DETERMINANTS OF CREDIT ACCESS AMONG SMALLHOLDER TEA FARMERS IN KERICHO COUNTY, KENYA

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A Thesis Submitted to the Board of Graduate Studies in Partial Fulfillment of the Requirements for the Conferment of the Degree of Master of Science in Agricultural Economics and Resource Management of University of Kabianga

UNIVERSITY OF KABIANGA

SEPTEMBER 2026

DECLARATION AND APPROVAL

Declaration

This thesis is my original work and has not been presented for the conferment of a degree or award of a diploma in this or any other University:

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DEDICATION

This thesis is dedicated to my parents for their constant encouragement and unceasing support during the entire period of my studies. I also dedicate this thesis to my wife for her moral, financial and social support. May Almighty God abundantly reward all of you.

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ABSTRACT

Tea is Kenya's leading foreign exchange earner, contributing approximately 23% of total export earnings in 2023. The tea industry has potential for further economic development as global tea consumption continues to grow. In Kericho County, smallholder tea farmers face persistent challenges in accessing financial services despite the presence of several credit service providers. There was inadequate empirical evidence on the determinants of credit access among these farmers. This study analyzed the determinants of credit access among smallholder tea farmers in Kericho County, Kenya, and examined the effect of credit access on farmer performance. A total of 150 respondents were sampled from 109,401 growers across 11 tea factories using multistage sampling and structured questionnaires. The study was guided by Rational Choice Theory and adopted an explanatory research design. Binary logistic regression tested the determinants of credit access, while multinomial logistic regression analyzed the relationship between credit access and farmer performance. Farm characteristics, particularly land size ($p=0.003<0.05$, $b=1.058$) and number of tea bushes ($p=0.000<0.05$, $b=0.001$), significantly influenced credit access. Among farmer characteristics, gender ($p=0.003<0.05$, $b=2.411$) was significant, with female farmers having greater access to loans. Farming experience ($p=0.014<0.05$, $b=-0.254$) was also significant; experienced farmers were less likely to seek loans, possibly due to reliance on self-financing. Age ($p=0.063>0.05$), education level, savings culture, and farming income were not statistically significant predictors of credit access. Farm activities including crop types and collateral use were similarly non-significant. Access to credit positively influenced productivity, tea quality, and earnings. The study is significant in that it provides empirical evidence to inform policymakers, financial institutions, and KTDA in designing targeted credit solutions for smallholder tea farmers, a population critical to Kenya's export economy yet under-served by formal credit systems. The study concludes that land size, number of tea bushes, and gender are the key determinants of credit access, and recommends enhancement of financial literacy programmes and targeted credit products for male farmers and those with limited landholdings to promote equitable growth in the tea sector.

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LIST OF ABBREVIATIONS AND ACRONYMS

AFC	Agricultural Finance Corporation
ASCRAs	Accumulating Savings and Credit Associations
ERSWC	Economic Recovery Strategy for Wealth and Employment Creation
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GoK	Government of Kenya
IDA	International Development Association
K-REP	Kenya Rural Enterprise Program
KTDA	Kenya Tea Development Agency
MoA	Ministry of Agriculture
NACOSTI	National Commission of Science and Technology
SMEs	Small and Medium Enterprises

OPERATIONAL DEFINITION OF TERMS

Access	The ability or opportunity to make use of a resource or service. In a financial context, access broadly refers to the availability and utilisation of financial services and products, including savings, insurance, and credit facilities (IFC, 2019). It differs from credit access in that it encompasses all financial services, not only credit.
Bodaboda	Term used for motorcycles and bicycles used for taxis and commercial transportation in Kenya.
Credit access	The ability of smallholder tea farmers to obtain control over money or assets from money lenders under agreed terms and conditions. Generally, credit access refers to the capacity of an individual or entity to obtain financial resources through formal or informal lending channels (World Bank, 2022). In the context of this study, credit access refers specifically to the ability of smallholder tea farmers in Kericho County to

	obtain money or financial assets from formal, semi-formal, or informal lending institutions under agreed terms and conditions.
Credit	Money or assets obtained from money lenders by smallholder tea farmers under agreed terms and conditions. According to Guarcello, Mealli, and Rosati (2010), credit is the purchase of money for use now with the assurance that it would be repaid later on a predetermined schedule and at a certain cost determined by the interest rate.
Determinants	A set of farm and farmer characteristics that decisively influences the ability of smallholder tea farmers to obtain credit from financial institutions or other credit service providers.
Formal credit sources	Institutions whose services are regulated by the Banking Act and licensed to disburse credit by the Central Bank of Kenya.
Informal credit sources	Credit services providers that are unregulated and unlicensed by the Government of Kenya.

	It refers to when two parties exchange money, commodities, services, or securities in exchange for the promise of future payment. One party acts as a lender or creditor and the other as the debtor or borrower.
Smallholder tea farmer	**F**armers having less than five acres of land for tea farming. The term "smallholder" describes them as having fewer resources than other farmers in the industry. For this reason, the definition of smallholders varies throughout nations and agro-ecological zones. In many developing nations, smallholders possess a significant portion of the total holdings, and during the past 20 years, their numbers have increased (Godfray et al., 2010).
Tuktuk	*Tricycle* ***v***ehicle for small business enterprises.

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter presents the background information and is structured based on the following sub headings: background of the study, statement of the problem, general objective, specific objectives, research hypothesis, justification of the study, significance of the study, scope of the study, limitations of the study and assumptions of the study.

1.2 Background of the Study

Agriculture is one of the proven paths to prosperity and no region in the world has developed a diverse modern economy without first establishing a successful foundation in agriculture (AASR, 2019). Agricultural sector is crucial in economic growth accounting for one third of global Gross Domestic Product (GDP) (IDA, 2019).

Tea is one of the most widely consumed beverages in the world, second only to water. The major tea-producing countries include China, India, Kenya, Sri Lanka, Turkey, and Vietnam. Global tea production reached approximately 6.4 million tonnes in 2022, with China accounting for the largest share at around 3.2 million tonnes, followed by India at approximately 1.35 million tonnes (FAO, 2023). Kenya remains the world's leading exporter of black CTC tea, with production reaching 570,000 tonnes in 2022 and export revenues exceeding KSh 174 billion (Tea Board of Kenya, 2023).

Production in Kenya increased by 18.0 percent, while in Sri Lanka it declined by 11.0 percent. The tea industry in Sri Lanka showed its greatest year-on-year crop shortfall in the years from 2010 to 2014, as the sub-sector faced various challenges due to severe weather conditions, coupled with government restrictions on fertilizer subsidies. However, crop shortfalls in 2015 and 2016, recovered in 2017. At the world level, black tea production increased annually by 3.0 percent and green tea by 5.4 percent over the last decade, in response to continued firm prices and green tea's perceived health benefits (FAO, 2018).

In Ghana, Amoa–Mensah et al. (2013), examined determinants that farmers go through to have in order to access loans in the Offinso Municipality from rural banks in the Municipality. The study looked at other rivals in the credit market and some of the reasons why rural banks did not give credit to farmers. It was established that while rural banks do offer loan facilities, farmers faced much competition when trying to obtain credit. The study also discovered that the inability of farmers to obtain loans typically has a negative impact on farmers' economic activities and development. As a result, the researchers suggested that rural banks can adopt a client-oriented approach in order to efficiently market their loan products.

In Zimbabwe, Chivandire (2019), studied factors affecting Smallholder Farmers' ability to obtain formal credit. The result indicated that obtaining the credit in district is influenced by a number of criteria, as proximity to formal financial institutions, sex, age and education. Income, however, was not a statistically

significant factor. The outcome suggested that measures that empower women and allow them to obtain formal credit should be put into place. Additionally, Chivi needs to have more financial institutions and raise educational levels.

In Tanzania, Nsubili (2018), found that farmers' ability to obtain bank credit were influenced by gender, education level, and the value of assets used for farming activities. This concurred with studies by Isaga (2018), in Tanzania's Mvomero District's that gender, education level, and the value of assets used for farming activities had substantial impact on smallholder farmers' ability to obtain bank financing. The creation of a government bank with a credit guarantee program that would only offer financial services to farmers is one of the policy ideas. Another is for banks to create new financial products specifically tailored to the needs of smallholder farmers.

Munishi et al. (2017), investigated the variables influencing the productivity of smallholder tea farmers in Muheza and Njombe, the two districts in Tanzania that produce tea. From the outcome, performance of smallholder tea farmers was significantly influenced by factors such as education level, the number of household members that help with tea farming, experience in tea farming and age of the farmer, member to tea cooperatives, and access to extension and credit facilities.

Musuva *et al. (*2016), examined how the characteristics of small-holder tea farmers in Kiambu County affected the value chain financing's effectiveness. Specifically, it set out to investigate how borrower characteristics affected their ability to obtain credit for value chain finance in the tea business in Kiambu County by assessing the effect of tea farmer age, education level, acreage and primary source of income.

Compared to people under 40 and people over 60, those in the age groups 41–50 and 51–60 had 6.6 times higher loan approval rates. When compared to those with different degrees of education, those with no education at all had a 27 percent greater likelihood of having their loan application denied.

People in formal work had a higher likelihood of acquiring credit facilities than those who engaged in tea growing, while those with less than one acre of land had a little higher chance of having their loan requests denied compared to those with more than one acre. The study found that the success of credit application processes was related to the age, education level, acreage, and principal source of income of farmers.

Musuva (2015) in Kenya sought to investigate the effects of the loan application procedure, risk management, governance, borrower characteristics, cost of borrowing, and firm characteristics on the efficiency of financing the agricultural value chain in Kenya's tea industry. The goals were to assess how the loan and overdraft application process affects the value chain financing in the tea industry; assess how borrower characteristics affect credit availability in the value chain financing in the tea industry; assess how borrowing costs affect credit availability in the value chain financing in the tea industry; and assess how farm characteristics affect credit availability in the value chain financing in the tea industry. The study found that high transaction costs and a high risk of loan failure were regarded as the least restricting factors in terms of access to financial services, high interest rates stood out as a barrier to the respondents' ability to get credit facilities. Other significant variables that restricted farmers' access to credit

facilities included the size of their farming operations, lack of collateral, and ignorance of credit facilities. The survey indicated stated that lending institutions did not prioritize visiting farms to observe the utilization of loaned funds. The profitability of tea production was discovered to be influenced by education level in addition to loan amount. The amount of loans granted by a financial institution was influenced by the acreage planted to tea.

In conclusion, smallholder farmers in Kenya still face difficulties in obtaining sufficient, affordable, and timely financial services, even though tea is the country's largest cash crop and a major source of foreign exchange. The majority of financial institutions work in peri-urban and high-density urban areas, which leaves value chains in agriculture and rural areas under-served. Due to the lack of tangible collateral and high processing costs brought on by several operational hazards, lending to the agricultural sector is seen as expensive and risky. Credit application success was correlated to the age, education level, acreage, and principal source of income of farmers.

Studies by Mukabane (2021), showed that a number of factors, including age, credit program, keeping financial records for your farm, distance from the closest town, years of experience, education level, marital status, family size, gender, number of employees, source of income other than farming, and length of time the farm had been in operation all had a significant impact on access to agricultural credit. It recommended that the government ought to support forums that farmers use to learn about the necessity of taking loans, and connect them with lending companies. Good training initiatives could include insurance to reduce farming risks and

financial literacy courses to teach smallholder farmers the skills they need to comprehend, acquire, and apply credit financial services to improve their farming operations. To increase the influence of credit on productivity, financial institutions ought to think about providing production credit in the form of agricultural inputs.

Meeme (2013), investigated the variables influencing small-scale female tea farmers' access to credit in Kenya and established the impact of farmer characteristics, institutional factors, customs and discriminatory cultural practices, tradition, collateral requirements, and risk factors on access to credit. Regarding farmer characteristics, the survey found that the majority of female tea farmers had completed college-level education and possessed sufficient knowledge on topics pertaining to tea farming. Primary reasons a loan application was denied included incomplete application forms, incomplete credit history, non-guaranteed applications, incomplete application histories, and past loan defaults.

According to the majority of respondents, the main description of women's social situation in the village was that they were never on an equal footing with men, and had no collateral in the form of a title deed, because the husband is the only person who controlled the tea farm. The majority of women did not have complete control over their tea farms, and that some of them lacked bargaining power or access to necessary resources.

Mbugua (2013), explored Factors Affecting Farmers' Access to Credit Facilities in Cherangany Constituency in Trans-Nzoia County which is a rampant problem faced by farmers around the world. Research findings suggest that a considerable fraction of the difficulties faced by the farming sector could be mitigated by means

of freely available and sustainable finance. The research was based on elements that influenced a farmer's ability to obtain credit include interest rates on loans, collateral, and basic loan conditions. Farmers who lack any of these characteristics find it difficult to obtain credit. After analyzing the study's results, the researcher offered suggestions for how to improve and make it easier for farmers to obtain credit, and advanced recommendations that included developing loan products especially for farmers and encouraging financial institutions to open rural branches in order to provide services closer to farmers.

Mathenge (2015) investigated factors influencing the sustainability of small tea enterprises in Kenya, focusing on enterprise characteristics, business practices, access to finance, and resource availability. The study found a significant relationship between these factors and enterprise sustainability, though not all hypotheses were supported.

The tea industry in Kenya is a major economic contributor, supporting over three million people and serving as the leading foreign exchange earner. Introduced in 1903 and commercialized by 1924, tea farming has grown significantly, with the smallholder sub-sector now accounting for 60% of total production. This sub-sector is largely managed by the Kenya Tea Development Agency (KTDA), established in 1964 to support smallholder farmers through production, marketing, and financial services.

Despite its economic importance, the smallholder tea sub-sector faces challenges such as low prices, high production costs, limited market access, and governance issues (Monroy et al., 2018). These constraints hinder farmer, with credit access

emerging as a key determinant of smallholder farmers' productivity and sustainability. In Kericho County, a major tea-growing region, understanding the determinants of credit access and their effect on smallholder tea farmer is essential for informing policy and enhancing the sector’s contribution to livelihoods and the national economy.

1.3 Statement of the Problem

Tea farming remains a vital economic activity and a primary source of livelihood for many households in Kericho County and Kenya at large. Nationally, over 60% of tea is produced by smallholder farmers who depend on it as their main source of income. Despite the sector's significance, smallholder tea farmers face persistent challenges that threaten their income levels and overall farm performance, with limited access to credit being a key constraint.

Access to credit is critical in improving farm productivity, adoption of modern farming techniques, purchase of farm inputs, and overall farm efficiency. However, in Kericho County, many smallholder tea farmers are unable to access adequate and affordable credit from formal financial institutions. This is primarily due to a lack of collateral, poor credit histories, insufficient financial records, and the perception of smallholder farmers as high-risk borrowers. Consequently, these farmers are unable to invest in productivity-enhancing activities, leading to sub-optimal tea yields and stagnant incomes.

While various financial institutions have emerged in response to government policies aimed at enhancing credit access such as those outlined in the Economic

Recovery Strategy for Wealth and Employment Creation (ERSWEC) credit uptake among smallholder tea farmers remains low. Evidence from local reports and field surveys indicates that despite the increased number of credit service providers, a significant proportion of smallholder farmers still lack access to structured credit, which limits their ability to scale operations and cope with production challenges.

Furthermore, fluctuations in tea prices and market risks continue to exacerbate the problem. Without reliable access to credit, farmers cannot diversify their income sources or invest in risk mitigation strategies. Previous studies have confirmed that access to credit is a significant determinant of agricultural productivity globally, yet there is a limited understanding of the specific determinants influencing credit access among smallholder tea farmers in Kericho County and how these affect their income levels.

There is also limited empirical evidence on how farm-specific characteristics (e.g., land size, production scale), farmer attributes (e.g., education level, financial literacy), and farm activities (e.g., application of fertilizers, labor hiring, modernization) influence access to credit and, ultimately, farmer performance. This presents a critical knowledge gap, which this study seeks to address by examining the determinants of credit access among smallholder tea farmers in Kericho County.

1.4 General Objective

The general objective of the study is to examine determinants of credit access among smallholder tea farmers in Kericho County, Kenya.

1.5 Specific Objectives

i. To establish the effect of the farm's characteristics on credit access among smallholder tea farmers in Kericho County, Kenya.
ii. To determine the effect of the farmer's characteristics on credit access among smallholder tea farmers in Kericho County, Kenya.
iii. To examine the effect of farm activities on credit access among smallholder tea farmers in Kericho County, Kenya.

1.6 Research Hypothesis

i. H_{01}: Farm characteristics have no significant effect on credit access among smallholder tea farmers in Kericho County, Kenya. H_{11}: Farm characteristics have a significant effect on credit access among smallholder tea farmers in Kericho County, Kenya.
ii. H_{02}: Farmer characteristics have no significant effect on credit access among smallholder tea farmers in Kericho County, Kenya. H_{12}: Farmer characteristics have a significant effect on credit access among smallholder tea farmers in Kericho County, Kenya.
iii. H_{03}: Farm activities have no significant effect on credit access among smallholder tea farmers in Kericho County, Kenya. H_{13}: Farm activities have a significant effect on credit access among smallholder tea farmers in Kericho County, Kenya.

1.7 Justification of the Study

Tea farming, particularly among smallholder farmers, plays a crucial role in

Kenya's rural economy and national export earnings. Smallholder tea farmers, under the management of the Kenya Tea Development Agency (KTDA), contribute significantly to tea production through procurement, marketing of green leaf, crop intensification, and expansion programs. These farmers also benefit from agricultural inputs such as fertilizers and credit facilitated by KTDA and other partners. However, despite these efforts, many smallholder tea farmers continue to face critical challenges that undermine their productivity and income potential.

One of the most persistent challenges is inadequate access to affordable and timely credit. This hinders farmers from investing in quality inputs, modernizing production methods, expanding farm activities, and coping with market volatility. According to Nyangito et al. (2004), agricultural credit in Kenya accounted for less than 10% of the total domestic credit provided by financial institutions. This challenge persists, as noted by the International Development Association (IDA, 2019), which reported that only 4% of commercial bank lending in Kenya goes to the agricultural sector despite agriculture employing the majority of the population.

These statistics highlight a significant mismatch between the credit needs of smallholder tea farmers and the attention given to the sector by financial service providers. The inadequacy of credit products specifically designed for smallholder tea farmers, coupled with structural limitations such as collateral requirements and limited financial literacy, further deepens the gap. This has adverse effects on smallholder tea farmers' capacity to improve yields, sustain income levels, and invest in long-term farm improvements.

The existing policy interventions and institutional support mechanisms have not

sufficiently addressed the underlying determinants of credit access specific to smallholder tea farmers. Much of the current literature and policy discourse either generalizes across agriculture or disproportionately focuses on other sub-sectors such as dairy, thus overlooking the unique dynamics of the tea value chain.

Therefore, this study was timely and necessary. It sought to generate empirical evidence on the determinants of credit access and their effect on the performance of smallholder tea farmers in Kericho County. The findings would provide critical insights for policymakers, financial institutions, KTDA, and development partners in designing targeted credit solutions and policy interventions to enhance the productivity and livelihoods of smallholder tea farmers.

1.8 Significance of the Study

The findings of this study would be of great benefit to various stakeholders involved in tea farming, financial services, and rural development. The key beneficiaries include:

1.8.1 Smallholder Tea Farmers

This study would assist smallholder tea farmers in Kericho County to better understand the factors influencing credit access and how such access impacts their farm income. By identifying key determinants and challenges, the study would empower farmers to make informed financial decisions, seek appropriate credit options, and improve their farming productivity and income sustainability.

1.8.2 Policy Makers

The study would provide evidence-based insights into the constraints hindering

access to credit among smallholder tea farmers. These findings would inform policy formulation and implementation by national and county governments, especially in designing targeted interventions to improve rural credit systems, enhance farmer support services, and promote inclusive agricultural financing in tea-growing regions.

1.8.3 Financial Institutions

For banks, microfinance institutions, SACCOs, and other rural credit providers, the study would reveal important aspects of rural micro-financing and the specific credit needs of smallholder tea farmers. The insights would aid financial institutions in developing tailored financial products and strategies that meet the realities and risk profiles of smallholder farmers, ultimately enhancing credit uptake and customer retention in rural areas.

1.8.4 Scholars and Researchers

This study would contribute to the existing body of literature in agricultural finance and rural development. Future researchers and scholars can refer to this study as a source of empirical data and theoretical grounding when exploring related topics on credit access, agricultural, and smallholder empowerment in Kenya and other developing economies.

1.9 Scope of the Study

This study was conducted in Kericho County, Kenya, a region selected due to its high concentration of smallholder tea farmers and a diverse presence of credit service providers, including commercial banks, cooperative societies, self-help

groups, professional money lenders, and government-funded credit schemes (Kericho County Development Profile, 2018).

The study focused on examining the determinants of credit access and their effect on the income of smallholder tea farmers. The independent variables examined were: farm characteristics, farmer's characteristics, and farm activities. The dependent variable was the credit access among smallholder tea farmers, measured in terms of income levels.

A multistage sampling technique was used to select the respondents. This involved proportionate and simple random sampling to ensure representativeness across different wards and sub-counties. In addition, purposive sampling was employed to select key informants with relevant expertise and in-depth knowledge of the tea farming sector and rural credit systems. The study was carried out between July and October 2024.

1.10 Assumptions of the Study

The study was guided by the following assumptions:

i. The sample selected was a true and adequate representation of the entire population of smallholder tea farmers in Kericho County.

ii. All respondents were willing to participate in the study and provided honest, accurate responses to the questionnaire items.

iii. The data collected through structured questionnaires were valid and reliable indicators of the farmers' actual credit access experiences and farm characteristics.

iv. The binary logistic regression and multinomial logistic regression models adopted in this study were appropriate and sufficient for analyzing the determinants of credit access and its effect on farmer performance, respectively.

v. The credit market conditions in Kericho County during the study period (July–October 2024) remained relatively stable, and no major exogenous shocks significantly altered farmers' access to or demand for credit.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents literature on determinants of credit access among smallholder tea farmers in Kericho County: Overview the concepts, empirical literature review, theoretical framework, conceptual framework and identification of the knowledge gap.

2.2 Review of Related Literature

It overviews farm and farmer characteristics as determinants for credit access, the structure of the household agricultural credit market in Kenya and types of credit sources available.

2.2.1 The farm as a determinant for credit access

A farm, also referred to as an agricultural holding, is a designated piece of land used primarily for agricultural activities aimed at producing food and other crops (Sekyi et al., 2020). It serves as the foundational unit for food production and rural livelihoods. The characteristics of a farm such as its size, output capacity, and asset holdings play a critical role in determining access to agricultural credit. According to Awotide et al. (2015), a study conducted in Nigeria found that farm size and the number of livestock owned significantly and positively influenced farmers' ability to access credit. Larger farms and more substantial livestock holdings increase the likelihood of securing financing, as they are often perceived by lenders as indicators of lower risk and higher repayment potential.

Further, the study found out that credit availability contributed significantly to improved cassava productivity. However, differences in productivity between farmers with and without access to credit were also influenced by variables such as household size and access to information assets. These results suggest that while credit is important, the structural characteristics of the farm remain key determinants in both access to credit and subsequent productivity outcomes.

The study underscored the need for financial institutions to consider farm-specific factors especially size and asset base when designing credit products for rural farmers. Tailoring credit to match the economic capacity and production potential of different farms can enhance credit access and promote agricultural development.

2.2.2 Farmer as a determinant of credit access

Farmers' individual characteristics play a critical role in determining access to credit. These characteristics include age, education level, income, farming experience, group participation, savings behavior, and credit history. Such attributes influence both the likelihood of obtaining credit and the choice of credit providers.

Goshu (2016) investigated credit access among SMEs in Ethiopia and found that firm size and age significantly influenced access to finance. Although the context involved businesses, the findings underscore the importance of operational scale and maturity factors that are transferable to agricultural settings. Suryani et al. (2023), in a study of cassava farmers in Indonesia, identified age, income, land size, education, farming experience, credit history, and organizational participation as

key factors influencing both access to credit and the type of lender selected. Specifically, larger land size and longer farming experience increased the chances of accessing formal financial institutions.

In Ghana, Sekyi et al. (2020) examined how credit access affects commercialization in agriculture. Their findings showed that farmer-specific factors such as age, education, group membership, and involvement in both farm and non-farm enterprises influenced credit access. These elements not only affected financial accessibility but also the extent to which farmers engaged in commercial agricultural practices. Daemane and Muroyiwa (2022) focused on small-scale maize farmers in Lesotho and found that work status, education level, savings behavior, and farm size were all significant predictors of credit access. The study emphasized the importance of financial literacy in enabling farmers to navigate the loan acquisition process more effectively.

Similarly, Kudadze et al. (2016) found that group membership, gender, and farm size positively influenced access to agricultural finance among rice farmers in Ghana. Interestingly, women were reported to have higher average credit uptake than men, suggesting that social dynamics and gender-based programs may also affect access levels. Awotide et al. (2015) confirmed that access to credit improved cassava productivity in Nigeria, with key determinants including household size, farm size, and asset ownership. These findings highlight the broader economic role of credit in boosting productivity among smallholder farmers.

In summary, a farmer's demographic and socio-economic characteristics significantly influence credit access. Factors such as education, farming experience,

savings behavior, group membership, and farm size not only affect eligibility but also the capacity to effectively use and repay credit. Understanding these variables is essential for financial institutions, policymakers, and development agencies aiming to enhance rural credit uptake and agricultural performance.

2.2.3 Structure of the Household Agricultural Credit Market in Kenya

The structure of the agricultural credit market in Kenya is influenced by a mix of institutional, socio-economic, and historical factors. Gültekin (2023), in a study conducted in Turkey, found that farmers' access to credit is largely determined by demographic and socio-economic characteristics such as education, level of agricultural engagement, household size, social security status, and ownership of farming equipment like tractors. These findings underscore the importance of designing credit systems that are accessible and responsive to farmers' unique circumstances.

In Kenya, agricultural credit has historically been considered a vital input for enhancing farm productivity. According to Iniovorua et al. (2016), credit includes various financial instruments that support agricultural transactions. The roots of agricultural credit in Kenya trace back to the 1950s, during the colonial era, when access to financing was extended to African smallholder farmers as part of efforts toward modernization. This process intensified in the 1970s with the development of institutions geared toward distributing official credit to rural farmers (Alila, 1992).

Kenya's financial system operates under various regulatory frameworks, including the Banking Act, Building Societies Act, Post Bank Act, the 2005 Deposit-Taking Microfinance Bill, and the 2004 SACCO Societies Regulatory Bill. Despite these structures, the rural financial services sector remains underdeveloped, largely due to the absence of comprehensive rural financial strategies (GoK, 2006). However, Msati and Kamau (2015) observed significant evolution in Kenya's financial system, marked by technological advancements and the emergence of new credit models, such as mobile banking and agency banking. These innovations have expanded access, particularly through formal financial institutions like commercial banks and microfinance institutions.

Owuor and Shem (2012) categorized Kenya's agricultural credit market into three segments: formal, semi-formal, and informal credit sources. Each category offers unique advantages and limitations in serving the needs of smallholder farmers.

Formal credit sources refer to regulated financial institutions such as commercial banks, which offer structured financial products, primarily in the form of loans. These institutions operate under the supervision of the Central Bank of Kenya and are guided by the Banking Act. Osano and Languitone (2016) describe formal credit as debt financing where financial products are accessed with clear terms and repayment schedules. However, formal institutions often shy away from financing smallholder farmers due to perceived risks, lack of collateral, and high transaction costs associated with rural lending.

Semi-formal credit sources include institutions that are not governed by the Banking Act but are registered and licensed by the government to serve specific

sectors. These include the Agricultural Finance Corporation (AFC), Microfinance Institutions (MFIs), Savings and Credit Cooperative Organizations (SACCOs), and Non-Governmental Organizations (NGOs) (Owuor & Shem, 2012; Davdo, 2012). These entities often play a critical role in bridging the credit gap by offering tailored credit services to smallholder farmers. Their flexibility in lending procedures and familiarity with local farming conditions make them a preferred choice in rural areas.

Informal credit sources refer to unregulated, community-based or individual credit systems. Although not governed by formal laws, these groups often self-regulate their operations. Examples include Rotating Savings and Credit Associations (ROSCAs), Accumulating Savings and Credit Associations (ASCAs), Mutual Assistance Groups (MAGs), as well as personal networks comprising friends, family, and local moneylenders (Alila, 1992; Owuor et al., 2004). These sources are highly accessible and flexible, often requiring no collateral, but may involve high interest rates and lack formal dispute resolution mechanisms.

2.2.4 Farm's Characteristics and Credit Access

Dlamini and Mohammed (2018), found that access to credit by entrepreneurs lies on their ability to fully demonstrate the continued growth of their business enterprises through complete business documentation such as business plan documents and proper record keeping structures since lenders are interested in disbursing credit to lucrative businesses that are growth oriented. Meaning, the age of the farm is a critical determinant in credit finance. Lenders are comfortable with advancing credit to renowned enterprises that have an established goodwill.

The characteristics governing Turkish producers' access to agricultural loans were evaluated by Gültekin (2023). This study was conducted in the nation's premier production regions. 409 producers in all were surveyed. The information was gathered in the first quarter of 2021 and pertained to the socioeconomic and demographic traits of farmers as well as the variables that may had an impact on their ability to get agricultural loans. The results of the logistic regression model's research indicated that producers' socioeconomic and demographic characteristics influenced their ability to obtain agricultural loans. These included education level, amount of agricultural activity, social security status, size of home, and tractor ownership. It is crucial to make agricultural finance more accessible to producers because of its significance for the agricultural industry.

Topor et al. (2023), aimed to statistically analyzed the elements that determined whether or not loans were given to Romanian farm. The profile of the farmer from the chosen counties (Alba, Cluj, Mures, Sibiu, Dambovita, and Prahova) was based on the content analysis of the accounting reports of the 45 Romanian farms that made up the research sample. The acquired data demonstrate how worked area, turnover, and overall asset worth all have a direct impact on variables like the desired amount. The value of recorded expenses and current liquidity have a limited link with amount requested. By putting in place a credit strategy that makes it easier to obtain funding, farms would be assisted in developing and modernizing, which would boost their overall viability and competitiveness.

In Cameroon, Chenaa et al. (2018) looked into how smallholder farmers in the Kumba municipality performed in relation to the factors that determine their ability

to obtain credit. The study specifically investigated the impact of three factors on smallholder farmers' performance; collateral security, cost of credit facility and knowledge/awareness of financial procedures. The research design used in the study was a descriptive survey. In the Kumba municipality, 272 smallholder farmers were given questionnaires via a multi-stage sampling process. Frequency tables were used for descriptive analysis of the data, and multiple regression analysis was used for inferential analysis. According to the t-values, which suggest that there is a significant relationship between the factors influencing credit availability (collateral security, cost of capital, and knowledge and awareness of financial procedures) and the performance of smallholder farmers in the Kumba municipality, the findings showed that these factors had a significant impact on the performance of smallholder farmers.

Mpirwa (2022), explored the factors that influenced the ability of smallholder coffee growers in Rwanda to obtain agricultural loans. The objectives of the study were the factors that influence small-scale coffee growers' ability to obtain financing and to examined the factors that influence the technical efficiency of coffee production in Gisagara District, Rwanda, for smallholder coffee farmers who have agricultural loan as well as those who do not. A multiphase sampling method was utilized to choose the participants. 222 smallholder coffee producers provided primary data for the study (from 2015 to 2019) via standardized questionnaires. To estimate the data, the stochastic production frontier model and binary logistic regression were used. The logit model's results showed that the coffee farmers' interest rates, gender, age, farm size, and cooperative membership were the factors

that determined their ability to obtain credit. Based on the study's findings, it was determined that two institutional factors interest rate and cooperative membership and three socio-demographic factors gender, age, and farm size influenced people's ability to access agricultural credit. It also found that agricultural credit had a significant impact on coffee production because, in most cases, it made it easier to pay for labor services and acquire farm inputs like pesticides and fertilizers.

Fatoki and Smit (2011) established that internal factors comprise business information and managerial competences while external factors constitute the legal atmosphere, security status, corruption prevalence, ethical standards, and the macro-economic dynamics. Other researchers such as Rand (2007) categorized determinants of credit access by SMEs as firm's characteristics, firm's location, and ownership types. Hoang and Otake (2014) identified firms' location, industry size, business information and incorporation as significant factors influencing access to credit finance by SMEs. Their study findings concur with that of (Guirkinger and Boucher, 2008) that revealed a significant negative relationship between farm location and pre-loaning costs. This implies that an increase in distance between lender and borrower hindered farmers from seeking formal loans due to rigorous screening used by lenders. Other researchers such as Erick (2014) posits that cost, lack of collateral, guarantor requirements and lack of audited financial statements are the major constraints towards accessing alternative sources of finance. Similarly, Ajagbe (2012) analyzed the determinants of access and demand for credit by entrepreneurs from Oyo State in Nigeria. The study findings revealed nature of the credit market and asset value to be the major factors

influencing credit access and demand. Iniovorua et al. (2016) investigated the factors affecting credit accessibility in Owerri agricultural zone of Imo State, Nigeria and employed a multinomial logistic regression analysis. `(MLR) results showed that collateral requirements and guarantor requirements to be negatively influencing credit accessibility. Meaning, lenders are keen on collateral that is worth the amount borrowed as well as guarantors that have the capacity to repay the loan in case of default.

Musuva et al. (2016), determined how borrower characteristics affected their ability to obtain credit for value chain finance related to the tea sector in Kiambu County. A cross-sectional study of 384 smallholder farmers who provided tea to six KTDA factories using a systematic sampling approach was carried out. Interviews were conducted with 120 (34/%) females and 234 (66%) males. In terms of age, 6% of respondents were under 30, 31% were between 31 and 40, 38% were between 41 and 50, 17% were between 51 and 60, and 8% were 60 years of age or more. Of the participants, 86% were married, 10% were single, and 4% had divorced. At the time of data collection, 14% of research participants had been planting tea for less than five years, 25% had been tea farmers for five to ten years, and 61% of all respondents had been planting tea for ten years or more. The average amount of land per farmer was 2 acres, and the mean number of years the respondents had been planting tea was 12.5 years. When compared to people under 40 and people over 60, those in the age groups 41–50 and 51–60 had 6.6 times higher loan approval rates. Those with no schooling at all were at a 27% greater risk of having their loan applications denied than those with other educational degrees. The study

found that the success of credit application processes was related to the age, education level, acreage, and principal source of income of farmers.

Kiplimo et al. (2015), examined the variables that most influence Kenyan smallholder farmers' ability to obtain credit and financial services. The findings of the logistic regression analysis show that the marginal impacts of occupation, education level, and extension service access were all statistically significant and had a beneficial impact on the ability to obtain credit financial services. However, access to credit financial services was negatively impacted by total annual household income and the distance to the credit provider, both of which were statistically significant. In summary, with policy recommendations for the establishment of credit/loans offices near farmers to streamline lending processes, lower risks, and improve farmers' understanding of loan repayment. In order to lessen flexibility into consumer expenditures, the government should also strengthen the enforcement of credit input services in the form of in-kind lending. Lastly, invoking appropriate legislative frameworks to realize fair access to financing by smallholder farmers would be important to accomplish food security, increased economic benefits, and poverty reduction.

2.2.5 Farmer's characteristics on credit access

These are farmer related economic factors such as gender, employment, income, education, age, employment, membership to an association, farming experience among others. Different scholars have attempted to investigate how farmer characteristics influence credit access however; they differ based on the underlying methodology and variables under consideration. For instance, Keider (2000) found

household head education, household resources, marital status, and age and dependency ratio as some of the significant factors influencing credit access. Similarly, Bassey et al. (2014) found age of traders, educational level and marketing experience to have a positive impact on credit access and recommended pursuit of policies geared towards reducing household size, enhancing educational attainment and marketing experience of traders. Both studies emphasized on the importance of education and marketing experience in enhancing credit accessibility. Akpan et al. (2013) examined the determinants of access and demand for credit in Southern Nigeria using the independent double hurdle model and found the farmers age, gender, farm size, association membership, extension visits, years of formal education and household sizes to significantly influence credit access.

In Ghana, Amoa–Mensah et al. (2013), examined the determinants that farmers go ought to have in order to access loans. It discovered that the main factors limiting productivity in many emerging nations is the insufficient availability of financing. It is therefore believed that granting credit, especially those living in rural areas, is crucial to reducing poverty and fostering economic development. It claims that although if informal credit markets are prevalent in rural regions, many lenders charge exorbitant interest rates, discouraging rural residents from making investments in profitable ventures. However, in order to address this issue, the nation formed the Agriculture Development Bank, National Investment Bank, and Ghana Commercial Bank, among others, to organize and finance rural development initiatives.

Chivandire (2019), determined the key variables influencing smallholder farmers' access to formal credit, with a focus on the Chivi district in Zimbabwe. Farmers in the district provided the study with the data. It was gathered using questionnaires from six randomly chosen wards within the district. The logit model estimation results shows that proximity to formal financial institutions, education, age, age squared, and sex are significant determinants of formal credit availability in the district. Income, however, was not a statistically significant factor. The outcome suggested that measures that empower women and allow them to obtain formal credit should be put into place. Additionally, Chiv needs to have more financial institutions and raise educational levels.

Abiodun (2019), analysed the determinants of access to formal and informal agricultural loans among farmers in Obubra Local Government Area of Cross River State, Nigeria and employed the binomial test model which revealed farming experience, education level, farm size, farm income and household size as significant factors influencing loan accessibility by formal loan source users while gender, marital status, guarantor, farm size, and household size to be significantly influencing loan accessibility by informal loan sources users. Hyuha et al. (1993) however, highlighted the preference of informal credit to formal credit and argued that Informal credit market have simple terms and conditions attached to them which makes borrowers to be free from the red tape hence making it an effective compliment of the formal credit sources.

Mayowa (2015) analyzed the determinants of credit acquisition from the land bank in South Africa and found age, gender, and education level as being significant factors influencing small holder farmers' ability to access agricultural credit from the semi-formal institutions. Gender is therefore a key determinant of credit access since males and females are subject to different socioeconomic and cultural factors when they apply for credit Dlamini and Mohammed (2018). According to (Okurut, 2000) women stand a lower chance of obtaining credit due to their inability to own collateral at the household level and Men have a greater advantage since they own land which is used as a collateral for loaning purposes. Coleman (2007) also asserted that women are also charged higher interest on loans and asked to provide additional collateral in order to access loans, a strategy used to offset the risk of default.

Sebopetji and Belete (2009) in their study on determinants of small-scale farmers' decision to use credit found that age significantly influenced the decision to use credit meaning as age increases the likelihood of using credit decreases, meaning age had a negative influence. However, Sebaggala, Kawuki, Nantongo (2014) in their study found gender and age to be positively influencing the probability of using the formal and semi-formal financial services. As notes Nguyen and Luu (2013), the owner of the business is able to influence the choice of credit source and that personal characteristics such as age, gender, and education are important determinants in credit choice selection. Meaning young people tend to borrow more frequently so as to invest more in lucrative businesses (Coleman, 2007).

The efficiency of agricultural value chain finance in Kenya's tea industry was investigated, with a particular focus on Kiambu County by Musuva (2015). Other factors that were examined were the cost of borrowing, governance, borrowers' characteristics, risk management, and loan application process. The study aimed loan and overdraft application processes on the efficiency of value chain financing in the tea industry; the influence of governance mechanisms, risk management on the efficiency, borrower characteristics on credit and the impact of farm characteristics on credit availability in the value chain financing in the tea industry using cross-sectional study design, which blends analytical and descriptive research methods. A sample size of 384 smallholder farmers who supplied tea to 6 KTDA facilities was used using a systematic random sampling design method, with a 95 percent confidence interval, on a population of 27,801, which was deemed sufficient for generalization using structured questionnaires. The length of the loan processing period and the loan application procedure had a strong correlation, according to the regression results. High transaction costs and a high risk of loan failure were regarded as the least limiting factors in terms of access to financial services, whereas high interest rates stood out as a factor that prevented the respondents from obtaining credit facilities. Other significant criteria that restricted farmers' access to credit facilities included the absence of collateral, ignorance of credit facilities and size of farming operations.

Ongwech et al. (2020), used a binary logistic regression model to examine the factors influencing smallholder producers' access to finance in Kinangop Sub-County. Using both stratified and simple random sampling approaches, 230

respondents were selected from a population of 35,840 smallholder producers. Data were gathered through the use of both structured and semi-structured questionnaires. The research design used in the study was a descriptive survey. The major factors of loan availability were found to be married status, years of schooling, frequency of savings, primary occupation of dairy farming, financial education, membership in associations, and number of dairy animals. These findings were obtained through the use of binary logistic regression analysis and the marginal impact calculation. As a result, the study found that there were important factors influencing credit availability in the research region and suggested that developing policies targeted at raising farmers' educational levels would be essential to improving credit availability for farmers in the research area.

2.2.6 Farm Activity on Credit Access

Ullah et al. (2020), examined the elements that influence farmers' ability to obtain agricultural finance and how important it is for them to use better farming practices in Khyber Pakhtunkhwa (KP), Pakistan's rain-fed region. It evaluated and contrast the relative contributions of farmers' socio-economic characteristics on their adoption tactics and credit availability using logistic models. The results of the binary logit model indicated that loan availability was positively influenced by farmers who owned significant physical assets, had a high farm income and a large farm. Agricultural experience, however, appeared to have a detrimental impact on farmers' ability to get agricultural loans. In a similar vein, older, more educated farmers with larger farms and higher farm incomes were more likely to have borrowed money from input suppliers rather than banks.

Crop farmers in Enugu-Ezike, Enugu State, Nigeria, were asked to identify the sources and accessibility of credit (Ukwuaba et al., 2021). They also looked into the socioeconomic characteristics of the farmers who had access to credit, the barriers to credit access, and potential solutions for enhancing farmers' credit availability. The findings indicated that the majority of crop producers got credit primarily for farming through unofficial means, with friends and relatives being the most common source. The majority of farmers that loan approvals were done promptly. The independent variables (gender, age, marital status, education, household size, farm size, membership of cooperatives, and farming experience) did not significantly affect credit availability when taken as a whole at any probability level, however, at the 10% ($p<0.10$) level, cooperative membership had a statistically significant negative relationship with credit availability. Increasing farmers' access to information, lowering loan acquisition rigidity, lowering interest rates, having bank accounts, establishing community and agricultural banks in rural areas with easy loan application processes, and organizing farmers into groups to optimize the benefits of group savings or collective investment were some recommendations that were poised by the study to improve access to credit.

Baba (2023), examined accessibility of agricultural loans and how it affected smallholder farmers' productivity in Nigeria's Plateau State. The study's specific goals were to identify the factors that influence smallholder farmers' ability to obtain agricultural credit, look into the relationship between smallholder farmers' credit usage and agricultural output, and determine how smallholder farmers' credit utilization patterns affect agricultural output among smallholder farmers who

practiced agriculture. 399 households participated as a sample size. Structured questionnaires were employed in the study to gather primary data. Analysing the factors that influence smallholder farmers' ability to obtain agricultural loans was the first particular goal. According to the study, factors such as education level, farm size, income source, household size, credit information, proximity to the cooperative society, scheme, and kind of agricultural activity all influenced smallholder farmers' ability to obtain loans.

Kiros and Meshesha (2022), investigates the variables influencing the availability of formal credit for farmers in Ethiopia's Amhara Regional State's Basona Worana District and North Showa Zone. Cross-sectional data were employed in the study in conjunction with a survey. The study was carried out between November 2019 and June 2020 using a multistage random sample procedure, 299 smallholder farmers participated fully by filling systematic questionnaire. The data were analysed by descriptive statistics and logistic regression analysis, and statistical analysis reveals that the following factors are not significant: distance from lending institutions, size of agricultural land, ownership of livestock, attitude towards credit risk, experience with credit, and education level. Therefore, policymakers should endeavour to enhance the availability and volume of credit services and support smallholders in allocating their credit to agricultural activities. Lending institutions ought to update their strict repayment schedules, interest rates, lending policies, and group lending programs.

Ibrahim and Bauer (2013) conducted a study on access to micro credit and its impact on farm profits among rural farmers in dry land of Sudan and found credit users to be better off with higher level of profits than non-credit users. Further results showed that savings, asset value and incomes were significant variables influencing the credit constrained conditions. However, results from their Heckman model procedure revealed a limited effect of credit on farm profits which indicated that loan volumes may be too small for making a significant impact on farm production. Similar results were found in a study conducted by Zeller et al. (2001) which revealed a significant positive relationship between membership to credit programs and crop income in Malawi. This implies that the expansion of credit amount can have crucial effects on agricultural production and the income of rural farmers. According to Ibrahim and Baur (2013), access to credit enhances farm income. Their study on the impact of micro-credit on farm profitability revealed that farmers with access to credit have more income compared to credit constrained farmers and recommended increasing credit amounts so as to enhance their productive capacity.

Similar results were obtained by Chigizie and Ambrose (2013) who investigated the factors constraining households' access to credit in Nigeria and impact of credit on household welfare. Their study revealed a positive impact of credit on household welfare. Foltz (2004) also examined the effect of credit on farm profits in Tunisia and found elasticity of profits with respect to credit to be 0.20 and 0.04 for rationed and non-rationed farmers respectively and concluded that better access to credit would significantly improve farm profits for rationed farmers. Zarazua (2007)

estimated the impact of credit on income in Urban Mexico and found a link between poverty impacts and lending technology and that even though group-based lending are more effective in poverty reduction; their impacts are still insignificant in lowering poverty incidence.

Kohansal et al. (2008) analysed the effect of credit accessibility on Farmers Investment in Khorasan-Razavi Province, Iran and used the binary logit model. The study results showed that number of instalments, previous investment and cultivated land area significantly influenced the investment probability. Reyes et al. (2013) assessed the impact of access to short term credit on farm productivity of fruit and vegetable growers in Chile for market-oriented farmers. The study however revealed that short-term credit does not have an impact on farm productivity, while other factors as education and the type of activity significantly influenced farm productivity. The study recommended that other providers of credit, such as informal credit institutions, may relax short-term credit constraints in rural financial markets in Chile so as to enhance accessibility and credit amount. Okurut (2009) in conducted a study on the impact and intensity of credit rationing on microenterprises in Botswana and applied the Heckman 1st step probit-2nd step OLS using the 2007 Informal Sector Survey. The study findings revealed that both formal and informal credit markets were significantly influenced by the collateral offered, business experience, and enterprise earnings.

Zeller and Diagne, (2001) in a study on access to credit and impact of credit on household welfare in Malawi, applied simultaneous equation model based on credit

limit and choice-based sampling. The empirical results revealed that access to formal credit, had marginal positive effects on household annual income. Similarly, Ding (2018) focused on factors affecting rural residents' participation decision in different types of microcredits, and their impact on household income and consumption in China and employed a multinomial endogenous switching regression model which revealed the major determinants of selection of a credit source to be: family size, dependency ratio, local casual wage rate, credit information and shocks. Moreover, the empirical estimates further revealed a significant positive relationship between participation in microcredit and per capita income and consumption.

Meeme (2013), explored to find out in Thika factors that affect small-scale female tea farmers in Kenya's ability to obtain credit. Objectives were; farmer characteristics, institutional factors, customs and collateral requirements. The participants of the study were small-scale female farmers with a green leaf number, 117 people made up the study's sample size. The sole instruments used to gather the data were a questionnaire and an interview schedule. Using the Statistical Package for Social Sciences (SPSS), descriptive statistics were used to examine quantitative data obtained through the use of a questionnaire. The results were given as frequencies and percentages. majority of respondents' access collateral requirements. The study found that the most common items were houses and household goods, with the biggest percentage of collateral needed to obtain formal credit coming from farm animals, land, cars, and agricultural equipment. Regarding the extent of the impact, the majority of respondents stated that financial institutions

require guarantors, automobile log books, good credit history, copies of business licenses, KRA pins, land titles, and household goods in order to grant formal credit access, implying that small-scale female tea farmers, house.

Kamau (2008), identified the key variables influencing small-scale tea growers' ability to obtain financing, a survey design was employed in the research. Four fifty thousand small-scale farmers who were registered with the government and the lenders made up the research population. To choose a sample of 50 farmers for the study, stratified random sampling was used. 50 farmers who had enrolled at the factory were then selected at random. The respondent's tea farm sizes determined the strata. Using the list of banks with operating licenses in Kenya and the SACCOs that lend money to small-scale tea farmers based on KTDA records, twenty loan providers were chosen. Closed-ended questionnaires were employed as the data gathering instrument. Tables, pie charts, and graphs were used to display the data after they had been examined. The results indicated that tea accounted for the majority of farmers' primary source of income, with tea farms ranging in size from half an acre to an acre. The majority of those surveyed had been growing tea for ten to twenty years. Collateral and farmers' ignorance of credit goods and services were factors that impacted their ability to obtain loans.

2.3 Theoretical Framework

This study was guided by rational choice theory. Rational choice theory is an economic principle that states that individuals always make prudent and logical decisions. These decisions provide people with the greatest benefits or satisfactions,

given the available alternatives, and also in their best self-interest. In other words, individual distinguishes the cost and benefits of alternative actions (their outcomes), with concern solely about her best self-interest (Burns and Roszkowska, 2016). The theory assumes that individuals try to actively maximize their advantages in any situation and therefore consistently try to minimize their losses. They choose the alternative with the most net gain or "utility" (Burns and Roszkowska, 2016). According to Friedman and Hechter (1988) individual decisions and actions are shaped by rational preferences and constrained by resource scarcity, opportunity costs, institutional factors and information. Under rational preferences individuals are assumed to have explicit, complete, reflexive, and transitive rank ordered preferences over the possible outcomes of their actions (Bicchieri, 2004). Resource scarcity drives individuals to make choices to attain satisfactory ends consistent with their preference.

Decision makers are assumed to conduct rational calculation and subsequently select the course of action likely to be associated with the highest outcome values. This theory supports the current study by providing a framework for understanding why smallholder tea farmers in Kericho County make rational decisions to seek or forgo credit. Farmers weigh the costs of accessing credit including collateral requirements, interest rates, and loan processing procedures against the expected benefits such as improved productivity, input acquisition, and income growth. The theory therefore helps explain the determinants of credit access as expressions of rational cost-benefit calculations influenced by farm characteristics, farmer attributes, and farming activities.

An opportunity cost is another factor that affects individuals' decisions, when making a specific choice. These implicit costs are associated with the act of foregoing the next best alternative available to decision makers. Individuals must consider these implicit costs in their pursuit of maximum benefits and satisfaction (Rahelizatovo, 2002).

On an attempt to analyze the behavior of individuals' decision makers who face a finite set of alternative choices, discrete choice models an econometric modeling technique is used. The models attempt to relate the conditional probability of a particular choice to various attributes of the alternatives, which are specific to each individual, as well as the characteristics of the decision makers (Judge et al., 1985). Using a dichotomous dependent variable as in the case of binary choice models, the choice behavior of individuals with only two alternatives was be examined. Different ways were adopted to approach such models but generally models relying on the linear random utility assumption are based on an individual decision maximizing their expected benefits or utility derived from the choice.

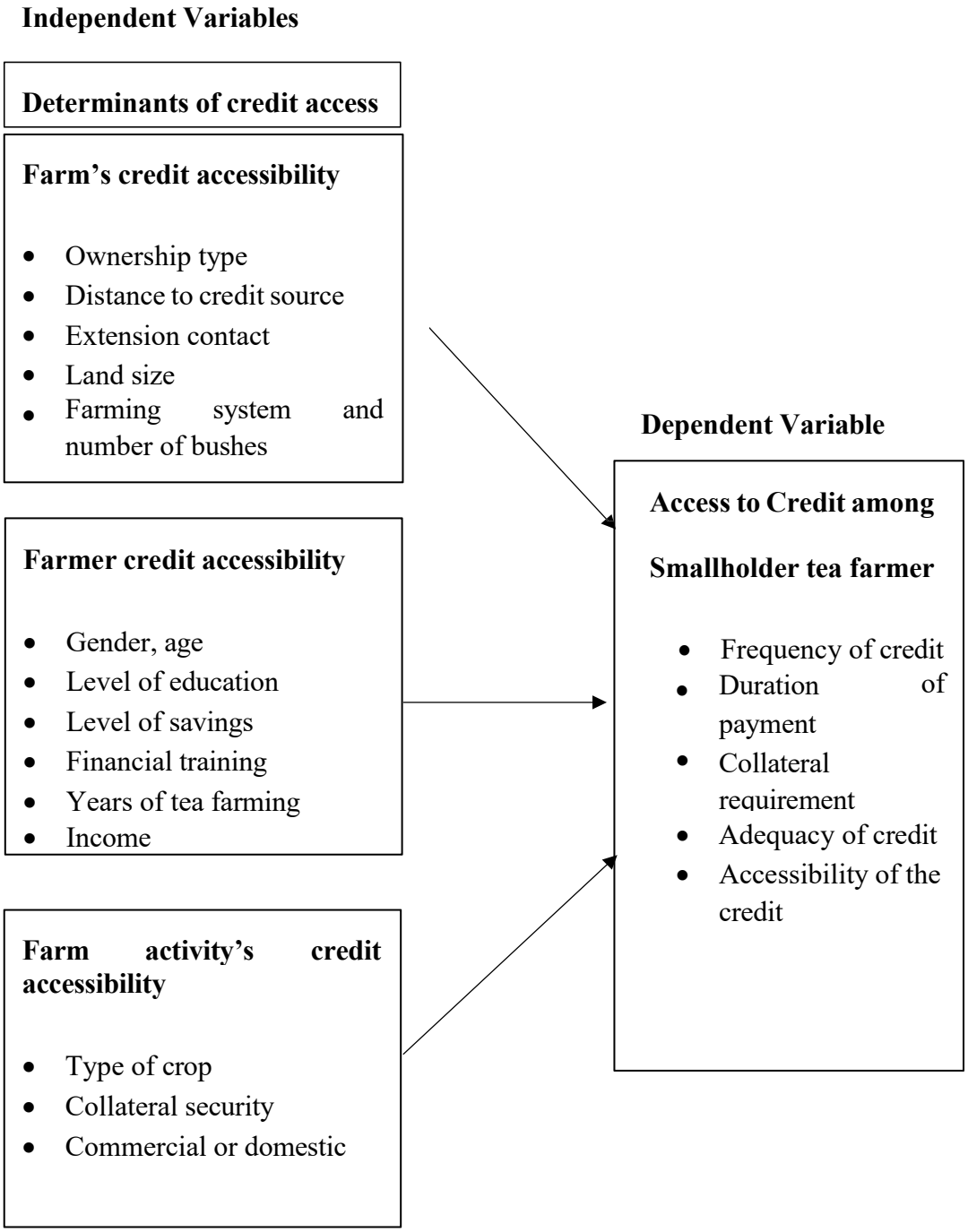
2.4 Conceptual Framework

The conceptual framework in Figure 2.1 shows a schematic representation of the perceived relationship between the dependent and independent variables in this study. It evaluated determinant of credit access among smallholder tea farmers in Kericho County, Kenya. It was hypothesized that these independent variables had a positive and direct influence on credit access. The dependent variable was credit

access while independent variable was determinant's which includes farm characteristics, farmer characteristics and farming activities.

Figure 2.1

A Conceptual Framework



2.5 Identification of the Knowledge Gap

A review of literature revealed that few studies have been conducted in Kenya in relation to the determinants of credit access and its effect on smallholder tea farm income. Most studies focused on effects of credit access on SMEs and farmer households in general without specific consideration to smallholder tea farmers. Moreover, most studies were conducted in other countries other than in Kenya. This study therefore filled the knowledge gap that exists in relation to determinants of credit access among smallholder tea farmers in Kericho County, Kenya.

Extent literature that was reviewed on farms credit accessibility among smallholder tea farmers revealed that a good number of them was carried out in other counties, such as Turkey, Romania, Cameroon, and Rwanda, this fact is that the studies focused on other sectors not smallholder tea farms. Those studies that were domiciled at the tea sector measured the variables with other variables unlike the current study which looks at determinants of credit access among of smallholder tea farmers.

The findings from the studies were conflicting, as some agreed and others disagreed despite the similarity on the variables, this probably can be explained by methodologies used as some used qualitative data as others pursued quantitative approach. Chivandire (2019), in Zimbabwe used income by farmer to measure its ability to enable to farmer to access financial loans, and the results showed it was insignificant. On the hand, Abiodun (2019), sought to determine determinants of access to formal and informal agricultural loans among farmers in Obubra Local Government Area of Cross River State, Nigeria, income as a subcontract was used

to measure its ability to acquire loans, and the results was farm income was significant factor influencing loan accessibility by formal loan source users. It is from these gaps that the current study sought to explore determinants of credit access among smallholder tea farmers in Kericho County, Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section presents research design, study area, target population, sample and sampling procedures, validity and reliability of the research instruments, data collection procedures, data analysis, analytical techniques, ethical considerations and the expected output of the study.

3.2 Research Design

The research study employed a descriptive and explanatory survey design. According to Best (2004), a survey is a means of gathering information about the characteristics, actions or opinions of a group of people concerning factors that affect access to something. Creswell (2002) observed that a descriptive survey design is used when data is collected to describe persons, organizations, settings, or phenomena. This study aimed at observing and describing the behaviour of the subjects under study without influencing them in any way. The descriptive survey design helps answer the questions like who, what, where and how on describing the phenomenon on study.

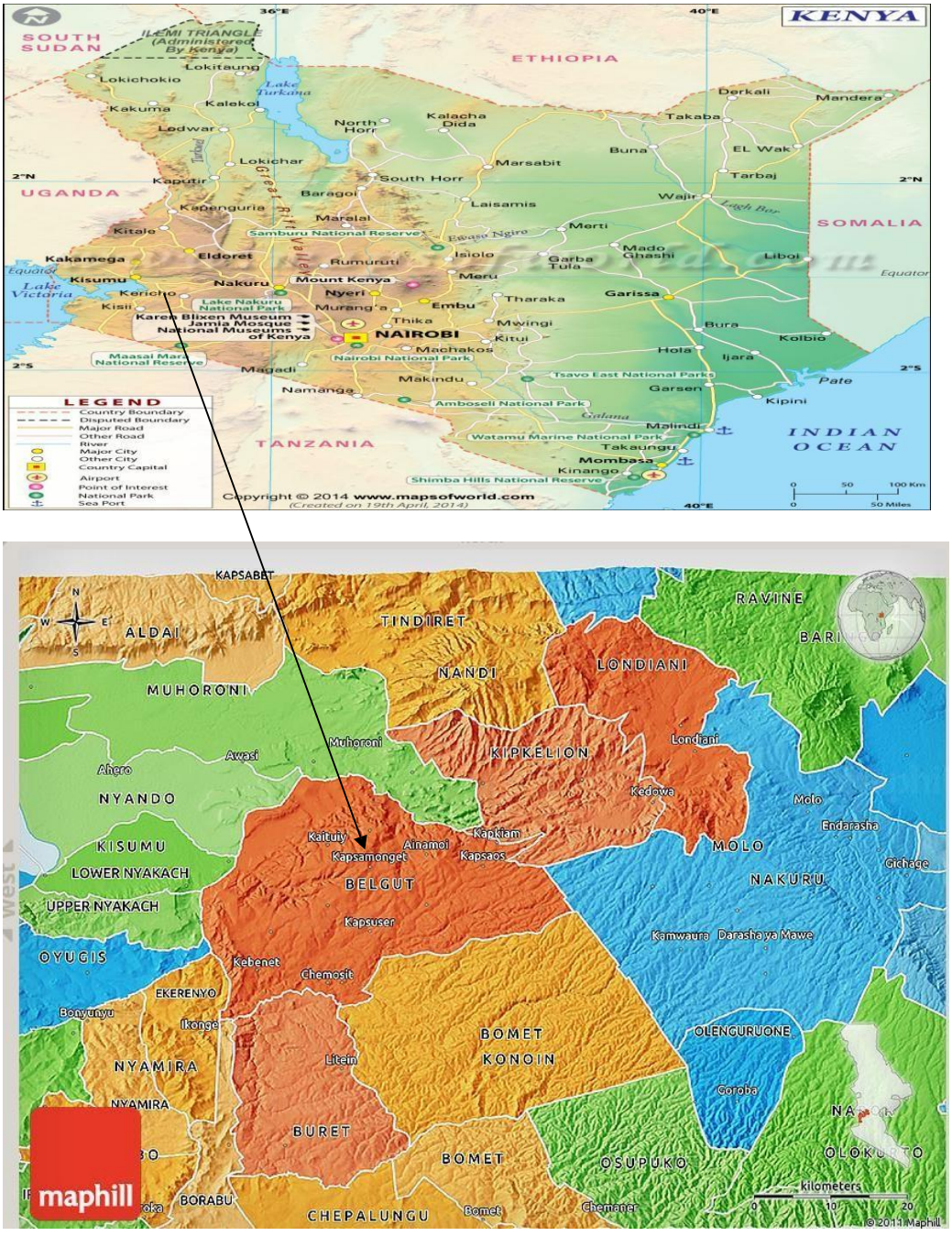
Mugenda (2010) argued that explanatory survey is the best design to use when in a fact- finding mission in order to explain a certain phenomenon. That is why the researcher opted for this research design.

3.3 Location of the Study

The study was conducted in Kericho County, Kenya. It is situated at a latitude and longitude between 0° N to 20° N and 29°E to 34°E respectively. The altitude ranges between 1240 and 2000 meters above the sea level and is characterized by distinct ecological zones of upper medium and lower medium with an annual mean temperature of 23.5^{o} C. The area has eleven major commercial banks: Family Bank, Equity Bank, ABSA Bank, Kenya Commercial Bank, SBM bank, Access Bank, StanBic Bank, Standard Chartered Bank, NCBA Bank, Cooperative Bank, and Diamond Trust Bank, three micro-finance institutions namely: Faulu Kenya, Kenya Women Finance Trust and Small and Micro-Enterprise Program (SMEP) (NCIDP, 2018). The county also has six major SACCOs namely: Ndege Chai SACCO, Chai SACCO, Imarisha SACCO, Kenya Highland SACCO, Simba SACCO and Patnas SACCO. Nevertheless, there is still need to increase income earning opportunities through commercializing agriculture, and enhancing access to capital and credit facilities (NCIDP, 2018). The site has been selected due to the larger number of tea farmers totaling to 109,401 tea farmers dominating as the main Agricultural activity in the area (KTDA, 2024). The County has eleven major tea factories registered under the Kenya Tea Development Agency (KTDA) and private companies namely: Toror, Tegat, Tebesonik, Kuresoi, Momul, Litein, Kipsigis Highlands, Kapkatet, Kaisugu, Kabianga and Chelal tea factories. These factories serve as the primary collection and processing centres for green leaf from smallholder tea farmers and provided the sampling frame for respondents in this study.

Figure 3.1:

Map of the Kericho County (Red Color)



Source: IEBC (2022) Kericho County Map

3.4 Target Population

The study targets smallholder tea farmers in Kericho County. The area has a total population of 109,401 tea farmers' households as at 31st December 2024 according to National Tea Database Tea-board of Kenya.

Table 3.1

Target Population

Factory	Tea Growers
Toror Tea Factory	12,863
Tegat Tea Factory	19,902
Tebesonik Tea Factory	3,556
Kuresoi Tea Factory	8,558
Momul Tea Factory	17,772
Litein Tea Factory	20,617
Kipsigis Highlands	2,432
Kapkatet Tea Factory	15,083
Kaisugu Tea Factory	6,100
Kabianga Tea Factory	736
Chelal Tea Factory	1,782
Total	**109,401**

Source: Kenya Tea Board Data based (2024)

3.5 Sample Size and Sampling Procedure

It defines what a sample is and procedure of getting a sample unit for the study.

3.5.1 Sample Size

A sample size is a sub population which possesses relatively the same characteristics as the population. The small-scale tea farmers were sampled using formulae given in equation (3.1) from Kothari (2008).

$$n = \frac{z^2.p.q.N}{e^2(N-1)+Z^2.p.q} \quad \text{.....(3.1)}$$

Where:

n is the sample size for a finite population

N is size of population which is the number of smallholder tea growers

p is population reliability (or frequency estimated for a sample of size, np is 0.5 which is taken for all developing countries population

p + q=1

e: margin of error considered is 8% for this study. A margin of error of 8% was selected because it falls within the acceptable range of 5%–10% commonly applied in agricultural and social science studies with large rural populations in developing countries (Kothari, 2008; Mugenda & Mugenda, 2003). At 8%, this margin yields a manageable and representative sample size of 150 respondents while maintaining sufficient statistical precision. Although a 5% margin of error would yield a larger sample, the scale of the population (109,401 farmers) and the logistical constraints of field data collection justified the use of 8%. Importantly, the 8% margin of error is distinct from and complementary to the 95% confidence interval (CI): the CI reflects the degree of certainty that the true population parameter lies within the estimated range, while the margin of error defines the acceptable deviation of the sample estimate from the true population value. Together, they ensure that the sample findings are both reliable and generalizable to the broader population of smallholder tea farmers in Kericho County.

Z is the estimated standard variation at 95% confidence interval (CI) which is considered the point of the normal distribution corresponding to the level of significance (Z = 1.96)

According to equation (3.1), the sample size for the study is:

$$n = \frac{1.96^2 * 0.5 * 0.5 * 109401}{0.08^2(109401 - 1) + 1.96^2 * 0.5 * 0.5}$$

=150 respondents

3.5.2 Sampling Procedures

Sampling, according to Orotho and Kombo (2002), is the process of selecting the required individuals for the study whereby a number of individuals are selected from a population such that the selected group has elements representative of the characteristics found in the entire population. Therefore, this study employed multistage sampling procedure whereby purposive, proportionate and simple random sampling techniques were used. In the first stage purposive sampling was used to select the study area since it leads in terms of tea production in Kenya. The area under study has eleven tea factories with tea growers that supply the factory with tea leaves. Proportionate sampling procedure was applied in order to obtain the sample size of small-scale tea farmers in the respective factories within Kericho County. In each tea factory, simple random sampling procedure were used to pick respondents for the study as depicted in table 3.2. Specifically, at each factory, the KTDA factory register which contains a complete list of all registered smallholder

tea farmers supplying to that factory was used as the sampling frame. Simple random sampling was then applied by assigning numbers to all registered farmers in each factory register and using a random numbers table to select the required number of respondents from each factory. This ensured that every farmer within a given factory had an equal probability of being selected, thereby enhancing the representativeness of the sample. Multistage sampling was preferred over stratified random sampling for the following reasons.

First, a complete and unified sampling frame listing all 109,401 farmers across all eleven factories simultaneously was not available; each factory maintained its own register independently. Stratified random sampling would have required such a single consolidated list as a prerequisite. Second, the natural clustering of farmers by factory provided an operationally efficient and logically defensible primary sampling unit. Third, the multistage approach allowed proportionate allocation across factories, ensuring that larger factories contributed proportionally more respondents, which is consistent with the structure of the target population. These advantages made multistage sampling more suitable and practically feasible for this study than stratified random sampling (Kothari, 2008).

Table 3.2

List of Sample Size per Factory

Factory	Tea Growers	Sample Size
Toror Tea Factory	12,863	18
Tegat Tea Factory	19,902	27
Tebesonik Tea Factory	3,556	5
Kuresoi Tea Factory	8,558	11
Momul Tea Factory	17,772	24
Litein Tea Factory	20,617	28
Kipsigis Highlands	2,432	3
Kapkatet Tea Factory	15,083	20
Kaisugu Tea Factory	6,100	8
Kabianga Tea Factory	736	1
Chelal Tea Factory	1,782	2
Total	**109,401**	**150**

The list of smallholder tea farmer households from each factory were obtained from the sub-county Agricultural Office and others directly from the field service department at the factory. The names of the farmers in the lists were first serially numbered and then randomly ordered and picked using a simple random sampling technique. This technique gave each farmer an equal opportunity of being selected and therefore, this increased the chances of obtaining an appropriate and representative sample size. This was advantageous in the sense that the sample frame was already available in the form of a list (Kothari, 2004).

3.6 Data Collection Instruments

Primary data was collected directly from the respondent's using a Questionnaire. Mugenda and Mugenda (2003) defined Questionnaire as a list of questions that are prepared by a researcher to fit a certain inquiry. A structured Questionnaire were

developed and used to collect data from smallholder tea farmer households. Data that were used in the study were collected from samples of smallholder tea farmer households in Kericho County. The structured questionnaire was administered to the respondents through face-to-face interviews by the researcher, thereby functioning simultaneously as a questionnaire and an interview schedule. The items in the questionnaire were derived from the three specific objectives of the study. A copy of the questionnaire/interview schedule is provided in Appendix 2.

Secondary data was collected through a systematic literature review. Sources reviewed included Ministry of Agriculture, Livestock and Fisheries annual reports; published theses and economic journals; economic surveys; statistical abstracts; National Bureau of Statistics publications; and internet sources. Secondary data were used primarily to contextualise findings and support the literature review in Chapter Two. Since secondary data were not extracted using a separate structured instrument but rather synthesised thematically from the above sources, no additional secondary data extraction form was employed. All sources are fully cited and referenced in accordance with APA 7th edition guidelines.

3.6.1 Validity

Kimberlin et al. (2008), describes validity as the extent to which a research tool measures what it is expected to measure. It is the degree to which the outcomes of a test are acceptable. To ensure that the results obtained from this study meets all the credentials of scientific research, the instruments were presented to two experts from the Department of Agricultural Biosystems, Economics and Horticulture, University of Kabianga. The two experts have extensive experience in teaching and

supervising postgraduate students. They were able to ascertain the validity by the clarity of wording and whether the respondents were able to interpret all questions in a similar way. Their comments were incorporated into the instrument.

3.6.2 Reliability

The primary data collection instrument used in this study was a structured questionnaire, which was administered by the researcher through face-to-face interviews, thereby serving the function of an interview schedule. To determine whether the instrument was reliable, it was pilot tested. A pilot scope of between 1% and 10% is deliberated suitable (Mugenda, 2003). The instruments were piloted using 15 respondents in the neighboring Konoin Sub-County, Bomet County who had similar characteristics to the study sample. However, the respondents did not take part in the research.

A test is reliable if it can be used by different researchers under the same conditions and still yield consistent results. Data from the pilot study was analyzed using Cronbach's Alpha coefficient, mathematically expressed as shown in Equation 3.2. A coefficient of 0.7 and above was deemed reliable. In case this threshold was not achieved, the instrument was revised and pilot tested until an acceptable score was achieved.

$$\alpha = \frac{N\bar{c}}{\bar{v} + (n-1)\bar{c}} \quad \text{..... (3.2)}$$

Table 3.3: Reliability Statistics Where α is the Cronbach's Alpha coefficient, $\bar{c}$ is the average inter-item covariance among the items, $\bar{v}$ is the average variance and N

is equal to the number of items/observations. The reliability of the tool was determined by the use of the Cronbach's Alpha coefficient. A coefficient of 0.907 was found which showed that the data collection instruments were reliable. After calculating the Cronbach's Alpha coefficient for this study, the reliability coefficient results are as shown in table 3.3 for the Questionnaire.

Table 3.3

Reliability Analysis

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No. of Items
0.907	0.909	24

3.7 Data Collection Procedures

Research authorization letter (permit) was sought from the National Commission for Science Technology and Innovation (NACOSTI) through an introduction letter from the Board of Graduate Studies, University of Kabianga. The permit was presented to the County Commissioner, Kericho County, and the County Agricultural Officer for permission to data collection from the tea farmers. Thereafter, appointments with farmers were sought by the researcher before the commencement of data collection. Households' heads were interviewed, however, if not available, a spouse or a knowledgeable person of the household was interviewed.

3.8 Data Analysis and Presentation

Both descriptive and inferential statistical methods were employed to analyze data. Descriptive statistical methods involved making a summary of a sample together with graphics analysis, and summarize data quantitatively without employing probabilistic formulation (Mutai, 2014). Inferential statistical methods were employed because the study sought to draw conclusions about the wider population of smallholder tea farmers in Kericho County from the sample of 150 respondents. Specifically, inferential statistics enabled the testing of hypotheses about the relationships between independent variables (farm characteristics, farmer characteristics, and farm activities) and the dependent variable (credit access), and to determine the statistical significance of these relationships. Binary logistic regression and multinomial logistic regression models were used as inferential tools because they are appropriate for categorical dependent variables and allow for the estimation of odds ratios and prediction of outcomes across groups (Hosmer & Lemeshow, 2000). Statistical Product for Social Sciences (SPSS) version 25, excel, and STATA version 14 programs were used in data analysis. Distribution tables, bar charts, graphs as well as figures were used to present the analyzed data.

3.8.1 Description of farm and farmer characteristics of smallholder tea farmers in Kericho County.

Descriptive statistical methods were used to analyze this objective. The method involved characterizing an individual or a group through measures of central tendencies and frequency tabulations.

3.8.2 Determining the effect of farm and farmer characteristics on credit access among smallholder tea farmers in Kericho County.

The study adopted a binary logistic regression to test if there are significant farm and farmer characteristics influencing credit access among smallholder tea farmers in Kericho County. A binary logistic regression model essentially determines the likelihood of an event occurring relative to the likelihood of an event not occurring; the effect of the independent variable is usually explained in terms of odds.

If the probability of a smallholder tea farmer getting access to credit is p and that of not obtaining credit is (1-p), then the equivalent odds is expressed as

$$\text{odds of (event)} = \frac{p}{1-p} \quad \text{.....(3.3)}$$

The model of the natural log odds is modeled as a linear function of the explanatory variables as given below

$$\text{logit (y)} = \ln\left(\frac{p}{1-p}\right) = \alpha + x'\beta \quad \text{.....(3.4)}$$

Where **p** is the probability of obtaining credit by a smallholder tea farmer and **x** is a vector of predictor variables, **α** and **β** are the structural coefficients of the model. Introducing the antilog in both sides of equation (3.4), an equation for the prediction of the probability of obtaining credit is derived as

$$P = P\,(Y=1\,|X)$$

$$= \frac{e^{\alpha+\beta x}}{1+e^{\alpha+\beta x}} = \frac{1}{1+e^{-(\alpha+\beta x)}} \quad (3.5)$$

Extending the concept of the simple to a multivariate logistic regression analysis, we obtain the following model:

$$\text{logit}(y) = \ln\left(\frac{p}{1-p}\right)$$

$$= \alpha + \beta_i x_i + \cdots + \beta_k x_k + \varepsilon_{ij} \quad (3.6)$$

$$P(Y = 1|X) = \frac{e^{\alpha+\beta_i x_i \ldots\ldots+.\beta_k x_k}}{1+e^{\alpha+\beta_i x_i+\cdots+\beta_k x_k}}$$

$$= \frac{1}{1+e^{-(\alpha+\beta_i x_i+\cdots+\beta_k x_k)}} \quad (3.7)$$

Where ε_{ij} is the error term

$\text{logit}(y) = \ln\left(\frac{p}{1-p}\right) = \alpha + \beta_1$ association membership + β_2 ownership type + β_3 distance to credit source + β_4 number of bushes + β_5 extension contact + $\beta_6$farming system + β_7 land portion under tea farming + β_8 gender of respondent+ $\beta_9$level of education + β_{10} financial training + β_{11} number of dependents + β_{12} off-farm income + β_{13} age of household head + β_{14} years of tea farming + β_{15}level of savings+ ε_{ij} (3.8)

X_{ijs} are the predictor variables of interest: (association membership, ownership type, distance to credit source, number of tea bushes, extension contact, gender of respondent, land portion under tea production, age of respondent, level of education, level of savings, financial training, number of dependents, off- farm income, years of tea farming.)

3.8.3 Analyzing the effect of credit access on smallholder tea farmers in Kericho County.

A Multinomial Logistic Regression model was used to analyze the effect of credit access on the performance of smallholder tea farmers in Kericho County. Multinomial Logistic Regression is appropriate when the dependent variable is categorical with more than two outcomes. In this study, the outcome variable farmer performance was categorized in terms of income type from farming (low income, medium income, and high income), measured against the credit access factors of loan adequacy, loan attitude, post-loan extension services, and membership to an association. The model was specified as follows:

$$\ln Y = \alpha + \beta_{1i}x_i + x'\beta_i + \varepsilon_{ij} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(3.9)}$$

Where;

Y is the binary dependent variable representing credit access (coded 1 if the farmer accessed credit and 0 otherwise).

Xi's are the independent predictor variables (farm and farmer characteristics) as specified in Equation 3.7 above.

α is the level of farm credit when no variable is in effect.

$\beta_{1i's}$ is the Vector of parameters to be estimated

x_i is credit access

x' is vector of predictor variables

ε_{ij} is the error term

$X_{i's}$ is (loan adequacy, attitude towards loan repayment, post loan extension services, association membership)

3.9 Diagnostics Tests

Diagnostic tests were also conducted from the regression results of STATA output. STATA has some routines for detecting multi-collinearity which allow for correction before the analysis is done. Diagnostic test results provide information on how these raw data may be modelled. When a model is estimated, diagnostic tests on model residuals yield information about model adequacy (Mahmood, 2018).

3.9.1 Multicollinearity Test

Multicollinearity is the statistical term for when two or more predictor variables in a regression model have a high degree of association (Corbin et al., 2014). When there are high correlations between the independent variables, it is known as multicollinearity (Martz, 2013). Testing for multi-collinearity was done since it may prevent the computation of a unique least squares solution to a regression analysis in extreme circumstances of perfect correlations between predictor variables Field. The standard errors and confidence intervals are inflated by multi-collinearity, which results in unstable estimations of the coefficients for individual predictors.

In this study, the Variance Inflation Factor (VIF) and tolerance consistency was used to assess multi-collinearity. (Saunders, 2011). The VIF statistic of a predictor in a model demonstrates how much larger the error variance for a predictor's special effect is than the reciprocal of tolerance, (Baguley, 2012).

The variance inflation factor (VIF), according to Cohen et al. (2013), is a measure of how much the variance of each regression coefficient rises in comparison to the scenario in which all predictor variables are uncorrelated. They suggested a VIF of 5 or higher as a criterion for deciding if a VIF is excessive and, hence, inappropriate. According to Zikmund et al. (2013), multicollinearity must be taken into account in the regression analysis whenever two or more variables have a Variance Inflation Factor (VIF) of 5 or higher. Therefore, one of the variables in this study was removed from the model if two or more of them have a Variance Inflation Factor of 5 or higher.

Table 3.4

Variance Inflation Factor results

Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.369	.233	5.877	.000		
Farms Characteristics	.317	.080	.424	3.970	.000	.317	3.155
Farmer Characteristics	-.031	.099	-.044	-.309	.758	.179	3.575
Farm Activity	.067	.077	.077	.870	.386	.456	2.195

Table 3.4 reveals that the variance inflation factor (VIF) for all the study variables was less than 5. These findings revealed that there was no multicollinearity.

3.9.2 Normality Test

Knowing the distribution's form and predicting the values of the dependent variables are both aided by normality, (Paul & Zhang, 2010). Normal data are required for parametric tests like correlation and binary regression analysis. The outcomes of any future study can be distorted when the data is not regularly distributed. Tests of normality will be used to determine if the data are well-modeled and regularly distributed and whether they fit a normal distribution, (Gujarati, 2009). Ghasemi & Zahediasl (2012) assert that the variables should essentially follow a normal distribution, particularly if the results are to be extrapolated beyond the sample. Using the graphical technique approach and the

Kolmogorov-Smirnov test, the normality of the score distribution was evaluated where non-significant results of P>0.05 revealed that the data follows normal distribution, (Tabachnik & Fidell, 2007).

Table 3.5

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**Df**	**Sig.**	**Statistic**	**Df**	**Sig.**
Farms Characteristics	.176	169	.000	.899	129	.000
Farmer Characteristics	.238	169	.000	.791	129	.000
Farm Activity	.152	169	.000	.892	129	.000

a. Lilliefors Significance Correction

Table 3.6 reveals that the results of tests of normality were significant and that the distribution was normal. The findings reveal that the data does not follows a linear distribution.

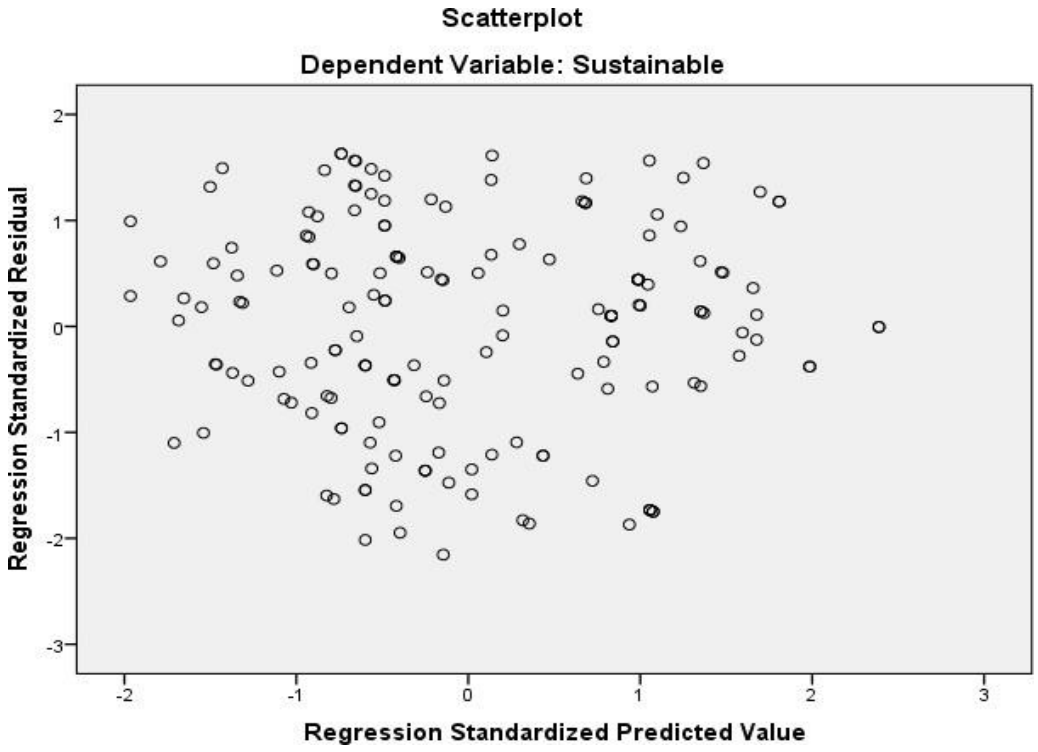
3.9.3 Linearity Test

The mathematical equation "y = cx," where "c" is any constant number, expresses the relationship between the variables "x" and "y" as linearity. When the slope of change in a relationship between two independent variables and a dependent variable is constant, the connection is said to be linear. The deviation from linearity test is arguably the most straightforward and thorough. The relationship between independent and dependent variables is not linear if the significant value for deviation from linearity is less than 0.05, which causes issues with modeling, (Jin, Parthasarathy, Kuyel, Geiger, & Chen, 2005).

Given that many statistical techniques assume that the data are linear, testing for linearity is crucial. This happens when data are used from a population where the pertinent variables are linearly correlated. This indicates that evaluations for linearity must be carried out before employing standard approaches like linear regression (Jin, Parthasarathy, Kuyel, Geiger, & Chen, 2005). Each variable was subjected to a linearity test. The probability of the data coming from a linear population is easily observed using the statistical software tool SPSS and the scatter graph graphical method. According to Mark (2003), difficulties with linearity can also be resolved by deleting outliers, which was done in the current investigation, which makes the assumption that the data is linear.

Figure 3.2

Scatter Graph for Linearity Test



3.9.4 Autocorrelation test

Autocorrelation is the degree to which a time series resembles a delayed version of itself over succeeding time periods (Escudero, 2009). Regression makes the premise that no error related to one observation is related to any other observation's error. The likelihood of autocorrelation was examined using Durbin Watson (DW) statistics. The DW statistic always ranges from 0 to 4. There is no autocorrelation in the sample if the value is 2, there is positive autocorrelation if the value is approaching 0, and there is negative autocorrelation if the value is near 4, (Brook, 2008).

Table 3.6

Model Summary for autocorrelation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.642[a]	.412	.394	.70807	.697

a. Predictors: (Constant), Farms Characteristics, Farmer Characteristics, Farm Activity

b. Dependent Variable: Sustainable

Table 3.6 reveals that the Durbin Watson was 0.697 which indicates that there is positive autocorrelation hence the results can be used for analysis.

3.9.5 Heteroscedasticity test

Heteroscedasticity refers to instance where the variance of the residual-term is not constant but varies with changes in explanatory variables (Gujarati, 2003). Since the data for this research is a cross-section of donor projects in Kenya, this raises concerns about the existence of heteroscedasticity. The Multiple Linear Regression Models assumes that the error term is homoscedastic, that is, it has constant variance. If the error variance is not constant, then there is heteroscedasticity in the data. According to Field (2009), heteroscedasticity problem is absent if the p values of independent variables are greater than the significant value of 0.05.

Table 3.7

Heteroscedasticity Test

Variables	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**p-value**
	B	**Std. Error**	**Beta**		
(Constant)	3.456	1.567		1.457	.000
Farms Characteristics	.045	.027	.134	1.236	.139
Farmer Characteristics	-.034	.014	-.198	-1.598	.134
Farm Activity	.018	.016	.101	1.11	.143

Table 3.7 indicates that all p values for all the variables are greater than 0.05 indicating the absence of heteroscedasticity.

3.10 Definition, Measurement of Variables and Expected Signs

Variable definitions, measurements and expected signs is provided in table 3.8

Table 3.8

Measurement of Variables

Variables	Description	Units	Expected sign
Dependent variable			
Credit access	Dummy	1=Yes, 0=No	+/-
Independent variables			
Farm and farmer characteristic			
Age	Continuous	Years	+/-
Gender	Categorical	1=male, 0=female	+
Income level	Continuous	KSh	+
Education level	Ordinal	1=Primary 2=Secondary, 3=College 4=University 5=post-graduate	+
Income of the farmer	Continuous	Shillings	+
Family size	Continuous	Continuous	+
Extension contacts	Continuous	Hours	+
Age of the farm	Continuous	Years	+
Location of the firm	Continuous	Continuous	+/-
Level of savings	Continuous	Shillings	+
Cost of market information	Continuous	Shillings	+/-
Farming type	Continuous	Continuous	+
Collateral security	Dummy	1=Yes, 2=No	+
Commercial	Dummy	1=Yes, 2=No	+

3.11 Ethical Considerations

Ethical issues are important in any research and they largely address the principle of morality of the study (Koro, 2015). Consent was obtained from the University of Kabianga before onset of the data collection; high professional and ethical conduct was maintained to ensure that the respondent's privacy and confidentiality was safeguarded during the entire period of this study. The need to carry out the study was communicated to the farmers through a copy of the permit from NACOSTI. Every effort was put in place to ascertain that no plagiarism occurs during the research study and that the intellectual property right is upheld. All persons involved in this research was handled with the utmost human dignity and respect. The document was also scanned for plagiarism using the recommended anti- plagiarism software.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The chapter provides the discussion of findings obtained from the field questionnaires. It entails the responses rate, the descriptive statistics and inferential statistics relating farm, farmer and farming activities in relation to access to credit as well as the relationship between determinants and credit access among smallholder farmers. These descriptive statistics provide description of farm, farmer and farming activities, credit access among smallholder tea farmers in Kericho using frequency, percentage frequency, mean and standard deviation where possible.

4.2 Responses Rate

A response of 129 questionnaires out of 150 making a response rate of 86%. According to Mugenda and Mugenda (2003) are response rate above 80% is said to be excellent for further analysis. Evaluation of response rate plays a critical role in research based on the study by Mugenda and Mugenda (2003) which established that 50% response rate is adequate, 60% is good, and a rate of 70% above is excellent. Concerning the statement, the response rate for this study was considered excellent for analysis.

4.3 Descriptive Statistics

Descriptive statistical methods were used to analyze farm characteristics, farmer characteristics, farming activity characteristics on access to credit among

smallholder tea farmers. The method involved characterizing an individual or a group through measures of central tendencies and frequency tabulations.

4.3.1 Farmer Characteristics

Farmer demographic characteristics are given by gender, marital status, age, education level, family size and experience. The results were presented using tables where frequencies, mean and standard deviation were used where possible to describe the nature of farmer characteristics.

Table 4.1

Gender of Respondents

	N	%
Male	76	58.9%
Female	53	41.1%

The results indicated that there were slightly more male farmers with 58.9% as compared to female with 41.1%. This gender imbalance could reflect broader societal trends where male dominance in agricultural activities remains prevalent, particularly in rural areas. Men often have more access to resources, including land ownership and credit facilities, compared to women, which can influence their greater involvement in farming activities.

The current study findings are convergent to the findings by Muyukani and Muthama (2019), done in Kiminini Sub County of Trans-Nzoia County, who reported that 83% of household heads were male-headed. This has also been supported by the findings by Chinai (2011), and Ayela et al. (2019) who posited that male-led households in rural agricultural areas are common, especially in Sub-

Saharan Africa, because men are regarded as the custodians of property and thus alienating women in heading the households. Sserumaga et al. (2013), in their study in Uganda reported contrary findings where more than 43% of women were household heads compared to 36% of male-headed and 21% of households headed by children. They also argued that the household head is a contentious issue because of changes in shared roles in modern communities.

This gender disparity could have implications for credit access among smallholder farmers, as previous studies suggest that women in many regions face more significant challenges in accessing formal financial services. Women's limited access to credit may result from cultural norms, lower land ownership rates, or a lack of collateral, which can hinder their ability to secure loans and invest in farm inputs that would improve productivity. Conversely, male farmers may be more likely to access credit due to societal structures that favor their control over key assets required as collateral.

Table 4.2

Marital Status

	N	%
Single	34	26.4%
Married	87	67.4%
Widowed	1	0.8%
Divorced	7	5.4%

The marital status statistics showed that a majority of the farmers are married, accounting for 67.4% of the respondents, while 26.4% are single. The prevalence of married farmers suggested that family structures might play a significant role in

smallholder farming, as married individuals may have greater stability and access to resources, including labor and credit, compared to their single counterparts. Additionally, married farmers may benefit from shared responsibilities and collective decision-making, which could positively impact their farm productivity.

On the other hand, widowed and divorced farmers represented the smallest demographic among smallholder tea farmers. These groups may face unique challenges, including reduced household labor and potential difficulties in accessing credit, as they might lack spousal support or collateral typically associated with dual-income households. The low representation of widowed and divorced farmers highlights the need for more inclusive policies that address the specific needs of vulnerable groups in agriculture.

Table 4.3

Age of the Farmers

	N	Minimum	Maximum	Mean	Std. Deviation
Age of the Farmer	129	20.00	57.00	35.9845	9.77560

From Table 4.3, the mean age is 36 years with a standard deviation of 10 years, implying that the farmers' ages are spread relatively evenly around this average. The youngest farmer in the sample is 20 years old, while the oldest is 57 years. This range suggested that tea farming in the region attracts both younger and older individuals, though the majority of farmers are likely in their mid-thirties. The relatively youthful mean age reflected the potential for long-term engagement in agriculture, as younger farmers may be more open to adopting new technologies and practices, including improved access to credit and modern farming techniques.

On the other hand, older farmers, while experienced, may face challenges in adapting to new credit systems or technology.

The age variation in the sample underscored the need for tailored financial and support services that cater to both younger farmers, who might have different credit needs or risk appetites, and older farmers, who may require different forms of assistance to enhance their productivity and access to credit. This finding is almost similar to that of Kanana et al. (2019), in their study in Imenti North, Meru County who reported that the majority of farmers had between 40-50 years. The current study findings are similar to the findings by Muui et al. (2013), in his study in Mbeere, Kitui, Makueni, and Mutomo districts of Eastern Kenya where he found out that the majority of sorghum farmers were between 30-40 years of age.

Table 4.4

Attained Formal Education

	N	%
Yes	128	99.2%
No	1	0.8%

The statistical results showing that 99.2% of the smallholder tea farmers in Kericho County have formal education indicated a highly educated farming population. This high level of educational attainment is a significant asset, as formal education often enhances farmers' ability to understand and adopt modern agricultural practices, access financial services, and manage their farming businesses more effectively.

Table 4.5:

Years in Formal Education

	N	Minimum	Maximum	Mean	Std. Deviation
Years of Schooling	129	3.00	20.00	11.5736	3.63957

The results indicating that smallholder tea farmers in Kericho County have spent an average of 12 years in formal education, with a standard deviation of 4 years**,** reflect a relatively well-educated population. This suggested that most farmers have attained secondary-level education, with some potentially completing higher education. The minimum of 3 years of formal education points to a small group with only basic schooling, while the maximum of 20 years indicates that some farmers have pursued advanced studies, possibly including tertiary education.

Table 4.6

Level of Education

	N	%
Lower Primary	4	3.1%
Upper Primary	8	6.2%
Secondary	50	38.8%
College	65	50.4%
University	2	1.6%

The education levels of smallholder tea farmers in Kericho County revealed that 50.4% of farmers have attended college, making this the largest group in terms of formal education. This high percentage of college-educated farmers suggested a strong foundation for understanding complex agricultural and financial concepts, which can significantly enhance their ability to access and utilize credit effectively.

Additionally, 38.8% of the farmers have completed secondary education, further demonstrating a well-educated farming population. However, a smaller proportion of farmers, 6.2%**,** have only attended upper primary, while 3.1% have reached lower primary levels, indicating that there is still a segment of the farming community with limited education, which could hinder their access to credit and affect their productivity of farmers.

Interestingly, only 1.6% of the farmers have a university education, suggesting that higher education is not as prevalent among small-scale farmers. This distribution points to the importance of targeted interventions, such as financial literacy programs and credit services, that are accessible to farmers with varying levels of education. College and secondary-educated farmers may require more advanced financial tools, while those with lower education levels could benefit from simplified credit processes and additional support to improve their farming outcomes.

The current study results on education levels are higher than those reported by Omoro (2013), in Nyando District, Nyanza Province, where 83% of the respondents had not gone beyond primary school levels with only 6% having gone past secondary school level. The current high level of education is associated with improved agronomy (Omondi, 2019); adoption of current technologies (Kibet et al., 2011), and high yields (Momanyi et al., 2019).

Table 4.7

Head of the Family

	N	%
Yes	87	67.4%
No	42	32.6%

The finding that 67.4% of the smallholder tea farmers in Kericho County are heads of their families underscored the central role that these farmers play not only in agricultural production but also in household decision-making and financial management. Being the head of the family often means bearing the primary responsibility for providing for the household, which may influence these farmers' motivation to improve farm productivity and seek access to credit.

Table 4.8

Family Size

	N	Minimum	Maximum	Mean	Std. Deviation
Family Size	129	1.00	8.00	3.1318	1.62202

The study results showing a mean family size of 3 with a standard deviation of 2, ranging from families as small as 1 member to as large as 8 members, reflected the diversity in household structures among smallholder tea farmers in Kericho County. The relatively small average family size may suggest that many farming households are nuclear, which could influence how resources, including income from tea farming and access to credit, are managed. Note that data on family size was obtained from 129 out of 150 respondents; the remaining 21 respondents did not provide information on household size, likely because they were spouses or

household members responding on behalf of the household head who was absent during the interview. These 21 non-responses were treated as missing data and excluded from the analysis of this variable, consistent with listwise deletion procedures used for missing data in this study.

The mean family size of 3 members is consistent with findings by Muui et al. (2019), who found that smallholder farming households in Western Kenya had an average family size of 3–4 members. Similarly, Mwangi and Kariuki (2015) found that smallholder tea farming households in Kericho had an average of 3.2 members, which is consistent with the current finding. Smaller household sizes among farming communities are associated with reduced household labour availability but may also reflect improved household resource allocation, including reduced food expenditure pressure, which can positively influence the household's capacity to save and service loans (Otieno et al., 2016). Jayne et al. (2001), also found that majority of the farmers in Kenya had 5 acres.

Table 4.9

Experience in Tea Farming in Years

	N	Minimum	Maximum	Mean	Std. Deviation
Experience in Tea Farming in Years	129	1.00	25.00	8.0853	4.49484

The results showing that smallholder tea farmers in Kericho County have an average of 8 years of experience in tea farming, with a standard deviation of 4 years, highlight a moderate level of expertise among the farmers. The minimum of 1 year and maximum of 15 years of farming experience demonstrated a range of experience levels within the community. This variation highlighted that while many

farmers are relatively seasoned, having spent several years cultivating tea, there are also newer entrants into the industry. Farmers with more experience are likely to have developed better farming practices and a deeper understanding of the tea market, which could positively impact their productivity and access to credit, as they are more familiar with managing both farming risks and financial systems.

The current study finding is consistent with results from a study by Cahn, (2007), who argued that farmers with more experience are more aware of farming production issues and how it influences food security in their areas. The results are also convergent to the findings by Wanjala et al. (2015), who argued that farmers who have long years of experience in a particular field/area can apply skills for effective production and sustainability.

Table 4.10

Main Employment

	N	%
Formal Employment	22	17.1%
Informal Employment	25	19.4%
Tea Farming	81	62.8%
Retail Business	1	0.8%

The employment data for smallholder tea farmers in Kericho County revealed that the majority of respondents, 62.8%, consider tea farming as their primary occupation, highlighting its significance as a key source of livelihood in the region. This high percentage indicates that most farmers are heavily reliant on tea farming for their income and economic stability, which underscored the importance of access to credit in enhancing their farm productivity and overall performance. A

smaller portion of farmers, 19.4%, engage in informal employment, likely supplementing their tea farming income with various forms of casual or unregistered work. Meanwhile, 17.1% are formally employed, balancing tea farming with more stable jobs that may offer consistent income and benefits.

The fact that only 0.8% of respondents are involved in retail business suggested that very few farmers diversify their income streams through entrepreneurship outside agriculture. This reliance on tea farming as the primary economic activity for most households highlights the need for effective financial services, such as credit access, that can support the sustainability and growth of their farms. Additionally, the presence of farmers in informal and formal employment indicates the potential for blended financial approaches that cater to diverse income sources and offer flexible repayment options based on their varied livelihoods.

Table 4.11

Household of Income

	N	Minimum	Maximum	Mean	Std. Deviation
Off Farming Income	129	.00	80000.00	13348.8372	17332.97578
On Farming Income	129	4000.00	120000.00	16201.5504	17960.62527
Total Income	129	4000.00	200000.00	29550.3876	32972.75420

The income analysis for smallholder tea farmers in Kericho County indicated that off-farming income has a mean of 13,350 shillings with a standard deviation of 17,330 shillings, while on-farming income averages 16,200 shillings with a standard deviation of 17,960 shillings. The total average income, combining both sources, amounts to 29,550 shillings with a standard deviation of 32,972 shillings. The relatively high standard deviations across all income categories suggest

significant variability among farmers' earnings, highlighting that while some farmers may be achieving better financial outcomes through tea farming or additional income sources, others may be struggling to reach these averages.

The higher on-farming income reflects the critical role that tea farming plays in the livelihoods of these farmers, indicating that their primary source of income is linked to agricultural activities. However, the presence of off-farming income suggested that many farmers are also seeking supplementary income through other means, which may include informal employment, small businesses, or other ventures. This diversification can provide a buffer against the risks associated with fluctuating tea prices or poor harvests, reinforcing the importance of credit access and financial services that cater to both farming and non-farming activities. The overall average income of 29,550 shillings indicates that farmers have the potential to improve their financial stability and livelihoods through better access to credit and support systems that enhance both farming productivity and off-farm income-generating opportunities.

The finding concurs with that of Rana et al. (2007) who found that households that received off-farm income were less likely to maximize production as a method of reducing financial risk. On the other hand, Nantharatana (2003) found that farming affects the adoption of soil and water management practices. The results of this study are almost similar to those of Mutunga et al. (2017) in their study in Nyandarua County, where they found that 20% of the farmers were involved in other off-farm businesses and 1% were in formal employment.

4.3.2. Farm

The farm characteristics was based on farm ownership, farm distance from creditors, farm access by credit extension services and farm size. The results were presented in tables in terms of percentage frequencies, mean and standard deviation.

Table 4.12

Farm Ownership

	N	%
Leasing	25	19.4%
Family Ownership	78	60.5%
Individual Ownership	26	20.2%

The results on farm ownership among smallholder tea farmers in Kericho County revealed that 60.5% of the farms are classified as family-owned, indicating that a significant portion of the farming community operates within a familial structure that emphasizes collective responsibility and shared resources. This high percentage of family ownership often facilitates collaboration among family members in farming activities, potentially enhancing productivity through shared labor and knowledge. In contrast, 20.2% of the farmers own their farms individually, which suggested that these farmers may bear full responsibility for decision-making and financial management, impacting their access to credit and investment strategies.

The remaining 19.4% of farmers engage in leasing arrangements, reflecting a reliance on rented land rather than ownership. Leasing can be a viable option for those who may not have the capital to purchase land but still wish to engage in tea

farming; however, it can also create uncertainties regarding long-term investments and security of tenure. Overall, these ownership dynamics highlight the varying degrees of stability and control that farmers have over their farming operations, with family-owned farms likely benefiting from collaborative efforts and long-term planning, while individual owners and leaseholders may face different challenges related to financing, resource allocation, and the sustainability of their farming practices.

Table 4.13

Farm Distance from Creditors

	N	%
Near (0-5 Km)	40	31.0%
Far (Over 5 Km)	89	69.0%
Total	129	100%

The results indicating that 31.0% of farmers are located within 0-5 kilometers from creditors, while 69.0% are situated over 5 kilometers away, highlighted a significant geographical divide in access to credit among smallholder tea farmers in Kericho County. The closer proximity of the 31% suggested that these farmers may have an easier time accessing credit facilities, allowing them to benefit from timely financial resources that can enhance their farming operations.

Conversely, the 69% of farmers who are more than 5 kilometers away from creditors may face barriers that can impede their access to essential financial services, including higher transportation costs, time constraints, and potential difficulty in establishing relationships with lenders. This distance may also lead to delays in accessing funds, which can adversely affect their ability to invest in their

farms during critical periods, such as planting or harvesting. The disparity in proximity to credit sources underscored the need for targeted interventions that improve access to financial services for remote farmers, such as mobile banking solutions, community-based lending initiatives, or outreach programs designed to bridge the gap between creditors and those located farther away.

This result is in convergence with the study by Bagamba et al. (2007) among smallholder banana producers in Uganda, who found that the nearness to the factor creditors increased the farmers' access to credit facilities and non-farm income-generating activities that enable farmers to afford and apply inputs on time.

Table 4.14

Extension Services from Creditors

	N	%
Yes	122	94.6%
No	7	5.4%

The finding that 94.6% of smallholder tea farmers in Kericho County have received extension services from creditors indicates a strong support system that is likely to enhance their farming practices and overall productivity. This high percentage suggested that creditors are actively engaging with farmers beyond just providing financial services, offering valuable guidance on best agricultural practices, crop management, and financial literacy. Such extension services can play a crucial role in empowering farmers by equipping them with the knowledge and skills necessary to optimize their farming operations and make informed decisions about investments and resource allocation.

Table 4.15

Farm and Tea Size

	N	Minimum	Maximum	Mean	Std. Deviation
Farm Acreage	129	.50	8.00	3.6310	2.18635
Acreage under Tea	129	.50	5.00	2.3640	1.45133
Number of Tea Bushes	129	1000.00	20000.00	8286.0465	5690.62749

The findings revealed that small-scale farmers in Kericho County cultivate an average of 3.631 acres, with a standard deviation of 2.186 acres, indicating a diverse range of farm sizes among the farmers. The minimum farm size of 0.5 acres and maximum of 8 acres showed that while some farmers operate small plots, others manage significantly larger areas, which can influence their production capacity and access to economies of scale. Notably, the average size of land specifically under tea cultivation is 2.364 acres with a standard deviation of 1.451 acres, where the smallest tea farm measures 0.5 acres and the largest is 5 acres. This focused tea acreage suggested that tea farming is a predominant agricultural activity for these farmers covering 65% of total farm size, though the relatively small average size might limit their potential yield and profitability. However, the remaining 35% of the farm are utilized mainly for subsistence other crops and house structures.

Additionally, the average number of tea bushes per farm is reported at 8,286, with a standard deviation of 5,691 bushes, indicating considerable variability in planting densities among farmers. The range, with a minimum of 1,000 and a maximum of 20,000 tea bushes, highlights differing farming practices and investment levels, where farmers with more bushes may benefit from higher production volumes. However, those with fewer bushes could face challenges in achieving sufficient

economies of scale, which are critical for competitiveness in the tea market. Together, these findings emphasize the diverse operational scales within the farming community and suggest that targeted interventions, such as access to credit, agricultural training, and resources for expanding farm sizes, could play a pivotal role in enhancing productivity and profitability for smallholder tea farmers in Kericho County.

4.3.3. Farming Activities

The farming activities encompassed not only tea cultivation but also the cultivation of various other crops, reflecting a diverse agricultural practice among the farmers. These additional crops play a crucial role in diversifying income sources, reducing the risks associated with reliance on a single crop, and enhancing overall farm resilience. Furthermore, the farming activities were leveraged as collateral security for accessing credit, enabling farmers to secure loans that can be invested back into their agricultural operations.

Table 4.16

Types of Crops besides Tea

	N	%
Maize	46	35.7%
Napier	6	4.7%
Cabbage	38	29.5%
None	25	19.4%
Coffee	14	10.9%

The results indicate that 35% of the remaining land from tea bushes among smallholder tea farmers in Kericho County is allocated for housing structures and

the cultivation of other crops, reflecting a significant diversification in land use beyond tea farming. This allocation is essential for supporting the overall livelihoods of the farmers and their families. Among the alternative crops cultivated, 35.7% of farmers grow maize, demonstrating its importance as a staple food crop and a critical source of food security for households. Additionally, 29.5% of farmers engage in cabbage production, which is likely aimed at both subsistence and market sales, contributing to their income.

Coffee is grown by 10.9% of the farmers, indicating its role as another cash crop, while 4.7% cultivate Napier grass, primarily for livestock feed, which can enhance farm sustainability through integrated farming practices. Notably, 19.4% of farmers do not cultivate any additional crops, suggesting that they may rely solely on tea farming and potentially face greater risks related to market fluctuations and crop failures. This diverse utilization of land reflects the adaptability of farmers in managing their resources to meet both household needs and market demands. However, it also highlights the importance of supporting these farmers with access to knowledge and resources that can optimize their agricultural practices across various crops, thereby enhancing food security and income stability while contributing to the overall sustainability of their farming systems.

Table 4.17

Farming Activity as Collateral Security

	N	%
Yes	46	35.7%
No	83	64.3%

The results show that 35.7% of farmers utilize their farming activities as collateral for accessing credit, while a significant 64.7% do not leverage their agricultural operations in this manner. The fact that a substantial minority of farmers is woulding to use their farming activities as collateral suggested a degree of confidence in their farming operations and a recognition of the value of their land and produce as financial assets. This utilization can provide these farmers with the necessary capital to invest in improvements, expand their operations, or manage unforeseen expenses, thereby enhancing their agricultural productivity and financial resilience.

Table 4.18

Farming Purpose

	N	%
Commercial	129	100.0%

All the tea was used for commercial purpose this is because tea need industrial processing for it to be consumed. Tea is therefore, major cash crop that is grown representing 65% of land acreage among the smallholder farmers. In order to improve the livelihood of tea farmers in Kericho, there is need to consider more training and financial support since the pieces of land are becoming small.

4.3.4 Performance of Smallholder tea Farmers

The performance of small-scale farmers was evaluated using several critical indicators: increased productivity, expansion of acreage, improvement in tea earnings, and enhancement of tea quality. These metrics collectively offer a

comprehensive assessment of the farmers' operational effectiveness and financial viability. This was represented in frequency table as below.

Table 4.19

Increase Productivity

	N	%
No	16	12.4%
Yes	113	87.6%

The results showed that a significant 87.6% of farmers reported an increase in productivity, indicating a positive trend in the agricultural output among smallholder tea farmers in Kericho County. This high percentage suggested that a majority of farmers are successfully implementing improved farming practices, adopting new technologies, and benefiting from supportive factors such as access to credit, extension services, and better resource management.

Table 4.20

Increase in Acreage over Years

	N	%
No	45	34.9%
Yes	84	65.1%

The results indicated that 65.1% of farmers have increased their acreage over the years, reflecting a notable trend towards expansion within the smallholder tea farming sector in Kericho County. This increase in land area may be attributed to several factors, including enhanced access to credit, favorable market conditions, or successful land management practices that encourage farmers to invest in their operations. The ability to expand acreage is crucial for farmers seeking to increase

their production capacity and take advantage of economies of scale, ultimately contributing to higher incomes and improved financial stability.

Table 4.21

Improvement in Tea Earnings

	N	%
No	9	7.0%
Yes	120	93.0%

The results indicated a remarkable 93.0% of farmers experienced an improvement in tea earnings over the years, showcasing a significant positive trend in the financial performance of smallholder tea farmers in Kericho County. This high percentage suggested that many farmers are successfully enhancing their profitability through various means, such as better management practices, access to credit, access to quality inputs, and improved market conditions.

Table 4.22

Improvement in Tea Quality

	N	%
No	21	16.3%
Yes	108	83.7%

The results indicated that 83.7% of farmers reported an improvement in tea quality, which is a significant achievement for smallholder tea farmers in Kericho County. This high percentage suggested that many farmers were successfully implementing better agricultural practices, including improved cultivation techniques, effective pest and disease management, and enhanced processing methods.

4.3.5 Access to Credit

The access to credit was evaluated based on number of farmers accessing credit, source of credit, loan adequacy, loan grace, savings, loan repayment, loan collateral, loan purpose, financial training and membership to an organization.

Table 4.23

Access to Credit

	N	%
No	42	32.6%
Yes	87	67.4%

The results revealed that 67.4% of farmers successfully accessed credit, indicating a significant portion of the farming community in Kericho County is engaging with financial institutions or other credit sources to support their agricultural activities. This access to credit is crucial as it allows farmers to invest in essential inputs, such as seeds, fertilizers, and equipment, which could lead to increased productivity and improved financial stability. The ability to secure credit could also enable farmers to implement better farming practices and manage risks associated with unpredictable agricultural conditions.

In contrast, 32.6% of farmers reported not accessing credit, highlighting a notable gap in financial inclusion within this group. Several factors might have contributed to this lack of access, including inadequate financial literacy, stringent collateral requirements, or mistrust in financial institutions. Additionally, some farmers might face barriers related to their financial history or lack of formal documentation, which could further impede their ability to secure loans. According to Githiora

(2015) on factors influencing the growth of small-scale farming, credit access for the farmers in Githunguri constituency, Kiambu county, Kenya was 58%, which is in convergence with the current study. Similarly, Maina et al. (2018) found that 84.62% of the farmers in Mukurweini, Kenya, had accessed credit which is also in convergence with the current study finding. A study by Ongwech et al. (2020) on determinants of credit access discovered that 65.65% of the smallholder farmers in Kinangop Sub-County, Kenya, had not accessed credit which is in divergence from the current study result. A contrary finding was also reported by Purwanti et al. (2023) in a study on unlocking credit access for farmers in East Java, Indonesia where 30% of the farmers had accessed credit, which is also divergent from the current study finding.

Table 4.24

Source of Credit

	N	%
Commercial Banks	6	4.7%
KTDA	27	20.9%
MFIs	29	22.5%
SACCOs	25	19.4%
Not Applicable	42	32.6%

The results indicated that access to credit among farmers in Kericho County is diversified across various sources, reflecting the availability of different financial institutions to support agricultural activities. Specifically, 22.5% of farmers reported accessing credit from microfinance institutions (MFIs), which are often more accessible to smallholder farmers due to their tailored financial products and

flexible lending criteria. This suggested that MFIs played a significant role in providing credit to farmers, enabling them to meet their operational needs and invest in productivity-enhancing resources.

Additionally, 20.9% of farmers accessed credit through the Kenya Tea Development Agency (KTDA), highlighting the importance of agricultural cooperatives in facilitating financial support for tea farmers. KTDA's involvement underscored the potential benefits of cooperative structures in improving credit access, as they often offer specialized financial services designed to meet the needs of their members. Moreover, 19.4% of farmers turned to Savings and Credit Cooperative Organizations (SACCOs) for loans, which could provide a community-based approach to savings and lending, fostering financial solidarity among members. This reflected a growing trend of farmers utilizing cooperative financial models to enhance their access to credit.

In contrast, only 4.7% of farmers accessed credit from commercial banks, which might indicate barriers such as stringent lending requirements or a lack of awareness about available banking products tailored for agricultural needs. Notably, 32.6% of farmers reported not accessing any credit facilities at all. This significant percentage highlighted ongoing challenges in financial inclusion within the farming community, potentially due to factors such as lack of financial literacy, stringent collateral requirements, or mistrust in formal financial systems.

Table 4.25

Loan Adequacy

	N	%
Yes	69	53.5%
No	31	24.0%
Not Applicable	29	22.5%

The results revealed that among farmers who accessed loans, 53.5% reported that the loans they received were adequate for their needs, indicating a positive perception of the financial support they received. This adequacy suggested that these farmers were able to use the funds effectively to invest in essential agricultural inputs, enhance productivity, and address operational costs. Access to adequate loans is crucial for farmers as it allowed them to plan and implement growth strategies that could lead to improved income and sustainability in their farming operations.

However, 24.0% of farmers expressed that the loans were inadequate, pointing to potential gaps in the lending process or the financial products offered. Inadequate loans could restrict farmers from fully realizing their agricultural potential, limiting their ability to purchase necessary inputs or invest in improvements such as land expansion, machinery, or technology adoption. This discrepancy raised important questions about the terms and conditions of the loans, including factors such as loan amounts, interest rates, and repayment periods, which could affect farmers' ability to meet their financial needs effectively.

Additionally, 22.5% of farmers had no opinion on the adequacy of loans, likely because they had not accessed these services at all. This highlighted a significant

portion of the farming population that remains excluded from credit facilities, underscoring the need for targeted efforts to reach these farmers.

Table 4.26

Loan Grace Period

	N	Minimum	Maximum	Mean	Std. Deviation
Loan Grace Period in Days	129	0.00	365.00	77.7907	96.62651

The results indicated that the mean loan grace period for farmers in Kericho County was 78 days**,** with a standard deviation of 93 days**.** This average grace period represented the time frame during which borrowers were not required to make repayments on their loans, allowing them a buffer to stabilize their finances before facing repayment obligations. A grace period is crucial for farmers, particularly in agriculture, where income could be seasonal and unpredictable due to factors like harvest cycles, market fluctuations, and adverse weather conditions.

Table 4.27

Current Serving the Loan

	N	%
Yes	76	58.9%
No	25	19.4%
Not Applicable	28	21.7%

The results indicated that 58.9% of farmers in Kericho County were servicing their loans, which reflected a majority of the borrowing community actively engaged in meeting their financial obligations. This high percentage of loan servicing is a positive sign of financial responsibility and suggested that those farmers were

effectively managing their debts, which is crucial for maintaining good relationships with lending institutions and for sustaining their financial health.

In contrast, 19.4% of farmers reported that they were not servicing their loans while, 21.7% of farmers indicated that loan servicing did not apply to them, likely due to not having taken out loans in the first place. This significant portion of the population highlighted the ongoing challenges of financial inclusion

Table 4.28

Loan Repayment Attitude

	N	%
Constraint	54	41.9%
Non-Constraint	75	58.1%

The results of the loan repayment attitude indicated that 41.9% of farmers experienced constraints in repaying their loans, while 58.1% did not face such challenges. This finding shed light on the differing experiences of farmers regarding their financial obligations and the potential factors influencing their ability to manage loan repayments.

Table 4.29

Difficulties in Loan Repayment

	N	%
Yes	50	38.8%
No	42	32.6%
Not Applicable	37	28.7%

The findings revealed that 38.8% of farmers in Kericho County faced difficulties in loan repayment, while 32.6% did not encounter such challenges. This data

indicated that a notable proportion of farmers struggled with their financial obligations, which could stem from various factors including fluctuating incomes due to seasonal agricultural production, rising costs of inputs, or unfavorable loan terms such as high interest rates. Additionally, the finding that 28.7% of respondents indicated that these repayment issues did not apply to them is particularly noteworthy, as this group likely consisted of farmers who have not accessed loans at all.

Table 4.30

Post Loan Extension Services

	N	%
Yes	77	59.7%
No	24	18.6%
Not Applicable	28	21.7%

The findings revealed that 59.7% of farmers in Kericho County received post-loan extension services, which signified a positive step towards supporting borrowers in managing their loans and improving their agricultural practices after securing funding. These extension services could include technical assistance, financial education, and guidance on effective resource management, all of which are essential for helping farmers optimize the use of their loan funds and enhance productivity.

Consequently, 18.6% of farmers reported not receiving any post-loan extension services, which could hinder their ability to maximize the benefits of their loans and potentially lead to challenges in repayment or inefficient use of funds. Furthermore, the 21.7% of respondents for whom this information was not

applicable likely referred to farmers who had not accessed loans in the first place, highlighting a significant segment of the farming population that remains excluded from both credit and the associated support services.

Table 4.31

Frequency of Post Loan Extension Services

	N	%
Weekly	1	0.8%
Monthly	56	43.4%
Quarterly	33	25.6%
Semi-Annually	2	1.6%
Not Applicable	37	28.7%

The results showed that the frequency of accessing post-loan extension services varies among farmers in Kericho County. A significant 43.4% of farmers reported accessing these services on a monthly basis, indicating a strong engagement with available support resources. Monthly access to extension services can provide farmers with timely advice and assistance, helping them to address immediate challenges in their farming operations and improve their overall productivity. In contrast, 25.6% of farmers utilized these services quarterly, which still reflected a reasonable level of engagement, though less frequent than the monthly participants.

Only a small percentage of farmers accessed extension services semi-annually (1.6%) or weekly (0.8%), suggesting that while some farmers may benefit from regular support, others might not prioritize or require such frequent assistance. The limited engagement in weekly or semi-annual services may also reflect the varying

needs and capacities of farmers, as not all might require constant support or might have alternative means of obtaining information.

Importantly, the finding that 28.7% of farmers reported that this information was not applicable to them underscored a considerable segment of the farming population that remains excluded from post-loan support services, likely due to not having accessed loan facilities. This highlighted a gap in support for those who are outside the lending system, indicating a need for financial institutions and extension services to reach out to these farmers and enhance their access to credit and related resources.

The results emphasized the critical role that post-loan extension services played in the agricultural sector, as they could significantly influence the effectiveness of loan utilization and contributed to the long-term sustainability of farming operations in Kericho County.

Table 4.32

Preferred Credit Terms:

	N	%
No Collateral Barriers	25	19.4%
Financial Training	11	8.5%
Technical Training on Sustainable Tea Management	16	12.4%
Reduced Loan Processing Fee	6	4.7%
Low Interest Rates	19	14.7%
Flexible Repayment Period	10	7.8%
Not Applicable	42	32.6%

The results indicated a diverse range of preferences among farmers in Kericho County regarding the terms of credit facilities. Notably, 19.4% of farmers expressed a preference for credit options that did not impose collateral barriers, highlighting a significant concern regarding accessibility to loans, particularly for smallholder farmers who might lack the necessary assets to secure credit. This preference underscored the need for financial institutions to develop more inclusive lending policies that could accommodate those without substantial collateral.

Additionally, 14.7% of farmers favored low-interest rates, which is critical in ensuring that loan repayments remain manageable and did not impose an excessive financial burden. Interest rates could significantly influence the overall cost of borrowing, and lower rates might enhance farmers' ability to invest in their agricultural operations and improve their livelihoods. Similarly, 12.4% of farmers indicated a desire for technical training on sustainable tea management, reflecting an awareness of the importance of best agricultural practices in enhancing productivity and sustainability. This preference for training demonstrated that farmers were not only seeking financial support but also valued the knowledge and skills necessary to optimize their farming practices.

The findings further revealed that 8.5% of farmers preferred financial training, which could empower them with the skills to manage their finances better and make informed decisions about credit and investments. Meanwhile, 7.8% of farmers expressed a preference for flexible repayment periods, which could accommodate the seasonal nature of agricultural income and help prevent defaults. Lastly, 4.7%

preferred reduced loan processing fees, indicating that the costs associated with securing loans were also a concern.

Importantly, the fact that 32.6% of farmers indicated that these preferences were not applicable to them suggested a significant portion of the population remained outside the credit system, likely due to a lack of access to loan facilities altogether. This exclusion highlighted the need for targeted outreach and support for farmers who might not currently benefit from credit access, ensuring that financial services were inclusive and tailored to meet the diverse needs of the farming community.

Table 4.33

Reason for the Choice of Credit

	N	%
Shifted the loan purpose	35	27.1%
Credit was insufficient	9	7.0%
Limited skills on credit management	16	12.4%
Limited technical education on tea management	27	20.9%
Not Applicable	42	32.6%

The results indicated that a variety of factors influenced farmers' decisions to choose specific credit facilities in Kericho County. Particularly, 27.1% of farmers opted for a credit facility because it allowed for a shift in the loan purpose, suggesting that flexibility in how funds can be utilized is a critical consideration. This flexibility could enable farmers to allocate resources to various aspects of their farming operations, such as diversifying crops or investing in equipment, which can ultimately enhance their productivity and resilience.

Furthermore, 20.9% of farmers chose credit facilities due to limited technical education on tea management. This reflected a need for integrated financial products that not only provide funding but also offered educational support, empowering farmers with the knowledge and skills necessary to optimize their tea production practices. The recognition of this gap in technical education underscored the importance of linking credit access with capacity-building initiatives that could help farmers improve their management practices and yield better outcomes.

Additionally, 12.4% of farmers reported that they had limited skills in credit management, indicating a significant need for financial literacy programs. Without a solid understanding of credit management, farmers might struggle to navigate the complexities of borrowing and repayment, potentially leading to difficulties in meeting their financial obligations. Addressing this gap through targeted training could foster better financial decision-making among farmers.

Finally, 7.0% of farmers indicated that the credit offered was insufficient, which highlights another critical barrier to accessing the necessary funds for their agricultural activities. Insufficient credit could severely limit farmers' ability to invest in their operations, ultimately impacting their productivity and financial stability. However, this was not applicable to 32.6% of the farmers who did not access the loan facilities. This indicated that the financial institution should consider inclusivity in training guiding those who were not able to access in improving productivity of tea farming.

Table 4.34

Form of Collateral Requirement

	N	%
Land Title Deed	24	18.6%
Household Assets	9	7.0%
Share or Savings	54	41.9%
Not Applicable	42	32.6%

The findings revealed that among farmers in Kericho County, 41.9% utilized shares or savings as the leading form of collateral for securing credit, highlighting the importance of liquid assets in lending practices. This approach not only offered lenders a form of security but also encouraged farmers to maintain savings, which could enhance their financial stability. Following this, 18.6% of farmers used land title deeds as collateral, indicating that traditional forms of collateral remained significant, although this might pose challenges for those without formal ownership documents.

Additionally**,** 7.0% reported using household assets as collateral, reflecting a more informal approach that might limit access due to valuation difficulties. A considerable, 32.6% of farmers indicated that this information was not applicable to them, suggesting a considerable portion of the population remaining outside the credit system, highlighting the need for inclusive lending strategies.

Table 4.35

Frequency of Loan Payment

	N	%
Bi Weekly	10	7.8%
Monthly	85	65.9%
Never	34	26.4%

The results indicated that a substantial majority of farmers in Kericho County, specifically 65.9%**,** are committed to repaying their loans on a monthly basis, reflecting a structured approach to managing their financial obligations. This monthly repayment schedule is likely aligned with the cash flow patterns of agricultural income, allowing farmers to allocate funds effectively for loan repayment. Additionally, 7.8% of farmers opted for bi-weekly repayments, suggesting that some individuals might prefer a more frequent repayment schedule, possibly to better manage their cash flow or reduce interest accumulation over time. However, it is noteworthy that 26.4% of farmers did not participate in loan repayment, indicating a significant segment of the population either faced challenges in meeting their repayment obligations or might have not accessed loans at all. This disparity underscored the need for targeted financial education and support mechanisms to enhance the capacity of farmers to manage their loans effectively, ensuring they could fulfill their repayment commitments and maintain access to future credit facilities.

Table 4.36

Distance of Credit Facility Affect Access to Credit

	N	%
Agree	102	79.1%
Disagree	27	20.9%

The results indicated that a significant majority of farmers in Kericho County, specifically 79.1%**,** believed that the distance to credit facilities significantly affected their access to credit. This perception underscored the logistical challenges faced by farmers, as physical distance from lending institutions could create barriers to obtaining financial services, limiting their ability to access essential funding for agricultural activities.

Farmers might encounter difficulties such as increased transportation costs, time constraints, and the potential for unfavorable loan terms if they are forced to travel long distances to secure credit. Conversely, only 20.9% of farmers disagreed with this statement, suggesting that a smaller segment of the population either does not perceive distance as a critical factor or might have alternative means of accessing credit, such as mobile lending platforms or community-based lending groups. This result is in convergence with the study by Bagamba et al. (2007) among smallholder banana producers in Uganda, who found that the nearness to the factor markets increased the farmers' access to credit facilities and non-farm income-generating activities that enable farmers to afford and apply inputs on time.

Table 4.37

Travelling Cost

	N	Minimum	Maximum	Mean	Std. Dev
Travelling Cost in Loan Pre-Disbursement Period	129	.00	15000.00	1739.5349	3920.29811

The findings revealed that farmers in Kericho County spent an average of 1,740 shillings with a standard deviation of 3,920 shillings on travel to access credit facilities. This significant variation in travel costs suggested that while some farmers might incur relatively low expenses, others faced substantial financial burdens when seeking credit, potentially due to factors such as distance from lending institutions or the availability of transportation.

Table 4.38

Source of Labour

	N	%
Family Labour	34	26.4%
Hired Labour	57	44.2%
Family and Hired Labour	38	29.5%

The results indicated that labor practices among tea farmers in Kericho County are diversed, with 44.2% of farmers opting to hire labor for their tea farms, reflecting a reliance on external workforce support to manage the demands of tea cultivation effectively. This choice might be driven by the need for specialized skills or increased labor during peak seasons, ensuring that farms operate efficiently and productivity is maximized. Additionally, 26.4% of farmers utilized family labor, suggesting that many still rely on household members for assistance, which might

help to reduce labor costs while fostering family involvement in agricultural activities.

Meanwhile, 29.5% of farmers reported using a combination of both family and hired labor, highlighting a blended approach that leveraged on the strengths of both sources. This mixed strategy could provide flexibility in managing labor needs and adapting to varying workloads throughout the year.

Table 4.39

Income of Farmers Affect Loan Accessibility

	N	%
Yes	128	99.2%
No	1	0.8%

The results revealed a compelling consensus among farmers in Kericho County, with 99.2% agreeing that their income significantly affected loan accessibility. This overwhelming agreement underscored the critical role that income plays in determining a farmer's eligibility for credit. Higher income levels typically enhance a farmer's ability to repay loans, making them more attractive to lenders, who often assess the financial stability of borrowers before extending credit.

Table 4.40

Frequency of Access to Loan Facility

	N	%
Monthly	65	50.4%
Quarterly	42	32.6%
Semi-Annually	11	8.5%
Never	11	8.5%

The findings indicated a varied pattern in how farmers in Kericho County accessed loan facilities, with 50.4% utilizing loans on a monthly basis. This suggested that a substantial segment of the farming community relied on regular access to credit, likely to support ongoing operational costs, manage cash flow, or invest in their farming activities. In contrast, 32.6% of farmers accessed loans quarterly, indicating a less frequent but still significant engagement with credit, possibly aligning with seasonal cash flow needs or specific investment cycles in their agricultural operations. Meanwhile, 8.5% of farmers reported accessing loans semi-annually, highlighting a more sporadic approach to borrowing, which might be indicative of cautious financial management or limited opportunities for credit access. Notably, another 8.5% of farmers indicated that they never access loan facilities, suggesting a potential gap in financial inclusion or a lack of awareness of available credit options.

Table 4.41

Regular Savings

	N	%
Yes	120	93.0%
No	9	7.0%

The findings revealed that a significant majority of farmers in Kericho County, specifically 93.0%, engaged in regular saving practices, highlighting a strong inclination toward financial prudence and future planning within this community. In contrast, the 7.0% of farmers who do not save might face challenges related to financial security and sustainability, potentially limiting their ability to invest in their farms or cope with unexpected financial demands.

Table 4.42

Mode of Savings

	N	%
Commercial Banks	22	17.1%
MFIs	28	21.7%
KTDA	53	41.1%
SACCOs	26	20.2%

The findings reveal that 41.1% of farmers save through the Kenya Tea Development Agency (KTDA), indicating its critical role in providing a trusted savings platform tailored to the needs of tea growers. This reliance on KTDA may be attributed to its familiarity and the specialized services it offers. In addition, 21.7% of farmers opt to save in microfinance institutions (MFIs), reflecting a growing trend towards utilizing these organizations for more flexible and accessible financial services. Meanwhile, 20.2% of farmers choose Savings and Credit Cooperative Organizations (SACCOs), which promote community-oriented savings approaches, enabling members to benefit from shared resources. Lastly, 17.1% of farmers save in commercial banks, highlighting a traditional banking option that, while less popular among this demographic, still plays a role in their financial strategies.

Table 4.43

Received Financial Education within the Last Two Months

	N	%
Yes	120	93.0%
No	9	7.0%

The results showed that an impressive 93.0% of farmers in Kericho County have received financial education within the last two months, reflecting a strong emphasis on improving financial literacy among the farming community. This high percentage suggested that there are active initiatives aimed at equipping farmers with essential knowledge and skills related to financial management, savings, credit access, and investment strategies.

Table 4.44

Source of Financial Education

	N	%
Extension Officers from MoA, Livestock and Fisheries	23	17.8%
Financial Institutions	29	22.5%
NGOs	6	4.7%
KTDA	69	53.5%
Professional Trainer	1	0.8%
None	1	0.8%

The results revealed that 53.5% of farmers in Kericho County received their financial education from the Kenya Tea Development Agency (KTDA), highlighting the agency's pivotal role in providing tailored financial training specifically designed for tea farmers. This underscored the importance of KTDA in enhancing the financial literacy of its members, likely addressing their unique challenges and opportunities within the tea sector.

Additionally, 22.5% of farmers obtained financial education from various financial institutions, indicating that these entities were also contributing to the financial literacy of the farming community, possibly through workshops or informational

sessions on credit access and financial management. Moreover, 17.8% of farmers received guidance from extension officers from the Ministry of Agriculture (MoA, Livestock and Fisheries), showcasing the government's commitment to supporting farmers through educational initiatives that foster better agricultural practices and financial management.

On the other hand, 4.7% of farmers reported receiving financial education from non-governmental organizations (NGOs), which often play a vital role in community development and capacity building. Notably, only 0.8% of farmers received training from professional trainers, indicating a limited impact of this source, while another 0.8% did not receive any financial education. This distribution of educational sources suggested that while KTDA and financial institutions are leading in providing financial literacy, there remains potential for greater collaboration among various organizations, including NGOs and professional trainers, to further enhance financial education and support for the farming community.

Table 4.45

Frequency of Interaction with Financial Trainers

	N	%
Monthly	52	40.3%
Quarterly	46	35.7%
Semi-Annually	31	24.0%

The results showed that a significant portion of farmers in Kericho County actively engage with financial trainers, with 40.3% reporting monthly interactions. This frequency of engagement suggested a strong commitment among farmers to

improve their financial literacy and management skills, as regular training could enhance their understanding of financial products and best practices. Meanwhile, 35.7% of farmers participated in these training sessions on a quarterly basis, indicating a substantial segment that values financial education but might have less frequent access or availability for monthly sessions. Additionally, 24.0% of farmers engaged with financial trainers semi-annually, reflecting a more sporadic approach to financial education. This distribution underscored the importance of providing flexible training options to accommodate varying schedules and commitments among farmers.

Table 4.46:

Member of Association

	N	%
Yes	128	99.2%
No	1	0.8%

The results revealed an impressive 99.2% of farmers in Kericho County are members of various associations, highlighting the significant role these groups play in the agricultural community. This high level of membership suggested that farmers recognized the benefits of collective action and collaboration, which could provide them with enhanced bargaining power, access to resources, and opportunities for shared knowledge and experiences.

Table 4.47

Number of Association as a Member

	N	%
1.00	109	84.5%
2.00	20	15.5%

The results indicated that a substantial 84.5% of farmers in Kericho County are members of a single association, while 15.5% belong to two associations. This trend suggested that most farmers preferred to concentrate their efforts and resources within one organization, which might provide them with sufficient support, resources, and networking opportunities to address their agricultural needs effectively.

Table 4.48

Benefits of Financial Training

	N	%
Improved Record Management Practices	14	10.9%
Improved Savings and Resource Mobilization Skills	74	57.4%
Improved Budgeting Techniques	17	13.2%
Good Business Analysis Skills	23	17.8%
Improved Marketing Skills	1	0.8%

The results indicated a notable enhancement in various financial skills among farmers in Kericho County, with 57.4% reporting improved savings and resource mobilization skills. This suggested that the majority of farmers are becoming more adept at managing their finances and optimizing their resources, which is crucial for sustaining their agricultural operations and improving their economic resilience. Additionally, 17.8% of farmers indicated an improvement in business analysis

skills, allowing them to make informed decisions based on market trends and financial performance.

Furthermore, 13.2% reported enhanced budgeting techniques, which are vital for effective financial planning and ensuring that farmers could allocate their resources efficiently. The results also showed that 10.9% of farmers have improved their record management practices, indicating a growing awareness of the importance of keeping accurate financial records for tracking performance and compliance. Lastly, while only 0.8% reported improvements in marketing skills, this highlighted a potential area for further development, as effective marketing could significantly impact farmers' ability to reach consumers and maximize their profits. Overall, these findings reflected the positive impact of financial education and training on the farmers' capabilities, ultimately contributing to better financial management and improved agricultural outcomes.

4.4 Regression Analysis Results

The study employed binary logistic regression to examine whether specific characteristics of farms and farmers significantly affect credit access among smallholder tea farmers in Kericho County. This type of regression model assesses the probability of an event happening compared to its non-occurrence, with the impact of independent variables typically expressed in terms of odds.

4.4.1. Farm Character and Credit Access

The binary logistic regression analysis aimed to assess how various farm characteristics (specifically ownership, distance, extension support, land size, and

the number of tea bushes) impact the likelihood of obtaining a loan among smallholder tea farmers.

Table 4.49 presents the omnibus test of model coefficients, offering a comprehensive assessment of the model's overall significance.

Table 4.49

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	63.604	6	.000
	Block	63.604	6	.000
	Model	63.604	6	.000

The Chi-Square test indicated that the overall model of using binary logistic was the best model. The model demonstrated statistical significance, with a chi-square value of (χ^2 (6) = 63.604, P < 0.05)**,** indicating that the independent variables collectively have a meaningful relationship with credit access. Hence, farm characteristics had significant association with credit access by smallholder tea farmers in Kericho County.

Table 4.50

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	99.195a	.389	.543

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

The R Square results from model summary that the model indicates farm characteristics explained between 38.9% (Cox & Snell R Square) and 54.3% (Nagelkerke R Square) of the variability in loan access and accurately classified 79.1% of cases, reflecting a strong predictive capability.

Table 4.51

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	100.752	8	.100

The goodness-of-fit test, as indicated by the Hosmer and Lemeshow statistic (χ^2 (8) = 100.752, P > 0.05), suggested that the model fits the data well, further validating its robustness. Hence, the model was the best fit to explain which farm characteristics had significant impact on the credit access by smallholder tea farmers in Kericho County. This implies that farm characteristics had significant influence on credit access.

Table 4.52

Classification Table

Observed			Predicted		
			Access to Credit		Percentage Correct
			No	Yes	
Step 1	Access to Credit	No	34	8	81.0
		Yes	19	68	78.2
	Overall Percentage				79.1

a. The cut value is .500

The classification table indicated that an average of 79.1% of the farm characteristics were correctly identified to affect access to credit. Hence, farm characteristics reflect a strong predictive capability of credit access.

Table 4.53

Variable in the Equation

		B	S.E.	Wald	Df	Sig.	Exp(B)
	Farm_Own	-.726	.626	1.344	1	.246	.484
	Dist_Creditor	-.076	.133	.330	1	.566	.927
	Ext_Creditor	21.365	14872.171	.000	1	.999	1.898exp 9
Step 1a	Acres	1.058	.354	8.943	1	.003	.347
	Tea_Acres	-.591	.531	1.237	1	.266	.554
	Tea_Bush	.001	.000	15.022	1	.000	1.001
	Constant	-18.856	14872.171	.000	1	.999	.000

a. Variable(s) entered on step 1: Farm_Own, Dist_Creditor, Ext_Creditor, Acres, Tea_Acres, Tea_Bush.

The variable in the equation indicated that, land size in acres emerged as a significant factor in access to loan (B = 1.058, Wald = 8.943, P = 0.003, Exp(B) = 0.347). This result indicates that farmers with larger land holdings have higher odds of accessing credit, implying that those with smaller land sizes have low chances accessing credits. This suggested that farmers with larger land holdings have higher odds of securing loans, indicating a potential perception by lenders that these farmers might have higher need for external financing.

Similarly, the number of tea bushes had a significant effect on access to loan (B = 0.001, Wald = 15.022, P = 0.000, Exp(B) = 1.001). This implies that farmers with higher number of tea bushes had higher odds of borrowing than those with few

numbers of tea bushes. This could suggest that lenders view a larger number of tea bushes as an indicator of agricultural productivity and potential profitability, making these farmers more attractive candidates for borrowing.

Farm ownership, distance from creditor, extension creditor services, and tea acres were found to be insignificant factors that did not affect access to credit. Hence, firm size and number of tea bushes had significant influence on access to loans.

4.4.2. Farmer Character and Credit Access

A binary logistic regression analysis was conducted to test whether farmer's characteristics that is gender, age, education level, savings, financial education, experience in farming, on farming income on likelihood of having a loan. The following farmer's characteristics that is gender, age, education level, savings, financial education, experience in farming were examined on farming income on likelihood of having a loan.

Table 4.54

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
	Step	78.590	7	.000
Step 1	Block	78.590	7	.000
	Model	78.590	7	.000

The model demonstrated statistical significance, with a chi-square value of (χ^2 (7) = 78.590, $P < 0.05$). This indicates that the predictors included in the model are collectively effective in explaining variations in access to credit among smallholder tea farmers. The significant chi-square results suggested that there is a noteworthy

relationship between the farmers' characteristics and their likelihood of obtaining loans, reinforcing the validity of the model.

Table 4.55

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	84.209a	.456	.636

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

The results indicated that it explains between 45.6% (Cox & Snell R Square) and 63.6% (Nagelkerke R Square) of the variance in access to credit. Additionally, the Hosmer and Lemeshow test supports the adequacy of the model, suggesting a good fit to the data (χ^2 (8) = 100.752, P > 0.05).

Table 4.56

Classification Table

Observed			Predicted		
			Access to Credit		Percentage Correct
			No	Yes	
Step 1	Access to Credit	No	28	14	66.7
		Yes	4	83	95.4
	Overall Percentage				86.0

a. The cut value is .500

The model's accuracy is impressive, as it correctly classified 86.0% of the cases, demonstrating its robust capability to identify which farmer characteristics significantly influence credit access. This high classification rate suggested that the model effectively distinguishes between farmers who are likely to access loans and those who are not, based on the variables analyzed.

Table 4.57

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1a	Gender	2.411	.806	8.954	1	.003	11.147
	Age	.072	.039	3.447	1	.063	1.075
	Edu_Level	.053	.433	.015	1	.903	1.054
	Savings	-21.225	13383.189	.000	1	.999	.000
	Fin_Edu	-21.301	13180.869	.000	1	.999	.000
	Exp_Farm	-.254	.103	6.094	1	.014	.776
	On_Income	.000	.000	.278	1	.598	1.000
	Constant	39.737	18784.172	.000	1	.998	1.808exp(17)

a. Variable(s) entered on step 1: Gender, Age, Edu_Level, Savings, Fin_Edu, Exp_Farm, On_Income.

Among the characteristics examined, gender emerged as a significant predictor of loan access (B= 2.411, Wald = 8.954, P= 0.003, Exp(B) = 11.147). The analysis revealed a coefficient of B = 2.411, a Wald statistic of 8.954, and a p-value of 0.003, suggesting that male farmers have lower odds of borrowing compared to their female counterparts. This finding highlights a potential gender bias in lending practices, which may limit financial opportunities for male farmers in Kericho County. In contrast, female farmers appear to be more likely to access loans, potentially benefiting from specific lending initiatives targeting women or having more flexibility in negotiating loan terms.

Age did not demonstrate statistical significance in influencing loan access at the 0.05 level (p=0.063>0.05). The coefficient was B = 0.072, a Wald statistic of 3.447, and a p-value of 0.063. Since the p-value exceeds the 0.05 threshold, age is not a statistically significant predictor of credit access in this study. No conclusion should be drawn regarding the directional effect of age on loan access based on these

results. Future studies with larger samples may explore whether age plays a role in credit access among smallholder tea farmers.

Experience in farming emerged as another significant factor, indicated by a coefficient of B = -0.254, a Wald statistic of 6.094, and a p-value of 0.014. This result suggested that more experienced farmers are less likely to seek loans, possibly due to a reliance on self-financing or established savings. These experienced farmers might have developed sufficient resources through their years in the industry, reducing their dependence on external credit sources.

Interestingly, factors such as education level, savings behavior, financial education, and income from farming did not show a significant impact on access to loans. This finding suggested that lenders may not consider these variables as crucial indicators of creditworthiness, potentially overlooking the importance of financial literacy and savings culture in supporting loan access.

4.4.3. Farming Activity and Credit Access

The results of the binary logistic regression analysis aimed to assess the influence of farming activities, specifically the presence of other crops and the type of farm collateral, on the likelihood of accessing loans.

Table 4.58

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	5.777	2	.056
	Block	5.777	2	.056
	Model	5.777	2	.056

The overall model did not demonstrate statistical significance, with a chi-square value of (χ^2 (2) = 5.777, P > 0.05). This marginal significant indicated that among the activities there some variable that were considered in access to loan, however, majority of farm activities did not determine credit access.

Table 4.59

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	157.022a	.044	.061

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

This indicated that the model explained a minimal portion of the variation in access to credit, ranging between 4.4% (Cox & Snell R Square) and 6.1% (Nagelkerke R Square). Such low values suggest that the included variables may not adequately capture the complexities influencing loan accessibility among smallholder farmers.

Table 4.60

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	50.405	4	.000

Furthermore, the Hosmer and Lemeshow test indicated that the model is not a good fit for the data, as evidenced by (χ^2 (2) = 50.402, P < 0.05). This reinforces the notion that the selected characteristics do not significantly contribute to understanding the dynamics of credit access.

Table 4.61

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1a	Crops	.013	.126	.010	1	.919	1.013
	Farm_Collateral	-1.027	.519	3.920	1	.048	.358
	Constant	2.417	.778	9.647	1	.002	11.214

a. Variable(s) entered on step 1: Crops, Farm_Collateral.

Despite the lack of overall model significance, the analysis revealed that the type of farm collateral had a significant effect on loan access (B = -1.058, Wald = 8.943, P = 0.003, Exp(B) = 0.347). This result implied that farmers who rely on collateral for loans have lower odds of successfully borrowing compared to those who do not utilize collateral. This finding highlighted the potential barriers posed by collateral requirements, which might disproportionately affect farmers with limited assets, thereby complicating their ability to access credit. Overall, while the model's predictive capabilities are limited, the significance of collateral usage provides valuable insights into the challenges faced by smallholder farmers in securing loans.

4.5 Discussions

The analysis of the effect of credit access on smallholder tea farmers' in Kericho County utilized a multinomial logit model. This model effectively log-linearizes both the income derived from farming and the extent of credit access, thereby reducing variability in the dependent variable and transforming the data to achieve an approximately normal distribution. Such transformation enhances the reliability

of the results by stabilizing the variance and allowing for more accurate statistical inferences.

In addition, Chi-Square analysis was employed to assess the relationship between credit access and the overall performance of small-scale farmers in Kericho. This analysis aimed to determine whether there is a significant association between farmers' performance and their ability to access credit. By exploring this relationship, the study provides insights into the potential impact of credit availability on the operational success and income generation of smallholder tea farmers, highlighting the importance of financial support in enhancing agricultural productivity.

4.5.1 Credit Access and Income from Farming

The income generated from tea farming was analyzed using a multinomial logit regression, which specifically examined the relationship between income types and credit access factor these are adequacy of loan, loan attitude, post-loan extension services and membership to an association.

This regression model provided comprehensive insights into how different forms of income are influenced by access to credit, enabling a nuanced understanding of the financial dynamics at play within smallholder tea farming. The results were presented through several key statistical measures, including model fitting information, Pseudo R-Square values, and the Likelihood Ratio Test.

Table 4.62

Model Fitting Information

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	Df	Sig.
Intercept Only	355.500			
Final	232.819	122.681	96	.034

The model fitting information revealed that the multinomial logit model provided a strong fit for explaining the relationship between credit access and income from farming. Specifically, the Chi-Square value of 122.681 and the corresponding p-value of 0.034 indicate that the model is statistically significant. This means that the model effectively captures the association between credit access and variations in farming income. The significant Chi-Square value suggested that credit access plays a meaningful role in determining income levels among smallholder tea farmers, providing evidence that credit availability is an important factor influencing financial outcomes in farming activities.

Table 4.63

Pseudo R-Square

Cox and Snell	.614
Nagelkerke	.622
McFadden	.221

The Pseudo R-Square results from the multinomial logit model indicated that access to credit explains a substantial portion of the variation in income from farming. Specifically, the Cox & Snell R-Square value of 61.4% and the Nagelkerke R-Square value of 62.2% demonstrated that more than half of the income variability

among smallholder tea farmers can be attributed to differences in credit access. These values reflect a strong model fit and emphasize the significant role of credit in shaping farmers' income levels. However, the McFadden R-Square value of 0.221, which is generally lower than the other two measures, suggested a more conservative interpretation of the model's explanatory power. McFadden's measure typically reports lower values but still indicates a decent fit in this context. A value of 0.221, though lower, still supports the conclusion that access to credit is an influential factor in determining farming income, albeit with other unmeasured factors potentially contributing to the remaining variation.

Table 4.64

Likelihood Ration Tests

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	232.819a	.000	0	.
Loan_Adequacy	257.204b	24.385	32	.830
Loan_Attitude	276.392b	43.573	16	.000
Post_Loan	214.933b	.	32	.
Membership	53.098b	.	16	.

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

b. unexpected singularities in the Hessian matrix are encountered. This indicates that either some predictor variables should be excluded or some categories should be merged.

The Chi-Square analysis results revealed that among the various factors related to access to credit, loan attitude emerged as the only significant contributor to income from farming. With a Chi-Square value of 43.573 and a p-value of 0.000 ($P<0.05$), the results indicated a highly significant relationship between farmers' loan attitudes and their farming income.

This finding suggested that how farmers perceive and approach loans whether they view them as an opportunity or a constraint directly impacts their ability to generate higher incomes from farming activities. Positive loan attitudes could encourage better financial management, investment in productive farming practices, and ultimately higher earnings. Conversely, a negative loan attitude might lead to underutilization of credit facilities, thereby limiting income growth. The significance of this relationship underscored the importance of addressing farmers' perceptions and attitudes towards loans as part of improving their financial outcomes.

4.5.2. Credit Access and Performance of Smallholder Farming

The Pearson Chi-Square test was selected as the most suitable method to assess the impact of credit access on the performance of smallholder farmers in Kericho County, particularly in relation to key performance indicators such as increased productivity, expanded acreage, improvement in tea earnings, and enhanced tea quality. The Pearson Chi-Square test is ideal for evaluating the association between

categorical variables, which in this case involves comparing whether access to credit has a statistically significant effect on various measures of farming performance.

Table 4.65

Pearson Chi-Square Test

		Access to Credit
Increase Productivity	Chi-square	4.669
	df	1
	Sig.	.031*
Increase in Acreage over Years	Chi-square	2.939
	df	1
	Sig.	086
Improvement in Tea Earnings	Chi-square	4.671
	df	1
	Sig.	.031*,b
Improvement in Tea Quality	Chi-square	12.109
	df	1
	Sig.	.001*

Results are based on nonempty rows and columns in each innermost subtable.
*. The Chi-square statistic is significant at the .05 level.
b. More than 20% of cells in this subtable have expected cell counts less than 5. Chi-square results may be invalid.

The results revealed significant associations between access to credit and key performance indicators of smallholder tea farming in Kericho County. Specifically, access to credit significantly influenced an increase in tea productivity, as shown by the Chi-Square value of 4.669 with a p-value of 0.031 ($P<0.05$). This indicates that farmers who had access to credit were more likely to experience an increase in tea productivity compared to those without credit access.

However, when examining the expansion of acreage over the years, the results did not show a statistically significant relationship with access to credit (Chi-Square = 2.939, P=0.086). This suggested that while credit access may enhance productivity, it does not necessarily lead to an increase in the land size under cultivation.

Similarly, tea earnings showed a significant association with access to credit (Chi-Square = 4.671, P=0.031), highlighting that farmers with credit access were more likely to see improvements in their tea income. This mirrors the results on productivity, indicating a close relationship between increased output and better financial returns.

Lastly, the improvement in tea quality was highly associated with credit access, as indicated by a Chi-Square value of 12.109 with a p-value of 0.001 ($P<0.05$). This demonstrates that credit access plays a critical role in enabling farmers to invest in better farming practices or inputs that result in higher-quality tea production. Overall, these results underscored the importance of credit in enhancing both productivity and the quality of tea, which in turn contributes to improved earnings for smallholder farmers.

4.6 Conclusion of the Results

The first research question was: what is the effect of the farm's characteristics on credit access among of smallholder tea farmers in Kericho County, Kenya?

The analysis revealed that certain farm characteristics significantly affected credit access and, consequently, the performance of smallholder tea farmers. The size of the land was a key factor, with results showing that farmers with larger land sizes

had higher odds of borrowing, while those with smaller land sizes had lower odds of accessing credit. The number of tea bushes was also significant, indicating that farmers with more tea bushes had higher chances of accessing credit. This access to credit, in turn, positively influenced productivity, tea quality, and earnings, although it did not significantly impact the expansion of acreage.

The results of the study indicated that specific farm characteristics significantly influence credit access among smallholder tea farmers. Notably, farmers with larger land sizes were more likely to access credit, while those with smaller land holdings experienced lower odds of borrowing. This finding aligns with Musuva et al. (2016), who observed that factors such as land size and farmer demographics play crucial roles in credit accessibility among tea farmers in Kiambu County. Conversely, Dlamini and Mohammed (2018) suggest that larger farms might be perceived as more stable and established, which could potentially increase their access to credit due to lenders' preferences for established businesses with documented growth trajectories. Additionally, the study found that the number of tea bushes positively correlated with credit access, echoing Mpirwa (2022), who identified farm size and productivity as significant determinants of loan availability for smallholder coffee growers in Rwanda.

Furthermore, the positive impact of credit on productivity, tea quality, and earnings supports the findings of Chenaa et al. (2018), which emphasized the importance of credit facilities in enhancing smallholder farmers' performance in Cameroon. However, it is noteworthy that the current results indicate no significant impact of credit access on acreage expansion, which contrasts with Topor et al. (2023), who

found that factors such as overall asset worth and turnover significantly influenced loan amounts and agricultural expansion. This divergence suggested that while credit access is crucial for improving productivity, the strategic use of credit for expansion may be hindered by other constraints not fully captured in this analysis.

The second research question was: what is the effect of the farmer's characteristics on credit access among smallholder tea farmers in Kericho County, Kenya? Farmer characteristics such as gender and farming experience were significant in determining credit access. The findings indicated that female farmers had higher odds of borrowing loans compared to their male counterparts. Age was not statistically significant in predicting credit access ($p=0.063>0.05$), and therefore conclusions about older farmers being less likely to access loans should not be drawn from this study. Experienced farmers had a lower likelihood of borrowing ($p=0.014<0.05$), possibly due to accumulated savings or established financial independence. Interestingly, education level, savings culture, and farming income were not found to significantly affect credit access. However, access to credit significantly enhanced performance indicators like tea productivity, earnings, and quality.

The analysis of farmer characteristics revealed several intriguing findings regarding credit access among smallholder tea farmers. Notably, the results indicate that gender and farming experience significantly affect credit access. Specifically, female farmers demonstrate higher odds of obtaining loans compared to their male counterparts. This aligns with findings by Mayowa (2015) and Dlamini and Mohammed (2018), who identified gender as a critical determinant of credit access

due to the varying socio-economic and cultural factors influencing loan applications. Age, however, was not a statistically significant predictor of credit access in this study ($p=0.063>0.05$); therefore, no conclusion can be drawn regarding older farmers' likelihood of accessing loans based on this finding. The finding on farming experience indicates that more experienced farmers are less likely to seek loans ($p=0.014<0.05$), corroborating the view that experienced farmers may possess established financial independence or savings that reduce their reliance on external credit.

Factually, the study found that education level and savings culture did not significantly impact credit access, which contrasts with the findings of Akpan et al. (2013) and Bassey et al. (2014), who emphasized the importance of educational attainment and marketing experience in enhancing credit accessibility. This discrepancy suggested that while education may be crucial in some contexts, it might not uniformly affect credit access across different farming communities. Additionally, Chivandire (2019) noted that income was also not a statistically significant factor, echoing the present study's findings.

Despite these varying influences on credit access, the analysis confirmed that access to credit significantly enhances performance indicators such as tea productivity, earnings, and quality. This outcome is consistent with Amoa-Mensah et al. (2013), who highlighted the critical role of credit in boosting agricultural productivity and economic development. Overall, the findings suggested that while certain farmer characteristics like gender and age play pivotal roles in credit access,

the broader determinants of agricultural performance remain strongly linked to access to credit itself.

Finally, the effect of farm activities on credit access among smallholders' farmers. Farm activities, including the type of crops grown and the use of farm collateral, were tested for their influence on credit access. The results indicated that while these activities were not statistically significant in predicting credit access, the presence of farm collateral did have an impact. Farmers who had collateral, such as land title deeds, had lower odds of borrowing loans. Access to credit facilitated improvements in key performance areas, such as tea productivity, earnings, and quality, but did not significantly affect the expansion of acreage over time.

The findings regarding the research question on the effect of farm activities on credit access among smallholder tea farmers in Kericho County, Kenya? While the study indicated that factors like the type of crops grown and the use of farm collateral were not statistically significant in predicting credit access, it was found that the presence of collateral, such as land title deeds, correlated with lower odds of borrowing. This is in line with the findings of Meeme (2013) and Kamau (2008), who emphasized the significance of collateral requirements for securing loans among farmers, suggesting that despite having collateral, farmers may still face barriers to accessing credit due to lenders' perceptions of risk or stringent lending criteria. Conversely, Ullah et al. (2020) found that ownership of substantial physical assets and high farm income positively influenced loan availability, indicating that collateral may not uniformly enhance credit access across different agricultural

contexts. This contrast points to a complex interplay where traditional predictors of credit access may vary in relevance depending on the agricultural sector in question.

Moreover, the study results echoed those of Ibrahim and Bauer (2013) and Zeller et al. (2001), who noted that access to credit positively impacted farm productivity and earnings. However, they also underscored the importance of credit volume, suggesting that while access to credit can facilitate improvements in key performance areas, it is the amount and terms of the credit that significantly influence agricultural success. This resonates with the current findings that, despite access to credit enhancing productivity, it did not lead to a significant expansion of acreage over time. In contrast, Kiros and Meshesha (2022) observed that factors like land size and livestock ownership were not significant in determining credit access, aligning with the current study's results but lacking mention of collateral's role, which may indicate regional differences in the credit sector.

Finally, the findings also aligned with Ukwuaba et al. (2021), who noted that socioeconomic characteristics had limited influence on credit availability, while cooperative membership exhibited a statistically significant negative relationship. This reflects a broader theme in the literature suggesting that while certain factors may be expected to facilitate access to credit, the reality is often more complex, necessitating further investigation into the local context and the dynamic interactions between various determinants of credit access and agricultural performance.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter provide the conclusions and recommendation of the study. It synthesizes the findings of the study on the determinants of credit access among smallholder tea farmers in Kericho County, Kenya. It highlights the interplay between farm characteristics, farmer characteristics, and farm activities, providing valuable insights for policy implications and future strategies aimed at enhancing credit access and improving agricultural productivity.

5.2 Summary of the Findings

The study aimed to explore the determinants of credit access among smallholder tea farmers in Kericho County, Kenya, through three specific objectives. The findings are summarized in the following subsections.

5.2.1. Effect of Farm Characteristics on Credit Access

The analysis revealed that certain farm characteristics significantly influenced credit access and, consequently, the performance of smallholder tea farmers. Notably, land size emerged as a critical factor; farmers with larger land holdings exhibited higher odds of borrowing, whereas those with smaller land sizes were more likely not to secure credit. Additionally, the number of tea bushes on a farm was positively correlated with credit access, indicating that farmers with a greater number of bushes had higher chances of obtaining loans. This access to credit

subsequently enhanced productivity, tea quality, and earnings, although it did not significantly impact the expansion of acreage.

5.2.2. Effect of Farmer Characteristics on Credit Access

The study also identified key farmer characteristics affecting credit access. Gender and farming experience played significant roles; female farmers were found to have higher borrowing odds compared to males. Age was not a statistically significant predictor of credit access ($p=0.063>0.05$), and this finding should not be interpreted as evidence that older farmers are less likely to access loans. Experienced farmers demonstrated lower borrowing likelihoods ($p=0.014<0.05$), possibly due to financial independence through accumulated savings. Despite being hypothesized as influential, factors such as education level, savings culture, and farming income did not significantly impact credit access. However, access to credit positively affected performance indicators, including tea productivity, earnings, and quality.

5.2.3. Effect of Farm Activities on Credit Access

The research investigated the influence of farm activities on credit access, including the types of crops grown and the use of farm collateral. Although these factors were not statistically significant in predicting credit access, the presence of farm collateral did play a role; farmers with collateral, such as land title deeds, faced lower odds of borrowing. Nevertheless, access to credit facilitated improvements in key performance areas, such as tea productivity, earnings, and quality, while it did not have a significant effect on the expansion of acreage over time.

5.3 Conclusions

The study on the determinants of credit access among smallholder tea farmers in Kericho County, Kenya, presents significant insights into the multifaceted relationship between credit access, farm characteristics, farmer demographics, and agricultural performance. The findings indicated that access to credit is a crucial determinant of productivity, tea quality, and earnings, underscoring the importance of financial resources in enhancing the livelihoods of smallholder farmers.

One of the key conclusions drawn from the study is that farm characteristics, particularly land size and the number of tea bushes, play a significant role in determining credit access. Farmers with larger land holdings are more likely to secure loans, which suggested that smaller landholders may face unique barriers in accessing financial resources. This finding highlighted the need for financial institutions to adopt flexible lending criteria that consider the diverse situations of farmers, rather than relying solely on traditional metrics such as land size as indicators of creditworthiness.

Additionally, the study underscored the importance of farmer characteristics in influencing credit access. Female farmers demonstrated higher odds of borrowing compared to their male counterparts, suggesting a positive trend toward gender equity in access to financial resources. However, the older and more experienced farmers were less likely to seek loans, potentially reflecting a reliance on savings or a lack of awareness regarding available credit options. This indicated a need for targeted financial education programs that cater to the specific needs of different

demographic groups, empowering all farmers to effectively navigate credit markets.

The investigation into farm activities revealed that while certain factors such as crop type and collateral did not significantly impact credit access, the presence of collateral was associated with lower odds of borrowing. This finding suggest that financial institutions may be applying strict collateral requirements, which could inadvertently limit borrowing opportunities for farmers with valuable assets but without traditional forms of collateral. Consequently, it is essential for financial providers to consider alternative assessment methods that can help mitigate risk while still enabling farmers to access credit.

The study concluded that improving access to credit for smallholder tea farmers is vital for enhancing their agricultural performance and overall livelihoods. Policymakers and financial institutions must collaborate to develop innovative financial products and services tailored to the specific needs of smallholder farmers, while also promoting financial literacy and awareness. In addressing the barriers to credit access and fostering an inclusive financial environment, the agricultural sector in Kericho County can be strengthened, ultimately contributing to the sustainable development of the region.

5.4 Recommendations

Firstly, financial institutions should consider developing tailored financial products specifically designed for smallholder tea farmers. These products should take into account the unique challenges faced by farmers, such as varying land sizes and

income levels. Implementing flexible lending criteria that prioritize the creditworthiness of farmers rather than solely relying on collateral could significantly increase access to loans for a larger number of farmers. This would ensure that those with smaller landholdings or alternative forms of collateral, such as farming equipment or future crop yields, are not excluded from obtaining financial assistance.

Secondly, it is crucial to promote financial literacy programs aimed at educating farmers about credit options, financial management, and effective use of loans. Targeted training sessions should be organized for different demographic groups, including women, youth, and older farmers, to address their specific needs and concerns regarding credit access. Such initiatives could empower farmers to make informed financial decisions, thereby enhancing their likelihood of successfully obtaining and utilizing credit to improve their farming operations.

Moreover, partnerships between government agencies, non-governmental organizations, and financial institutions should be strengthened to facilitate the creation of comprehensive support systems for smallholder farmers. These partnerships can help bridge the gap between farmers and credit providers, ensuring that farmers are aware of available financial resources and how to access them. Additionally, collaborative efforts could include mentorship programs that connect experienced farmers with those seeking guidance in managing credit and optimizing farm productivity.

Lastly, policymakers should focus on creating an enabling environment that fosters agricultural growth and credit accessibility. This could involve implementing

policies that protect the rights of smallholder farmers, enhancing land tenure security, and promoting agricultural extension services that equip farmers with knowledge about sustainable farming practices. By ensuring that farmers have secure access to their land and the resources they need to thrive, policymakers can promote a more robust agricultural sector that benefits both farmers and the broader economy.

In conclusion, enhancing credit access for smallholder tea farmers in Kericho County requires a multifaceted approach that involves tailored financial products, financial education, collaborative partnerships, and supportive policies. By implementing these recommendations, stakeholders can significantly improve the livelihoods of smallholder farmers, leading to increased productivity, quality, and overall performance in the tea sector.

5.5 Suggestions for Further Studies

Future research should expand on the determinants of credit access for smallholder tea farmers by incorporating a more diverse range of variables, such as socio-economic factors, access to technology, and market dynamics, to provide a more comprehensive understanding of the challenges faced by these farmers. Additionally, longitudinal studies could be beneficial in examining how changes in credit policies and agricultural practices impact farmers' productivity and financial stability over time. Exploring the role of cooperative societies and group lending models could also yield valuable insights into alternative financing mechanisms that may improve access to credit. Furthermore, comparative studies between different regions or types of crops could highlight best practices and successful

strategies that can be adapted to enhance credit access and overall agricultural performance. This broader scope of research would not only contribute to the academic discourse but also offer practical recommendations for policymakers and practitioners in the agricultural finance sector.

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APPENDICES

Appendix 1: Letter of Transmittal

Kipkoech Rotich,

P.O Box 43-20210,

KERICHO

Dear Sir/Madam,

REF: REQUEST FOR PARTICIPATION IN RESEARCH STUDY

I am Kipkoech Rotich a student at the University of Kabianga pursuing a Master's degree in Agricultural Economics and resource management.

I am conducting a study on the determinants of credit access among smallholder tea farmers in Kericho County, Kenya. This information collected from you would be kept confidential and used purely for this academic work. Thanks for your cooperation.

Yours faithfully,

Kipkoech Rotich

Appendix 2: Questionnaire

PLEASE INDICATE OR TICK WHERE APPROPRIATE.

<table>
<tr><td colspan="4">SECTION (1):
FARM AND FARMER CHARACTERISTICS OF SMALLHOLDER TEA FARMERS IN KERICHO COUNTY.</td></tr>
<tr><td>1. What is your gender?
▪ Male ( )
▪ Female ( )</td><td>2. What is your civil status?
▪ Single ( )
▪ married ( )
▪ widowed ( )
▪ divorced ( )</td><td colspan="2">3. What is your age? (yrs.)_____
_____
_____
_____</td></tr>
<tr><td>4. Have you attained any formal schooling?
Yes ( ) No ( )</td><td>5 a. If yes, years of schooling _____
5 b. Which level did you attain?
▪ Lower primary ( )
▪ Upper primary ( )
▪ Secondary ( )
▪ College ( )</td><td>6. Are you the household head?
Yes ( ) No ( )</td><td>7. What is the family size?___
_____</td></tr>
<tr><td>8. Years of experience in tea farming?_____</td><td colspan="2">9. Main employment:
▪ Formal employment ( )
▪ Informal employment ( )
▪ Tea Farming ( )
▪ Retail Business ( )</td><td>10. Off farm income?____
On farm income?____</td></tr>
<tr><td colspan="4">11. What's your farm ownership; Leasing ( ) Family ownership ( ) individual ownership (
12. How far are you from creditors; Near (0-5 km) ( ) Far (over 5 Km) ( )</td></tr>
<tr><td colspan="4">13. Do you receive extension service from the creditors? No ( ) Yes ( )</td></tr>
<tr><td colspan="4">14 How many acres do you have _____and how many do you farm tea _____acres.</td></tr>
</table>

15. How many tea bushes to you have in your firm _____(estimates).		
16. What other type of crops do you plant besides tea _____		
17. Do you use your farm activity (cows, structure, land) as collateral security for accessing loan; *No ( ) Yes ( ) if yes name* _____		
18. What is the purpose of farming; *Commercial ( ) Domestic ( )*		
19. Have you increase in productivity; *No ( ) Yes ( )*		
20. Have your number of acreage increase over the years; *No ( ) Yes ( )*		
21. Have improve in the earning from the tea farming; *No ( ) Yes ( )*		
22. Is there an improvement in quality of tea delivered to KTDA *No ( ) Yes ( )*		
23. Did you receive credit to invest in the tea enterprise in the past two years? *Yes ( ) No ( )*	**24. If yes, from which source did you borrow?** ▪ *Commercial banks ( )* ▪ *KTDA ( )* ▪ *MFIs ( )* ▪ *NGOs ( )* ▪ *Uwezo fund ( )* ▪ *Women Enterprise Fund ( )* ▪ *Youth Fund ( )* ▪ *SHGs ( )* ▪ *Professional Money Lenders ( )* ▪ *Friends and Relatives ( )* ▪ *SACCOs* ▪ *M-Shwari* ▪ *Shylocks* ▪ *AFCs* ▪ *Others specify*_____ _____	**25 a. Was the loan adequate for you?** *Yes ( ) No ( )* **25 b. What was the grace period** *(days)*___ _____ **26 a. Are you still servicing the loan?** *Yes ( ) No ( )* **26 b. What is your attitude towards loan repayment?** • *Constraint ( )* • *Otherwise ( )* **26 c. If yes, are you finding it difficult to repay the loan?**

	15 d. Did you receive post loan extension services? *Yes ( ) No ( )* **How frequent** *Weekly ( )* *Bi weekly ( )* *Monthly ( )* *Quarterly ( )* *Semi-annually ( )* *Annually ( )*	*Yes ( ) No ( )*

27. Why did you prefer the source? ▪ *No collateral barriers ( )* ▪ *Financial training ( )* ▪ *Technical training on sustainable tea management practices ( )* ▪ *Reduced loan processing fee ( )* ▪ *No bureaucracies ( )* ▪ *Low interest rates ( )* ▪ *Flexible repayment period ( )* ▪ *Possibility of Top ups ( )*	**28. If yes, Kindly give a reason?** • *Shifted the loan purpose ( )* • *Credit was insufficient ( )* • *Limited skills on credit management ( )* • *Inadequate grace period ( )* • *Limited technical education on tea management ( )* • *Any other(specify)____* _____

29. Which form of collateral was required?

a. *Land title deed ( )*
b. *Other household assets ( )*
c. *Shares/savings ( )*
d. *Group guarantorship ( )*
e. *Others (specify)( )*_____

30. How frequently did you repay the loan?

- *Weekly ( )*
- *Bi weekly ( )*
- *Monthly ( )*
- *Quarterly ( )*

31. What is the distance from your home to the credit source in Km?_____
_____

32. How much travelling costs did you incur in the pre disbursement period?
_____
_____

33. What is your source of labour?

- *Family labour ( )*
- *Hired labour ( )*
- *Both ( )*

34. If hired labour, what is your monthly labour cost? KES. _
_____
_____
_____
_____

35. How frequently do you access extension services

- *Weekly ( )*
- *Bi weekly ( )*
- *Monthly ( )*
- *Quarterly ( )*
- *Semi annually( )*
- *Never ( )*

38 a. Did you receive financial education in the last two years?

Yes ( ) No ( )

38 b. If Yes, from where?

- *Extension officers from MoA( )*
- *Financial institutions ( )*
- *NGOs ( )*
- *KTDA ( )*
- *Professional trainers ( )*
- *Any other (Specify*_____

36. Do you regularly save?

Yes ( ) No ( )

37. If yes which mode do you use?

- *Piggy banks ( )*
- *SHG/Chama ( )*
- *Commercial Banks ( )*
- *MFIs ( )*
- *KTDA*
- *Other Cooperatives ( )*
- *AFC ( )*
- *Any other (Specify*
  _____
  _____

39. How often do you interact with financial trainers'?

- *Weekly ( )*
- *Monthly ( )*
- *Quarterly ( )*

40. Are you a member of any association?

Yes ( ) No ( )

41. How many associations do you belong to?_____
_____

▪ *Semi-Annually ( )* ▪ *Others……..*	

42. How have you benefited from financial training?

- *Improved record management practices ( )*
- *Improved savings and resource mobilization skills ( )*
- *Improved budgeting techniques ( )*
- *Good business analysis skills ( )*
- *Improved marketing skills ( )*
- *Others……..*

THANK YOU FOR YOUR COOPERATION

Appendix 3: NACOSTI PERMIT

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NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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Date of Issue: **01/August/2024**

RESEARCH LICENSE



This is to Certify that Mr.. Kipkoech Rotich of University of Kabianga, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kericho on the topic: DETERMINANTS OF CREDIT ACCESS ON PERFORMANCE OF SMALLHOLDER TEA FARMERS IN KERICHO COUNTY, KENYA for the period ending : 01/August/2025.

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Appendix 4: Clearance Letter

UNIVERSITY OF KABIANGA
ISO 9001:2015 CERTIFIED
OFFICE OF THE DIRECTOR, BOARD OF GRADUATE STUDIES

REF: AGR/PGEC/003/19 **DATE: 1ST JULY, 2024**

Kipkoech Rotich,
Agricultural Biosystems, Economics & Horticulture Department,
University of Kabianga,
P.O Box 2030- 20200,
KERICHO.

Dear Mr. Rotich,

RE: CLEARANCE TO COMMENCE FIELD WORK/DATA COLLECTION

I am pleased to inform you that the Board of Graduate Studies has considered and approved your MSc research proposal entitled **"Determinants of Credit Access on Performance of Smallholder Tea Farmers in Kericho County, Kenya."**

Subsequently the Board has also approved the following supervisors for appointments.

1. Dr. Yegon Moses K. A.
2. Dr. Richard K. Siele

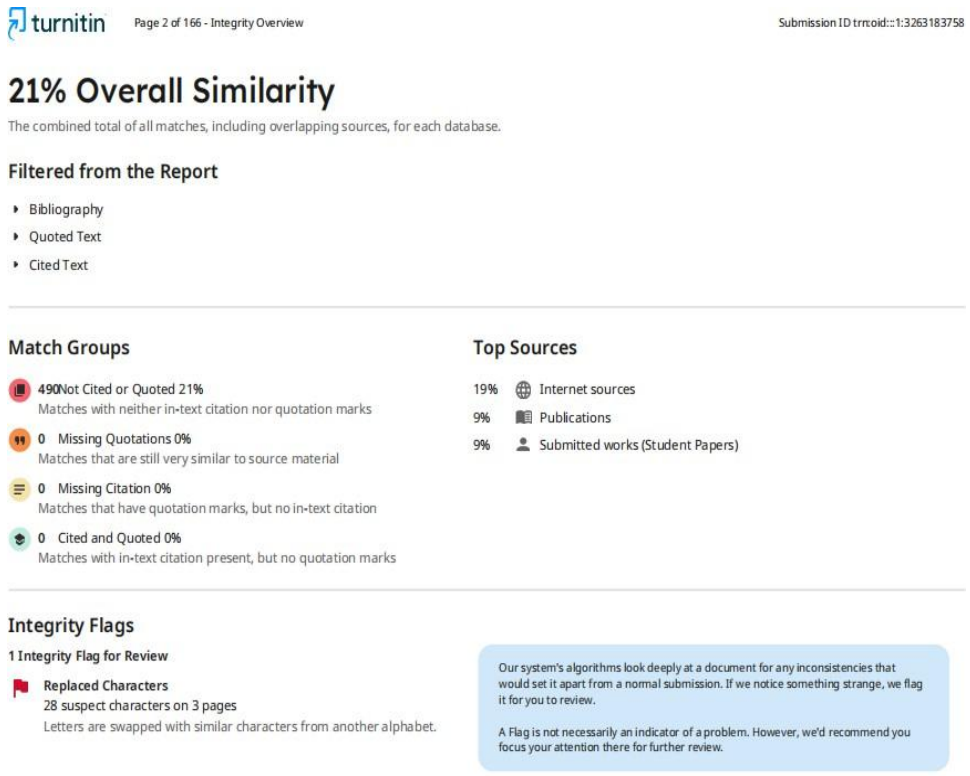
You may now proceed to commence field work/data collection on condition that you obtain a research permit from NACOSTI and /or an ethical review permit from a relevant ethics review board.

You are also required to publish one (1) article in a peer reviewed journal, with all your supervisors, before your oral defense of thesis.

You are required to submit through your supervisors, and HoD, progress reports every three months, to the Director, Board of Graduate Studies.

Please note that it is the policy of the University that you complete your studies within three years from the date of registration. Do not hesitate to consult this office in case of any difficulties encountered in the course of your studies.

Appendix 5: Turnitin Report



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