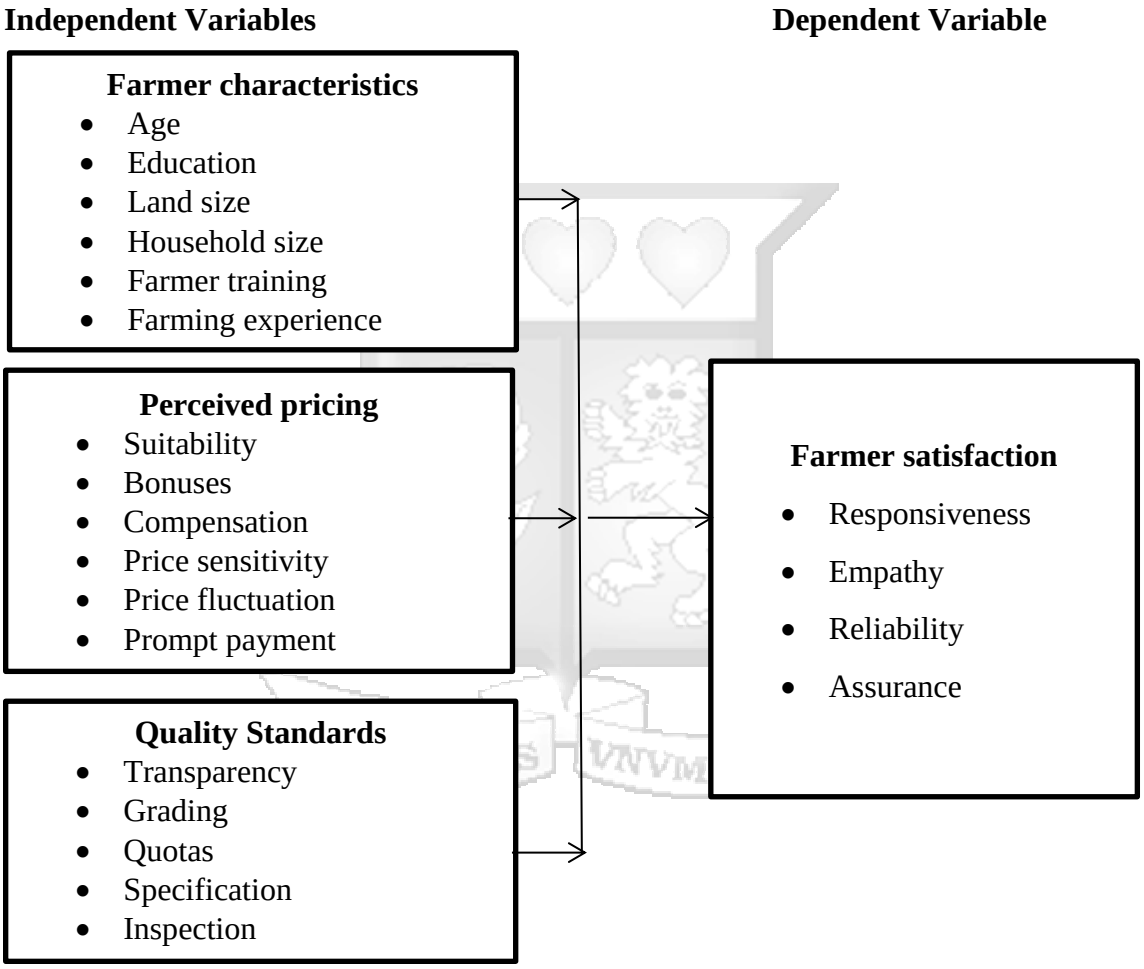


**Figure 2.1: Conceptual framework**

**Source: Researcher (2022)**

**Table 2.2: Operationalization of variables**

| Variables | Indicators | Scale | Source |
|---|---|---|---|
| Farmer characteristics | • Age<br>• Education<br>• Land size<br>• Household size<br>• Farmer training<br>• Farming experience | Nominal<br>Nominal<br>Ordinal<br>Ordinal<br>Ordinal<br>Ordinal | Kanana (2019); Okeyo et al. (2020); Ochieng et al. (2017); Harshana (2019) |
| Perceived pricing | • Suitability<br>• Bonuses<br>• Compensation<br>• Price sensitivity<br>• Price fluctuation<br>• Prompt payment | 5-point Likert scale | Rohani et al. (2019); Kagwiria (2017); Kanana & Mbugua (2019); Harshana (2019 |
| Quality standards | • Transparency<br>• Grading<br>• Quotas<br>• Specification | 5-point Likert scale | Gabagambi (2014); Ochieng et al.(2017); Deekshitha, V., & Shobharani, H. (2019). |
| Farmer satisfaction | • Tangibility<br>• Responsiveness<br>• Empathy<br>• Reliability<br>• Assurance | 5-point Likert scale | Parasuraman et al. (1985); Machimu (2020). |

**Source: Researcher (2022)**

# CHAPTER THREE
# RESEARCH METHODOLOGY

## 3.0 Introduction

This chapter describes the research philosophy, design, the population and study setting, data analysis, reliability and validity of research instruments, and ethical considerations of the study.

## 3.1 Research Philosophy

According to Saunders, Lewis, and Thornhill (2009), there exist five philosophies in management and business research: critical realism, positivism, pragmatism, postmodernism, and interpretivism. Out of these, the positivist research philosophy meets the demands of this study and was used.

The positivist philosophy provides accurate and unambiguous knowledge and its origin can be traced in the works of Auguste Comte, Francis Bacon and other early 20th century scientists and philosophers referred to as the Vienna Circle (Saunders et al., 2009). Epistemologically, positivists aim to discover measurable and observable regularities and facts and focus on research that can be measured and observed that can contribute to producing meaningful and credible data (Chege & Otieno, 2020). The study measured association between variables by collecting information on these variables and analysing their relationships using quantitative methods. Thus, the positivist philosophy was adequate.

## 3.2 Research Design

In this case, a descriptive cross-sectional research design was used as information from farmers was collected during a specified period of time and analysed to report findings. In descriptive research, cross-sectional research is widely adopted to conduct an analysis between variables from which results are interpreted in the area of knowledge (Zangirolami-Raimundo, Echeimberg, & Leone, 2018).

## 3.3 Population and Study Setting

### 3.3.1 Target Population

In this case, 7,678 sorghum farmers in Busia and Siaya Counties as the premier regions that EAML has entered into market-specification contracts with sorghum

farmers as shown in Table 3.1 represented the target population. The two counties were selected due to proximity to the researcher.

**Table 3.1: Target Population**

| Strata (County) | Target Population |
|---|---|
| Busia County | 877 |
| Siaya County | 6,801 |
| **Total** | **7,678** |

**Source: EAML (2022)**

### 3.3.2 Sampling Frame and Size

The sampling frame was acquired from EAML as the list of sorghum farmers in Busia and Siaya Counties who have signed the market-specification contract. In this case, the population is finite and thus the Yamane (1967) sample size formula presented as:

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

$$n = \frac{7,678}{1 + 7,678\ (0.05)^2}$$

$$n = \frac{7,678}{7,679\ (0.0025)}$$

$$n = \frac{7,678}{19.1975}$$

Where:

n = Sample size

N = Population

e = Acceptable sampling error (95%)

The merit of this sample size formula is that one can adjust the margin of error. Using a sampling error of 95%, a sample size of 384 was achieved as shown in Table 3.2. Using the sampling frame, simple random sampling method which is a probability sampling procedure that ensures sample units are well-distributed throughout a

population was used. This approach makes sure that all population members have a balanced opportunity to be selected. To do this, the sampling frame was input in Microsoft Excel software packages from which random samples were assigned and using the random function from which respondents were selected until the desired sample size was reached.

**Table 3.2: Sample size**

| Strata (County) | Population | Sample size |
|---|---|---|
| Busia County | 877 | 44 |
| Siaya County | 6,801 | 340 |
| **Total** | **7,678** | **384** |

**Source: EAML (2022)**

### 3.4 Data collection instrument

The research used a semi-structured questionnaire to collect data from respondents. The collection of standard information from a large sample size can be undertaken by using a questionnaire as they provide the ability of an instrument to gather information that is coherent and consistent for analysis. Roopa and Rani (2012) suggest that questionnaires should have a clear purpose that is associated to research objectives while outlining how the results will be used. Open-ended items were adopted to gather background information while five-point Likert scale items were used to solicit information on study variables. The scale asked respondents to indicate to which extent statements in the instrument were related to them. The questionnaire consisted of perceived pricing (7-items), quality standards (7-items) and farmer satisfaction (13-items).

However, after a pilot study, quality standards items were reduced to four to achieve a higher reliability coefficient. Data collection enumerators were contracted to gather information from farmers using the face-to-face administration of the instrument.

### 3.5 Analysis of Data

The questionnaire was pre-coded to allow for data entry and analysis into Statistical Package for the Social Sciences (SPSS) Version 26.0. (Creswell, 2014), described some critical stages in which analysis of data should be done. In the first step, response rate for a study should be presented; this section included reporting

frequencies on each variable from respondents and descriptive statistics for each of the variables. The mean, frequency, percentages, and standard deviation comprised the descriptive statistics.

The next step of analysis undertook inferential statistical analysis of the data. To do this, the researcher used the weighted mean score for each of Likert scale variables so as to perform correlation and regression analysis between independent and dependent variables. The Pearson's Correlation Coefficient was adopted to determine strength of association while ordinal regression was used to predict independent variables influence on dependent variables. Multicollinearity test which is a diagnostic test required before performing regression analysis was done using the variance inflation factor (VIF) and tolerance values. The regression model used was:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where:

Y = Farmer satisfaction

$\alpha$ = Autonomous function

$\beta_1$, $\beta_2$, and $\beta_3$ = Slope of the function of each function attribute

$X_1$ = Farmer characteristics

$X_2$ = Perceived pricing

$X_3$ = Quality standards

### 3.6 Reliability and Validity

To determine the reliability and validity of the research instrument; a pilot study was conducted among a sample of 10 respondents selected randomly from Busia County. The sample size included in this pilot was not involved in the final data collection process to avoid any sampling bias. The aim of a pilot study is to avoid undertaking the final data collection exercise without being satisfied with the proposed methodology (Malmqvist et al., 2019). Reliability is the degree to which an instrument can be able to deliver consistent outcomes after consequent tests (Roopa & Rani, 2012). In pretesting of questionnaire, there are three forms of reliability that a study should analyse and these include: inter-interviewer, internal consistency and test-retest reliability. The study limited its reliability to internal consistency which

measures how dependable results are for various items of the same construct. This form of reliability is important for instruments that are based on Likert scale data.

Validity is the extent to which a data collection tool measures what it aims to measure (Roopa & Rani, 2012). There are four types of validity that can be adopted for questionnaires, these are: content, criterion, face and construct validity. In this study, content and construct validity was adopted. Content validity looks into how well an instrument captures all aspects of a concept being measured while construct validity aims to determine how well an instrument matches to hypothesis or ideas on variables being measured (Roopa & Rani, 2012). So as to determine content validity, expert judgment was used to decide the content validity of the questionnaire; this means direction and advice on the items in the instrument was sought from professionals in the field of contract farming and farmer satisfaction. In this case, the measure of internal consistency was used to determine the construct validity.

### 3.7 Ethical Considerations

Upon getting clearance from the defence panel, the researcher sought ethical clearance from the Strathmore University Institutional Ethics Review Committee (SU-IERC). The researcher applied for a research permit after from the National Commission for Science, Technology and Innovation (NACOSTI). Ethical considerations were upheld during the data collection exercise. Informed consent was be provided to participants by attaching a cover sheet on the instrument detailing objectives of the study, role of respondents, their rights and duration of filling the instrument.

These were read out to respondents before any interview and along with doing this, respondents were asked for their permission to continue with data collection. The principle of anonymity was also guaranteed for respondents where they were not asked to provide any identifying information when participating in the research. The information provided was held in confidence as the questionnaires from each data collection day were kept under lock and key. In terms of research ethics, it was ensured that all information not from the author was correctly cited and included in the reference list. Further, the data was presented as it was collected and analysed without any manipulation to create a personal narrative.

# CHAPTER FOUR

# PRESENTATION OF RESEARCH FINDINGS

## 4.1 Introduction

This chapter consists of presenting the findings for the study and is thus broken down into several subsections. The subsections covered include the study's response rate, reliability outcomes, demographic information and farmer satisfaction.

## 4.2 Study Response rate

Table 4.1 shows that out of the 384 surveys administered to sorghum farmers under contract farming, 384 were returned and consequently used in this analysis thereby indicating attainment of a 100% response rate. This was achievable as the researcher recruited and trained research assistants from the region and were later engaged in the pilot test to enable them put their knowledge practically. The construction of the surveys was also based on English and Kiswahili and this contributed to easier administration for those respondents not too familiar with English.

**Table 4.1: Response Rate**

| Gender | Number | Percent |
|---|---|---|
| Questionnaires administered | 384 | 100.0 |
| Questionnaires returned | 384 | 100.0 |

## 4.3 Reliability Scores

Table 4.2 shows the Cronbach's correlation coefficients achieved for each of the Likert scale items for each variable after the pilot study. The lowest reliability score was for quality standards which were achieved after deleting three out of the seven items to remain with four items. The reliability scores for perceived pricing and farmer satisfaction were reported as 0.815 and 0.909 respectively from the initial instruments containing 7 and 13 items respectively.

**Table 4.2: Cronbach's Alpha Statistics**

| Variables | Items | Cronbach's Alpha Statistics |
|---|---|---|
| Perceived pricing | 7 | 0.815 |
| Quality Standards | 4 | 0.601 |
| Farmer satisfaction | 13 | 0.909 |

### 4.4 Demographic Information

This subsection of the chapter presents different characteristics of respondents and consists of gender, duration of contract with EAML, gender receiving payment after sale of sorghum, number of trainings received and use of inputs in the last planting season.

#### 4.4.1 Gender

The gender of respondents was not widely different as male respondents accounted for 41.7% while female represented the remaining 58.3% indicating more women were engaged in sorghum CF in Busia and Siaya Counties.

**Table 4.3: Gender of respondents**

| Gender | Frequency | Percent |
|---|---|---|
| Male | 160 | 41.7 |
| Female | 224 | 58.3 |
| **Total** | **384** | **100.0** |

#### 4.4.5 Contract Duration

In terms of the duration respondents had been in CF with EAML, the findings show that majority were in CF for two years and accounted for 46.1 % followed by those with three years represented at 26.8 %. The findings indicate 24% were in contracts for one year while 2.1 % were in CF for four years and respondents with more than four and a half years and more in sorghum CF with EAML represented less than 1 % as shown in Table 4.4.

**Table 4.4: Number of years in EAML Contract**

| Number of years | Frequency | Percent |
|---|---|---|
| 1 year | 92 | 24.0 |
| 2 years | 177 | 46.1 |
| 3 years | 103 | 26.8 |
| 3.5 years | 1 | 0.3 |
| 4 years | 8 | 2.1 |
| 4.5 years | 1 | 0.3 |
| 5 years | 2 | 0.5 |
| **Total** | **384** | **100.0** |

### 4.4.11 Gender receiving payment

In Table 4.5, results indicate that females were the highest in the category of receiving payment from sorghum sold as shown by 52.3% while males accounted for 43.5%. In cases where both female and male received payment, the sample accounted for 4.2%.

**Table 4.5: Gender receiving payment from sorghum sale**

| Gender | Frequency | Percent |
|---|---|---|
| Male | 167 | 43.5 |
| Female | 201 | 52.3 |
| Both | 16 | 4.2 |
| **Total** | **384** | **100.0** |

### 4.4.12 Number of Training in Sorghum Production

Table 4.6 shows that 69.5% of farmers had received training on sorghum farming several times, followed by those who had received training three times accounting for 8.3%, 3.9% had received trainings four times while 3.4 % eight times. The results show that 1.3% had received training once while 2.4% received training six times. These findings imply that EAML provided continuous training in enhancing their production in sorghum farming.

**Table 4.6: Number of trainings received on Sorghum farming**

| Number of times received training | Frequency | Percent |
|---|---|---|
| 3 times | 32 | 8.3 |
| 4 times | 15 | 3.9 |
| 5 times | 2 | 0.5 |
| 6 times | 9 | 2.4 |
| 7 times | 2 | 0.5 |
| 8 times | 13 | 3.4 |
| 9 times | 2 | 0.5 |
| Several times | 267 | 69.5 |
| Once | 5 | 1.3 |
| **Total** | **384** | **100** |

### 4.4.12 Use of Inputs

The output presented in Table 4.7 indicates that more respondents used improved seeds varieties and fertilizer as shown by 86.2% and 95.6% of respondents. On the other hand, fewer respondents used pesticides or herbicides as shown by those who indicated No 87.0% and 99.5% respectively.

**Table 4.7: Use of inputs in last planting season**

| | Yes | | No | |
|---|---|---|---|---|
| **Inputs** | **Frequency** | **Percent** | **Frequency** | **Percent** |
| Improved seed varieties | 331 | 86.2 | 53 | 13.8 |
| Fertilizer | 367 | 95.6 | 17 | 4.4 |
| Pesticides | 50 | 13.0 | 334 | 87.0 |
| Herbicides | 2 | 0.5 | 382 | 99.5 |



### 4.4.13 Intention to sign a new contract

The respondents were asked to indicate if they would sign the market-specification contracts again and majority of respondents answered Yes. This accounted for 86.2% while those indicating No represented 13.8% as shown in Table 4.8, implying satisfaction with contracts.

**Table 4.8: Intention to sign market-specification contract again**

| Would you sign the contract again | Frequency | Percent |
|---|---|---|
| Yes | 331 | 86.2 |
| No | 53 | 13.8 |
| **Total** | **384** | **100.0** |

### 4.4.14 Intention to remain in current contract

A follow up question was asked if respondents would sign the contract again if the terms remained constant. Table 4.9 shows 79.9% of respondents answered yes and the remaining 20.1% answered no. This implies that farmers were satisfied with the terms of the market-specification contracts with EAML.

**Table 4.9: Intention to remain in current contract**

| After this contract ends, would you sign up for another one, assuming the contract terms are unchanged | Frequency | Percent |
|---|---|---|
| Yes | 307 | 79.9 |
| No | 77 | 20.1 |
| **Total** | **384** | **100** |

### 4.4.15 Reason for not continuing with contract

Table 4.10 shows respondents' reasons for resigning from the market-specification contract. This includes low input prices/high input prices/initial setup is expensive (3.4%), low output prices/high input prices/lack of transparency (2.6%), low output prices/high input prices (2.1%), and low output prices/high input prices/unfair contract terms (1.6%). Low prices feature in most selection of responses showing farmers expected better prices for their output.

**Table 4.10: Reason for not continuing with contract**

| Reasons | Frequency | Percent |
|---|---|---|
| Low output prices | 1 | 0.3 |
| Low output prices/high input prices | 8 | 2.1 |
| Low input prices/high input prices/Initial setup is expensive | 13 | 3.4 |
| Initial Setup is expensive | 2 | 0.5 |
| High input prices/initial setup is expensive | 3 | 0.8 |
| Low output prices/High input prices/lack of transparency | 10 | 2.6 |
| Low output prices/high input prices/Unfair contract terms | 6 | 1.6 |
| **Total** | **384** | **100.0** |

## 4.5 Descriptive Statistics

In this subsection of the analysis, the descriptive statistics for each variable is presented and this is done by using measures of central tendency which include the mean and standard deviation.

### 4.5.1 Farmer Satisfaction

The dependent variable was farmer satisfaction which was measured by 13 statements representing four dimensions of satisfaction namely reliability, responsiveness, assurance and empathy, all measured at a five-point Likert scale (1 = Not at all 2 = To a small extent 3 = To some extent 4 = To a moderate extent 5 = To a great extent). Mean and standard deviations show the overall mean score for farmer satisfaction was 4.53 implying respondents agreed to being satisfied with the market-specification contracts as summarized in Table 4.11.

The highest ranked items were farmers agreeing that EAML staff respond to needs of farmers and that EAML offers customer care to farmers as shown by a mean score of 4.85 and 4.77 respectively. These findings suggest farmers were more satisfied with empathy component and this was also evident as farmers agreed that EAML personnel is always ready to respond to farmers' needs as shown by a mean score of 4.70.

However, the least ranked item had a mean score of 4.07 as farmers responded that EAML provides contractual services at the agreed time implying that reliability of the market-specification contracts was not at per with farmers' expectation. Likewise, the dependability of service provided to farmers through CF was ranked low with a mean score of 4.21 indicating there was need for EAML to enhance the reliability component of the market-specification contract with Sorghum farmers in Western Kenya.

**Table 4.11: Mean and standard deviation for farmer satisfaction**

| Farmer Satisfaction | N | Mean | Std. Deviation |
|---|---|---|---|
| EAML provides services to smallholder farmers as per existing contract description | 383 | 4.43 | 0.758 |
| There is dependability on service provision by EAML as per contract description | 384 | 4.21 | 0.799 |
| EAML provides contractual services at the agreed time | 384 | 4.07 | 0.944 |
| EAML always keeps farmers informed | 384 | 4.63 | 0.612 |
| EAML personnel is ready to promptly provide contractual services | 383 | 4.31 | 0.746 |
| EAML personnel is always willing to assist | 384 | 4.63 | 0.607 |

| | | | |
|---|---|---|---|
| farmers | | | |
| EAML personnel is always ready to respond to farmers' needs | 384 | 4.70 | 0.539 |
| I have confidence in EAML leadership and management | 383 | 4.46 | 0.707 |
| EAML makes farmers feel safe during contractual service delivery | 383 | 4.54 | 0.642 |
| EAML is Consistent on contractual services delivery | 384 | 4.60 | 0.630 |
| I have confidence in EAML's staff knowledge in providing contractual services | 383 | 4.67 | 0.585 |
| EAML staff offers customer care to farmers | 384 | 4.77 | 0.477 |
| EAML staff's respond to the needs of farmers | 384 | 4.85 | 0.425 |
| **Overall mean score** | | **4.53** | **0.652** |

### 4.5.2 Farmer Characteristics and Farmers' Satisfaction with Market-Specification Contracts

Table 4.12 provides the descriptive findings from which it was observed that the mean age for the sample was 42 years and the mean years in education for respondents were 11 years. The average sorghum farming experience was shown to stand at nine years with two years being the average duration of farmers in the market-specification contract with EAML. The average household size among respondents was five members which is higher than the national average which is four members. In terms of farm size, three acres was the average size of land in the sample with one and half acres under sorghum cultivation. The average quantity of sorghum produced from the sample was 700 kilograms with farmers able to sell an average of 650 kilograms.

**Table 4.12: Farmer Characteristics Descriptive Statistics**

| Variable | Mean | Std. Deviation |
|---|---|---|
| Gender | 1.58 | 0.493 |
| Age | 41.664 | 10.179 |
| Education | 11.00 | 3.610 |
| Sorghum farming (years) | 9.35 | 6.316 |
| EAML Contract Duration | 2.10 | 0.808 |
| Household size | 5.39 | 2.049 |
| Farm size (acres) | 2.71 | 2.098 |
| Sorghum cultivation (acres) | 1.49 | 1.686 |

| | | |
|---|---|---|
| Quantity produced from acreage (Kgs) | 715.35 | 736.141 |
| How much sorghum was sold (Kgs) | 648.54 | 986.684 |

### 4.5.3 Perceived pricing and Farmer's satisfaction with Market-Specification contracts

The second independent variable was perceived pricing which was measured by seven statements ranked on a five-point Likert scale. This data was analysed using mean and standard deviation scores summarized in Table 4.13. The output indicates an overall mean score of 3.96 which implies moderate agreement with the statements on pricing of market-specification contracts. The individual item mean scores indicate that farmers agreed with regulations placed on the price and the method of payment as shown by a mean score of 4.33 and standard deviation of 0.789. The second ranked items were farmers agreeing to entering into contracts due to pricing sensitivity provided and pricing formula for sorghum produce as shown by a mean score of 4.23.

The farmers disagreed with the statement that price fluctuation influenced their participation in market-specification contracts as shown by a mean score 2.94 and standard deviation 1.535. This implies that price fluctuations imposed onto farmers in market-specification contracts was the least desired component and EAML should make efforts to address this fact. The farmers were in moderate agreement that pricing structures were suitable for the time and effort taken in producing sorghum as indicated by a mean score of 3.66 and 0.942 standard deviation.



**Table 4.13: Mean and standard deviation for perceived pricing**

| Perceived Pricing | N | Mean | Std. Deviation |
|---|---|---|---|
| The price of sorghum produce was agreed upon between the farmers and the contracting company | 384 | 4.22 | 0.894 |
| The pricing structures are suitable for the time and effort I take in producing sorghum | 384 | 3.66 | 0.942 |
| I am in support with the pricing formula for sorghum produce that is in the contract | 384 | 4.23 | 0.936 |
| The market-specification contracts reduce income (price) risks that arise from fluctuations in commodity price | 384 | 4.10 | 0.974 |

| | | | |
|---|---|---|---|
| I agree with the regulations placed on the price and the method of payment | 384 | 4.33 | 0.789 |
| I entered into the contract due to the pricing sensitivity provided by the agreement | 384 | 4.23 | 0.856 |
| The price fluctuation influences my participation in market-specification contracts | 384 | 2.94 | 1.535 |
| **Overall mean score** | | **3.96** | **0.990** |

### 4.5.4 Quality Standards and Farmer's satisfaction with Market-Specification contracts

The third independent variable was quality standards set in the market-specification contracts with market farmers in Western Kenya, where four statements were used to measure the variable on a five-point Likert scale. An overall mean score of 3.88 implies moderate agreement with the items as shown in Table 4.14. The findings reveal farmers' disagreement that perceived manipulation of quality standards in market-specification contracts as shown by a mean score of 2.64 and 1.381 standard deviation. This implies confidence of respondents with content and description of market-specification contract with EAML. The respondents agreed that designing of contracts was done with more transparency on grading process (M=4.41, SD =0.767), The supporting criteria used to determine acceptable and unacceptable quality of sorghum produced (M=4.34, SD =0.808), and that quality control system in the market-specification contract is devoid of deficiencies (M=4.14, SD =0.924).

**Table 4.14: Mean and standard deviation for quality standards**

| Quality Standards | N | Mean | Std. Deviation |
|---|---|---|---|
| There is perceived manipulation of quality standards in market-specification contracts | 384 | 2.64 | 1.381 |
| I support the criteria used to determine acceptable and unacceptable quality of sorghum produced | 384 | 4.34 | 0.808 |
| The quality control system in the market-specification contract is devoid of deficiencies | 384 | 4.14 | 0.924 |
| The designing of contracts was done with more transparency on grading process | 384 | 4.41 | 0.767 |

| | | |
|---|---|---|
| **Overall mean score** | **3.88** | **0.970** |

### 4.6 Correlation Analysis

Table 4.15 shows the findings from the Pearson's correlation analysis that indicate positive and significant associations were present between education ($r = 0.170$, $p < 0.05$), sorghum farming experience in years ($r = 0.339$, $p < 0.05$), farm size ($r = 0.204$, $p < 0.05$), land under sorghum production ($r = 0.220$, $p < 0.05$), quantity produced from acreage ($r = 0.272$, $p < 0.05$), amount of sorghum sold ($r = 0.199$, $p < 0.05$), perceived pricing ($r = 0.605$, $p < 0.05$), quality standards ($r = 0.450$, $p < 0.05$) and the dependent variable farmer satisfaction with CF. However, positive and insignificant correlations were observed between contract duration, household size and farmer satisfaction with CF. Moreover, negative associations were observed between gender ($r = -0.067$, $p > 0.05$), age ($r = -0.047$, $p > 0.05$), and farmer satisfaction with CF.

**Table 4.15: Pearson's Correlation Analysis**

| Variables | Pearson Correlation | Sig. (2-tailed) |
|---|---|---|
| Gender | -0.067 | 0.189 |
| Age | -0.047 | 0.361 |
| Education | .170** | 0.001 |
| Farming experience | .339** | 0.000 |
| Contract Duration | 0.084 | 0.101 |
| Household size | 0.058 | 0.257 |
| Farm size (acres) | .204** | 0.000 |
| Sorghum cultivated | .220** | 0.000 |
| Sorghum produced (kgs) | .272** | 0.000 |
| Sorghum sold (kgs) | .199** | 0.000 |
| Perceived pricing | .605** | 0.000 |
| Quality Standards | .450** | 0.000 |

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

### 4.7 Diagnostic Statistics

The diagnostic tests conducted was the variance inflation factors (VIF) and tolerance values used to check for multicollinearity in data before performing linear regression analysis.

### 4.7.2 Multicollinearity

In interpreting results of a multicollinearity tests, the rule of thumb is to observe that the VIF values are less than 10 and that tolerance values are less than 1. Based on this criterion, output in Table 4.15 indicates no multicollinearity present in the data as the tolerance values were less than 1 and the VIF were less than 5.

**Table 4.16: VIF and Tolerance Statistics**

| | Collinearity Statistics | |
|---|---|---|
| **Variables** | **Tolerance** | **VIF** |
| Gender | 0.917 | 1.090 |
| Age | 0.480 | 2.081 |
| Education | 0.758 | 1.319 |
| Farming experience | 0.571 | 1.752 |
| Contract Duration | 0.773 | 1.293 |
| Household size | 0.694 | 1.440 |
| Farm size (acres) | 0.810 | 1.235 |
| Sorghum cultivated | 0.787 | 1.270 |
| Sorghum produced (Kgs) | 0.672 | 1.488 |
| Sorghum sold (Kgs) | 0.745 | 1.342 |
| Perceived pricing | 0.660 | 1.515 |
| Quality Standards | 0.738 | 1.355 |

a Dependent Variable: Farmer Satisfaction



## 4.8 Regression analysis

A multiple linear regression was done to determine the combined effect of the independent variables on farmer satisfaction with sorghum CF under EAML. This subsection of the analysis is thus presented under the three outputs from this analysis.

### 4.8.1 Model Summary

The model summary output provides information on the combined effect of the proposed model to explaining change or variation in dependent variables. In this case, Table 4.17 indicates that farmer characteristics, perceived pricing and quality standards explained 52.4% ($R^2 = 0.524$) of change in farmer satisfaction with sorghum CF under EAML.

**Table 4.17: Model Summary Output**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .724[a] | .524 | .508 | .29616 |

a Predictors: (Constant), gender, age, education, farming experience, contract duration, household size, farm size, sorghum cultivated, sorghum produced, sorghum sold, perceived pricing and quality standards

### 4.8.2 Analysis of Variance

The analysis of variance (ANOVA), output shows significance of a regression model as explained by the F statistic and the significance level reported. Table 4.18 shows the model was significant $F$ (12, 372) = 34.005, $p < 0.05$) in explaining 52.4% of farmer satisfaction with CF.

**Table 4.18: ANOVA[a] Output**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 35.792 | 12 | 2.983 | 34.005 | .000[b] |
| | Residual | 32.542 | 371 | .088 | | |
| | Total | 68.334 | 383 | | | |

a Predictors: (Constant), gender, age, education, farming experience, contract duration, household size, farm size, sorghum cultivated, sorghum produced, sorghum sold, perceived pricing quality standards

### 4.8.3 Coefficients

Table 4.19 shows effect and direction of each independent variable on farmer satisfaction with sorghum CF after performing multiple regression analysis. The finding indicates that age negatively influenced ($\beta$ = -0.010, $p < 0.05$) farmer satisfaction implying that an increase in age resulted in less satisfaction with CF. Sorghum farming experience had a positive and significant ($\beta$ = 0.025, $p < 0.05$) effect on farmer satisfaction with CF and this was also observed for perceived pricing ($\beta$ = 0.315, $p < 0.05$) and quality standards ($\beta$ = 0.192, $p < 0.05$).

These findings imply an increase in sorghum farming experience, perceived pricing, and quality standards would yield greater farmer satisfaction with sorghum market-specification contracts while an increase in age of farmer reduced this farmer satisfaction. Moreover, other results show that contract duration ($\beta$ = -0.008, $p > 0.05$)

and household size ($\beta$ = -0.004, $p$ > 0.05) had a negative but insignificant effect on farmer satisfaction with market-specification contracts. Farm size ($\beta$ = 0.012, $p$ > 0.05), sorghum cultivated ($\beta$ = 0.006, $p$ > 0.05), sorghum produced ($\beta$ = 0.00003, $p$ > 0.05), and sorghum sold ($\beta$ = 0.00002, $p$ > 0.05) had positive and insignificant effects on farmer satisfaction with sorghum market-specification contracts.

The implication of the results revealed that an increase in the age of farmers would result in a reduced level of satisfaction with market specification contracts. Meanwhile, an increase in the number of years that a farmer has cultivated sorghum would result in an increase in farmers' satisfaction with market specification contracts. The analysis also showed that an increase in price would lead to farmer satisfaction with market specification contracts as expected while quality standards demanded by EAML would result in farmer satisfaction as farmers made concerted efforts to improve the quality of sorghum produced.

**Table 4.19: Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 2.579 | .182 | | 14.174 | .000 |
| | Gender | .009 | .032 | .010 | .271 | .786 |
| | Age | -.010 | .002 | -.249 | -4.806 | .000 |
| | Education | .008 | .005 | .072 | 1.757 | .080 |
| | Farming experience | .026 | .003 | .381 | 8.012 | .000 |
| | Contract Duration | -.008 | .022 | -.015 | -.364 | .716 |
| | Household size | -.004 | .009 | -.021 | -.481 | .630 |
| | Farm size (acres) | .012 | .008 | .059 | 1.481 | .139 |
| | Sorghum cultivated (acres) | .006 | .010 | .024 | .599 | .549 |
| | Sorghum produced (Kgs) | 0.00003 | .000 | .056 | 1.283 | .200 |
| | Sorghum sold (Kgs) | 0.00002 | .000 | .054 | 1.303 | .193 |
| | Perceived pricing | .315 | .037 | .378 | 8.555 | .000 |
| | Quality standards | .192 | .036 | .226 | 5.407 | .000 |

a. Dependent Variable: Farmer Satisfaction

## 4.9 Chapter Summary

This chapter consisted of presenting the findings for the study and is thus broken down into several subsections. The subsections covered include the study's response rate, reliability outcomes, demographic information and farmer satisfaction.

# CHAPTER FIVE
# SUMMARY, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

## 5.0 Introduction

This chapter provides a summary of each chapter of this research followed by a discussion for each specific objective where literature reviewed in chapter two is used to determine corroboration or disagreement with previous studies. A subsection of conclusions for each objective is also presented along with recommendations for action and suggestions for areas of further research.

## 5.1 Summary

This research delved into sorghum farmers' satisfaction with market-specification contracts in Western Kenya. The study was guided by three specific objectives which aimed to: determine influence of farmer characteristics, perceived pricing and quality standards on sorghum farmers' satisfaction with market-specification contracts in Western Kenya. A descriptive research design was adopted targeting a population of 7,768 sorghum farmers in Busia and Siaya Counties from which 384 farmers were reached. A simple random sampling procedure was adopted to recruit respondents into the sample and was administered through a semi-structured questionnaire after confirming its reliability and validity. The data was analysed using descriptive, correlation and multiple regression analysis methods with findings presented in tables and supported by interpretations.

The mean age for the sample was 42 years and the mean years in education for respondents were 11 years. The average sorghum farming experience was shown to stand at nine years with two years being the average duration of farmers in the market-specification contract with EAML. The average household size among respondents was five members which is higher than the national average which is four members. In terms of farm size, three acres was the average size of land in the sample with one and half acres under sorghum cultivation. The average quantity of sorghum produced from the sample was 700 kilograms with farmers able to sell an average of 650 kilograms. Farmer characteristics, perceived pricing and quality standards influenced farmer satisfaction with market-specification contracts by 52.4%.

Based on each of the variables considered, age negatively affected ($\beta = -0.010$, $p < 0.05$) farmer satisfaction implying that an increase in age resulted in less satisfaction with CF. Sorghum farming experience had a positive and significant ($\beta = 0.025$, $p < 0.05$) effect on farmer satisfaction with CF and this was also observed for perceived pricing ($\beta = 0.315$, $p < 0.05$) and quality standards ($\beta = 0.192$, $p < 0.05$). These findings imply an increase in sorghum farming experience, perceived pricing and quality standards would yield greater farmer satisfaction with sorghum market-specification contracts while an increase in age of farmer reduced this farmer satisfaction.

## 5.2 Discussion

### 5.2.1 Farmer Characteristics and Farmers' Satisfaction with Market-Specification Contracts

The study's first objective was to determine influence of farmer characteristics on sorghum farmers' satisfaction with market-specification contracts in Western Kenya. The farmer characteristics considered included gender, age, farming experience, contract duration, household and farm size. The gender was categorized as either male or female while years were used to measure age, education, contract duration, and farming experience. The farm size variable was measured by number of acres owned by the farmer.

Out of these characteristics, farming experience was found to have a positive effect on farmer satisfaction with market-specification contracts corroborating past studies that have found similar effects. This finding can be attributed to the fact that the EAML market-specification contract was recently introduced and the farmers with higher experience in sorghum farming see the benefit from entering into contract farming with EAML.

The age of respondents was found to have a negative effect on farmer satisfaction with market-specification contracts indicating that an increase in age would result in less satisfaction. This result goes against findings of Ochieng et al. (2017) which established that years in education, age, annual income, and gender of household head did not have any influence on farmer attitudes toward contracts.

Other characteristics including gender, contract duration, farm size, and education did not have any relationship with farmer satisfaction. This has been observed in earlier research such as that of Seba (2016) which found no conclusive evidence existed to indicate that farm size, education, gender, or household labour empowerment influenced satisfaction with CF. The study found education did not have any effects on farmer satisfaction with market-specifications corroborating the findings from Ochieng et al. (2017) research among vegetable farmers which provided no evidence of any relationship between education of farmers and influence on their attitudes toward contract farming.

### 5.2.2 Perceived Pricing and Farmers' Satisfaction with Market-Specification Contracts

The second objective examined role of perceived pricing on sorghum farmers' satisfaction with market-specification contracts in Western Kenya. Seven statements rated on five point Likert scale were used to measure this variable from which an overall mean score of 3.96 was achieved indicating moderate agreement of farmers with these statements. For the most part, farmers agreed with the pricing specified in contracts but farmers indicated not being motivated to enter into contract farming due to market price fluctuations. The regression analysis revealed that an increase in perceived pricing would contribute to a 0.315 increase of farmer satisfaction with market-specification contracts.

This finding agrees with the transaction cost theory (TCT) which adopted a theoretical framework for this research. Market-specification contracts provide farmers opportunities that allow them to achieve a premium price and ready market for sorghum. The findings agree with earlier studies that found pricing factors to be influential in predicting satisfaction of farmers in CF. Undertaking their research in Spain, (Hernández-Espallardo et al., 2009) observed that liquidation price was more preferred by farmers to predict their satisfaction with cooperative contracts than their readiness to remain members. Likewise, (Kulkarn & Grethe, 2020) results revealed significant variations on the levels of satisfaction with non-contract and contract farmers on offered market prices, indicating that perceived pricing was influential in CF satisfaction.

The positive effects of pricing on satisfaction with CF have also been observed in Kenya. (Kanana and Mbugua ,2019) results indicated annual average income of farmers increased after entering CF and this was associated with high prices and high yields offered, hence satisfaction with these contracts. In earlier research, (Kagwiria, 2017) found a positive effect of product pricing on participation in CF alluding to farmers' satisfaction with product pricing.

According to (Prager et al., 2020), market-specification contracts can be described by actions of the buying company providing assurances and guarantees of a certain premium which reduces price (income) risks that come from fluctuations in prices of commodity, guaranteeing that a producer can locate a market for their produce. The price fluctuation in sorghum markets did not minimize participation in market-specification contracts implying that market prices change in sale of sorghum were a determinant for their decision to enter into CF. This evidence was supported by (Kagwiria, 2017) study which also found that farmers' participation in CF was motivated by price fluctuations of their product.

### 5.2.3 Quality Standards and Farmers' Satisfaction with Market-Specification Contracts

The third objective assessed influence of the role of quality standards on sorghum farmers' satisfaction with market-specification contracts in Western Kenya. This variable was measured by four statements which were measured on five-point Likert scale. The obtained overall mean score was 3.88 indicating respondents were in moderate agreement with these statements. Respondents acknowledged feeling not manipulated with the market-specification contracts from EAML and for the most part were satisfied with criteria used to select and determine quality of sorghum produced.

The regression analysis that showed quality standards had a positive effect on farmer satisfaction with market-specification contracts had a 0.192 unit increase. The results support the adoption of TCT as a theoretical framework for this study as quality standards for sorghum are significant when making sales to large buyers. The TCT explains that a contract is justified when large companies (EAML) are buyers and fit

for a product (sorghum) that involves difficult technical production to attain higher and required quality by the market.

The quality standards described in CF has also been found to influence positive perceptions of farmers towards CF elsewhere. (Kiriveldeniya & Rosairo, 2020) investigation revealed that farmers trusted the firms they were in contracts with based on their increased quality of produce indicating satisfaction with their market-specification contracts. The study found that majority (69.5%) of farmers had participated in several training sessions with EAML and this explains the ability of farmers to be able to meet quality standards specified in contracts.

Other research studies however have revealed farmer dissatisfaction with market-specification contracts, hence disagreeing with this study's finding. One such study was conducted by (Väth, Gobien, & Kirk 2019) which found that farmers had a lower bargaining position on the contracts as they were not able to clearly identify the specified quality standards, thus were less satisfied with the contracts. This dissatisfaction was also experienced in India where (Deekshitha &Shobharani, 2019) revealed that the major problem faced by farmers with market-specification contracts was manipulation of quality specifications as farmers struggled to maintain quality standards. The majority of farmers indicated dissatisfaction with these contracts.

Majority of evidence from past research continued to show that quality standards was a challenge for farmers and thus this variable negatively affected their satisfaction with market-specification contracts. In Sri Lanka, (Wijesooriya & Champika, 2015) also found that farmers struggled to deliver required standards of quality specified in their contracts thus contributing to their dissatisfaction. (Machimu 2020) also showed that farmers were highly dissatisfied (unacceptable quality) with the CF services received.

## 5.3 Conclusion

### 5.3.1 Farmer Characteristics and Farmers' Satisfaction with Market-Specification Contracts

The study's first objective was to determine influence of farmer characteristics on sorghum farmers' satisfaction with market-specification contracts in Western Kenya. Based on the findings, it is this study's conclusion that age negatively affected

satisfaction with market-specification contracts while farming experience had a positive effect on farmer satisfaction with sorghum market-specification contracts.

### 5.3.2 Perceived Pricing and Farmers' Satisfaction with Market-Specification Contracts

The second objective examined role of perceived pricing on sorghum farmers' satisfaction with market-specification contracts in Western Kenya. The findings lead to this study's conclusion that perceived pricing in market-specification contracts contributed positively to farmers' satisfaction with contract farming.

### 5.3.3 Quality Standards and Farmers' Satisfaction with Market-Specification Contracts

The third objective assessed influence of role of quality standards on sorghum farmers' satisfaction with market-specification contracts in Western Kenya. Based on the findings, the study concludes that quality standards specified in farmers' contracts with EAML contributed positively to farmer satisfaction with these contracts.

## 5.4 Recommendations

In terms of farmer characteristics, the findings revealed that age negatively affected farmer satisfaction with market-specification contracts and it this study's recommendation that EAML constantly improve their communication on contract farming for older farmers to motivate their participation and provide an opportunity for them to share their sources of dissatisfaction.

The results indicated that perceived pricing of market-specification contracts had a positive effect on farmer satisfaction with contract farming with EAML. The study recommends EAML should continuously monitor and adjust their prices to be competitive to avoid side selling of sorghum produce and motivate farmers to increase sorghum production.

The findings showed quality standards positively influenced farmers' satisfaction with market-specification contracts. It is therefore this study's recommendation that EAML should continue with the continuous training, farm visits and sensitizations it provides to farmers on enhancing the quality of their produce which has contributed to their capability to meet the quality standards specified in the contracts.

## 5.5 Limitations of the Study

Budget constraints, tight timelines, accessibility to rural homesteads, language barrier and poor communication between the researcher and enumerator were some of the hurdles encountered during the study. As enumerators were involved in the research, there was a lot of engagements to be done on the payment terms and plan for administering the questionnaires. This ended up digging into the time the data collection exercise would be executed. As part of the population resided in rural homesteads, it was sometimes vital to communicate in the native language so as to get accurate data. Enumerators who are cognizant of the culture and language of such places were involved in this. The whole data collection exercise was intended to be done in 10 days but ended up being finished in 30 days. Inaccessibility to some of the regions where farmers are located, the use of few enumerators for the exercise due to budget constraints and poor communication between the researcher and enumerators were some of the reasons that led to a delay in data collection.

## 5.6 Areas of Further Research

Age negatively affected farmer satisfaction with market specification contracts. There is need for future studies to explore into what factors contribute to older farmers dissatisfaction with market-specification contacts. This study would be conducted qualitatively among a small sample of farmers in Western Kenya.

# APPENDICES

## APPENDIX 1: INFORMED CONSENT FORM

**Title of Study: Sorghum Farmers Satisfaction with Market Specification Contracts in Western Kenya**

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**Purpose of the Study**

You are being asked to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information. The purpose of this study is to assess the influence of job training on job satisfaction among graduate management trainees in commercial banks in Kenya

**Study Procedures**

You will be required to fill out a questionnaire that will be administered by the principal investigator which will be dropped at your organisation and picked two weeks later.

**Risks**

There are no foreseeable risks to you in taking part in this research. The principal investigator will not be liable for any health issues, physical or psychological, which may arise during the data collection process.

**Benefits**

There will be no direct benefit to you for your participation in this study. However, we hope that the information obtained from this study may assist policy makers in

enhancing design and implementation of graduate management training in commercial banks.

**Confidentiality**

Your responses to this questionnaire will be anonymous. Every effort will be made by the researcher to preserve your confidentiality including assigning code names/numbers for participants that will be used on all research notes and documents.

**Contact Information**

If you have questions at any time about this study, you may contact the researcher whose contact information is provided on the first page. If you have questions regarding your rights as a research participant, or if problems arise which you do not feel you can discuss with the Primary Investigator, please contact the Strathmore University Institution Review Board at Tel (+254) 703-034-363.

**Voluntary Information**

Your participation in this study is voluntary. If you decide to take part in this study, you will be asked to give verbal consent to be interviewed. After giving verbal consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the researcher. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

**Consent**

I have read, and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Signature/Initials: ……..

## APPENDIX 2: QUESTIONNAIRE FOR CF SORGHUM FARMERS

**Section One: Background information**

1. What is your gender?

Male ( )

Female ( )

2. What is your exact age? …….

3. What is the number of years in school? ……

5. How many years have you been involved in sorghum farming? ……..

6. How long have you been in a contract with EAML? ……

7. What is your household size? (Number of people living and sharing a meal together in that house) ……..

8. a) What is your farm size (in acres)? ……

b) Of this, how much acreage is under sorghum production? …….

9. a) What was the quantity in kg harvested from the last production? .....

b) How much of this was sold? …….

c) Please select the gender of who sold

Male ( )

Female ( )

Both ( )

10. Have many times have you received training on sorghum farming? ……

11. In the latest planting season, did you use the following (Select all that apply):

| | | |
|---|---|---|
| Improved seed varieties | Yes ( ) | No ( ) |
| Fertilizer | Yes ( ) | No ( ) |
| Pesticides | Yes ( ) | No ( ) |
| Herbicides | Yes ( ) | No ( ) |

**Section Two: Perceived pricing**

This section of the questionnaire presents statements on perceived pricing received; you are asked to indicate to what extent these statements apply to you. The options

presented are (1 = Not at all 2 = To a small extent 3 = To some extent 4 = To a moderate extent 5 = To a great extent).

| Statements | | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 12 | The price of sorghum produce was agreed upon between the farmers and the contracting company | | | | | |
| 13 | The pricing structures are suitable for the time and effort I take in producing sorghum | | | | | |
| 14 | I am in support with the pricing formula for sorghum produce that is in the contract | | | | | |
| 15 | The market-specification contracts reduce income (price) risks that arise from fluctuations in commodity price | | | | | |
| 16 | I agree with the regulations placed on the price and the method of payment | | | | | |
| 17 | I entered into the contract due to the pricing sensitivity provided by the agreement | | | | | |
| 18 | The price fluctuation minimizes my participation in market-specification contracts | | | | | |

**Section Three: Quality standards**

In this section, statements on quality standards are presented; you are asked to indicate to what extent these statements apply to you. The options presented are: (1 = Not at all 2 = To a small extent 3 = To some extent 4 = To a moderate extent 5 = To a great extent).

| Statements | | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 19 | The product quality measures defined by the contract are acceptable to me | | | | | |
| 20 | There is perceived manipulation of quality standards in market-specification contracts | | | | | |
| 21 | The specified quality standards ensure that I get the required inputs to enhance my farm productivity | | | | | |
| 22 | I possess the ability to meet company expectations of quality | | | | | |
| 23 | I support the criteria used to determine acceptable and unacceptable quality of sorghum produced | | | | | |
| 24 | The quality control system in the market-specification contract is devoid of deficiencies | | | | | |
| 25 | The designing of contracts was done with more transparency on grading process | | | | | |

**Section Four: Farmer satisfaction**

This section presents statements on your satisfaction with market-specification contract you entered with EAML. You are asked to indicate your level of agreement with the statements. The options presented are: (1 = Not at all 2 = To a small extent 3 = To some extent 4 = To a moderate extent 5 = To a great extent).

| Statements | | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| **Reliability** | | | | | | |
| 26 | EAML provides services to smallholder farmers as per existing contract description | | | | | |
| 27 | There is dependability on service provision by EAML as per contract description | | | | | |
| 28 | EAML provides contractual services at the agreed time | | | | | |
| 29 | EAML always keeps farmers informed | | | | | |
| **Responsiveness** | | | | | | |
| 30 | EAML personnel is ready to promptly provide contractual services | | | | | |
| 31 | EAML personnel is always willing to assist farmers | | | | | |
| 32 | EAML personnel is always ready to respond to farmers' needs | | | | | |
| **Assurance** | | | | | | |
| 33 | I have confidence in EAML leadership and management | | | | | |
| 34 | EAML makes farmers feel safe during contractual service delivery | | | | | |
| 35 | EAML is Consistent on contractual services delivery | | | | | |
| 36 | I have confidence in EAML's staff knowledge in providing contractual services | | | | | |
| **Empathy** | | | | | | |
| 37 | EAML staff offers customer care to farmers | | | | | |
| 38 | EAML staff's respond to the needs of farmers | | | | | |

39. a. If you had the chance to go back in time, would you sign the contract again?

Yes ( )

No ( )

b. If not, why would you not sign the contract again? (Please select up to 3 responses)

Unfair contract terms ( )

Low output prices ( )

High input prices ( )

Lack of transparency/honesty ( )

Initial set-up is too expensive ( )

38. After this contract ends, would you sign up for another one, assuming the contract terms are unchanged?

Yes ( )

Why?

……

……

……

……

No ( )

Why?

……

……

……

……

# APPENDIX 3: ETHICAL APPROVAL

Strathmore UNIVERSITY

**29th July 2022**

Mr Waititu, Hezekiel
zekielchege@gmail.com

Dear Mr Waititu,

**RE: Determinants of Farmer Satisfaction With Market Specification Contracts Among Sorghum Farmers In Western Kenya**

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU- master's** research proposal. Your application reference number is **SU-ISERC1446/22.** The approval period is **29th July 2022 to 28th July 2023.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 48 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 48 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to SU-ISERC.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) https://research-portal.nacosti.go.ke/ and obtain other clearances needed.

Yours sincerely,

for: **Dr Ben Ngoye,**
**Secretary; SU-ISERC**

STRATHMORE UNIVERSITY INSTITUTIONAL SCIENTIFIC AND ETHICAL REVIEW COMMITTEE
(SU-ISERC)
29 Jul 2022
Email:ethicsreview@strathmore.edu
P.O BOX 59857-00200
NAIROBI-KENYA

**Cc: Prof Fred Were,**
**Chairperson; SU-ISERC**

# APPENDIX 3: RESEARCH PERMIT

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **394376**

Date of Issue: **21/August/2022**

## RESEARCH LICENSE

**This is to Certify that Mr.. Hezekiel Chege Waititu of Strathmore University, has been licensed to conduct research in Busia, Siaya on the topic: DETERMINANTS OF FARMER SATISFACTION WITH MARKET SPECIFICATION CONTRACTS AMONG SORGHUM FARMERS IN WESTERN KENYA for the period ending : 21/August/2023.**

License No: **NACOSTI/P/22/19769**

**394376**

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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