TRANSACTION COST DETERMINANTS OF FARMERS' PARTICIPATION IN CONTRACT FARMING IN TANZANIA: CASE OF TEA SUBSECTOR

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A THESIS SUBMITTED IN FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN COMMUNITY ECONOMIC DEVELOPMENT OF THE OPEN UNIVERSITY OF TANZANIA

2023

CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by The Open University of Tanzania a thesis entitled, "**Transaction Cost Determinants of Farmers' Participation in Contract Farming in Tanzania: Case of Tea Subsector"** in fulfilment of the requirements for the degree of Doctor of Philosophy in Community Economic Development of the Open University of Tanzania.

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DECLARATION

I, **Finias Dogeje** declare that, the work presented in this thesis is original. It has never been presented to any other University or Institution. Where other people's works have been used, references have been provided. It is in this regard that I declare this work as originally mine bona fide. It is hereby presented in fulfilment of the requirement for the Degree of Doctor of Philosophy (PhD) in Community Economic Development (CED).

…..…….....

Signature

…..…….....

Date

DEDICATION

This thesis is dedicated to my family, specifically my wife; Easter Elia Kiyogoma, my lovely daughter Angelina Finias Dogeje, my lovely son Collins Finias Dogeje, my brother, Faraja Filbert Dogeje, friends, and all those who have supported me throughout my journey in accomplishing this academic milestone. With utmost gratitude and appreciation, I bestow this thesis to you. Your firm support, encouragement, and belief in me have been the cornerstone of my success, and I cannot thank you enough for being a constant source of inspiration throughout this journey.

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ABSTRACT

Contract farming is recognised for its potential to improve agricultural productivity, market integration, and farmers' access to inputs, extension services and technology. Transaction costs are vital in defining success and sustainability of such arrangements. Besides, gaps remain in understanding the association between transaction costs and participation of farmers' in contract farming, with a focus on entire agri-value chain continuum. This study examines transaction cost determinants on farmers' participation in contract farming in Tanzania's tea subsector, focusing on downward and upward nodes of the value chain. A cross-sectional survey was conducted, collecting quantitative data from 393 smallholder tea farmers in three districts of the Southern highlands Tanzania; Rungwe and Busokelo in Mbeya region and Njombe District Council in Njombe region. Paired samples t-tests assessed differential transaction costs related to participation of farmers in contract farming across the tea value chain nodes, while Binary Logistic Regression Analysis (BLR) explored the effect of transaction cost determinants on farmers' participation in contract farming. This study concludes that, there is higher perceived downward transaction costs compared to upward transaction costs (P=0.000). Relatedly, downward transaction costs negatively significantly influence participation (P=0.015), while upward transaction costs had positive significant effect (P=0.005). Furthermore, farmer quality have insignificant impact on transaction costs or participation (P=0.127). It is recommended that, to enhance farmers' participation in contract farming stakeholders should focus on reducing transaction costs through nuanced classification, prioritising downward transaction costs while creating supportive policy environment.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
ASDS-II	Agricultural Sector Development Strategy – II
BLR	Binary Logistic Regression
CED	Community Economic Development
DC	District Council
DETC	Downward Enforcement Transaction Cost
DNTC	Downward Negotiation Transaction Cost
DSTC	Downward Search Transaction Cost
EFA	Exploratory Factor Analysis
FAO	Food and Agriculture Organisation of the United Nations
FCE	Farming Contract Experience
FEA	Farming Equipment Access
FL	Factor Loading
FQ	Farmer Quality
GPS	Global Positioning System
IFAD	International Fund for Agriculture Development
Kgs	Kilogram
KMO	Kaiser-Meyer-Olkin
KoBo	KoBo ToolBox
LNA	Land Access
LSD	Least Significant Difference
MSA	Measure of Sampling Adequacy

NAP	National Agricultural Policy
NCE	Neo-Classical Economics
NIE	New Institutional Economics
OUT	Open University of Tanzania
QGIS	Q Geographical Information System
RBQ	Rank Based Quotient
SDGs	Sustainable Development Goals
SHF	Smallholder Farmers
TAT	Tea Association of Tanzania
TBT	Tea Board Tanzania
TC	Transaction Cost
TCE	Transaction Cost Economics
TDETC	Total Downward Enforcement Transaction Cost
TDNTC	Total Negotiation Search Transaction Cost
TDSTC	Total Downward Search Transaction Cost
TDTC	Total Downward Transaction Cost
TNC	Transnational Corporations
TRIT	Tea Research Institute of Tanzania
TSHTIDA	Tanzania Smallholders Tea Development Agency
TUETC	Total Upward Enforcement Transaction Cost
TUNTC	Total Upward Search Transaction Cost
TUSTC	Total Upward Search Transaction Cost
TUTC	Total Upward Transaction Cost
TVCK	Tea Value Chain Knowledge

TZS	Tanzania Shillings
UETC	Upward Enforcement Transaction Cost
UNCTAD	United Nations Conference on Trade and Development
UNTC	Upward Negotiation Transaction Cost
UoM	Unit of Measure
URT	United Republic of Tanzania
USTC	Upward Search Transaction Cost
VIF	Variance Inflation Factor
WATCO	Wakulima Tea Company

CHAPTER ONE

INTRODUCTION

1.1 Background to Study

Participation of farmers in contracting farming in the age of globalisation, market liberalisation, and agribusiness expansion across the globe cannot be overemphasized, as continuous changes in technology, food safety, and consumer preferences, exacerbated by rapid urbanization, leads to increased agri-produce demand (Food and Agriculture Organisation (FAO), 2005; Zerssa et al.,2021; FAO, 2015). Besides, even due to these global changes which lead to higher food demand, farmers fail to match the consumer needs by using more conventional, open market-based procurement practices. This is due to farmers have several challenges, including narrow access to both cost-efficient and reliable inputs (herbicides, fertilizers and seeds), limited access to mechanization services, extension services, and lack of reliable and profitable markets for their agricultural products. Connectedly, it is difficult for buyers or suppliers (investors) to have access to consistent quality and quantity of various agri-commodities in the market (FAO, 2005). It is argued that contract farming tends to correct these market conditions in favour of both farmers and investors (Saroj et al., 2023; Eaton & Shepherd, 2001; URT, 2016).

Contract farming is a form of vertical integration focusing on the alignment of various activities or stages across specific value chain nodes, for example, farm preparation, growing (farm management), harvesting, sorting, transporting and crop selling (Bijman, 2008). In contract farming, a single management investor effectively controls two or more production and marketing stages (Meemken & Bellemare, 2019). This, in

turn, corrects market failures by ensuring that investors procure the required products at the required quality and quantities while farmers engage in agriculture profitably (Dubbert et al., 2021). Through contract farming, farmers are given an opportunity for increased market access, building human and technical skills, and social capital among farmers who are mainly resource-poor. Furthermore, it provides buyers (investors) with a reliable quantity and quality supply of produce (World Bank & International Fund for Agriculture Development (IFAD), 2009; Eaton & Shepherd, 2001).

The genesis of contract farming dates back to old age. For example, during ancient Greece, paying debts, rent and tithes were made through contracting crops (Reynolds, 1985). Similarly, China started using contract farming in the first century. Likewise, towards the end of the nineteenth century, in the United States, farmers used to pay rent to the landowners through sharecropping agreements, whereby one-third and one-half of their crops were deducted. Moreover, in the United States, between 1919 and 1939 cotton cooperative gins used a form of farming contracting arrangement to improve their ginning capacity and to transact with other buyers (Rehber, 2007; Eaton & Shepherd, 2001). Moreover, contract farming was widely used between 1930s and 1940s in Western Europe and across Europe by the late twentieth century (Rehber, 2007; Watts, 1994). Relatedly, contract farming system was established in the colonies controlled by Europe and African countries, inclusive in the early decades of the 19th century (Rehber, 2007; Hamilton, 2008; Eaton & Shepherd, 2001).

In recent decades farming under contract arrangements has been used extensively as the most vertical integration form in developed countries, whereby approximately 15 percent of agricultural output is produced through contract farming (Rehber, 2007;

Prowse, 2016). For instance, in 2001, 39 percent of the value of US agricultural production was from contract farming, a significant rise from predicted 31 percent of the total agricultural output projected for 1997 (Young & Hobbs, 2002). Participation in contract farming occasionally varies by sector, whereby some sectors have more significant representation than others in developed countries. For example, in Germany, 38 percent relates to dairy contract production, while the overall average for other commodities is 6 percent. Similarly, in broiler production contracts is 75 percent in Japan, while in South Korea is 23 percent only (Young & Hobbs, 2002).

Connectedly, contract farming is significantly used in transitioning and developing countries. For instance, it is estimated that contract farming is practised in over 110 countries of the transitioning and developing economies but at varying stages and proportions (United Nations Conference on Trade and Development (UNCTAD), 2009). For instance, between 60 percent and 85 percent of commercial farms in the Czech Republic, Slovakia, and Hungary use contract farming, while in Georgia, Moldova, Armenia, Russia and Ukraine, proportion of food enterprises using contract farming arrangement risen to 75 percent in 2003 from 25 percent in 1997 (Swinnen & Maertens, 2007). Furthermore, in Latin America, rapid growth in contract farming was noticed since 1950s for various crops like grain and vegetables in Mexico, banana and barley in Peru. Moreover, in Brazil poultry and soya production represented 75 percent and 35 percent of contract farming, congruently (UNCTAD, 2009).

Likewise, contract farming has grown faster in Asia. For example, since 1950s, Malaysian and Indonesian governments have been promoting contract farming (Swinnen & Maertens, 2007; Rehber, 2007). In Vietnam, contract farming provides

40 percent of the country's production of rice and tea and more than 90 percent of its fresh milk. Within India, contract framing has been employed since 1960s in production of seed and is currently used in vegetables, poultry, dairy products, rice and potatoes production. Connectedly, the government of China has been pioneering contract farming since 1990s, whereby contract farming arrangements covered over 18 billion hectares. In Pakistan, Nestlé's local partners gathers more than 140,000 farmers' milk across a hundred thousand square kilometres as part of its contract farming operations (FAO, 2005; UNCTAD, 2009; Rehber, 2007).

From 1980s contract farming has also been increasing in sub-Sahara Africa with some support from governments, however, currently private actors are initiating contract farming projects. It is estimated that contract farming employs 12 percent of Mozambique's rural population, whereas in Kenya, it accounts for almost 60 percent of the production of sugar and tea (Swinnen & Maertens, 2007; UNCTAD, 2009). In the recent decades, private sector mostly dominate contract farming arrangement in developing countries. For instance, by 2008, 60 percent of Unilever’s raw materials for its various products related to ice cream, nutrition, home care, personal care, beauty and wellbeing were sourced from about 100,000 famers located in developing countries. Moreover, Carrefour, a wholesale and multinational retail cooperation in France had 18 contracts with farmers for supplying various agricultural products from developing countries. In addition, SAB Miller (United Kingdom) had contracts with over 16,000 cotton farmers in Tanzania, Uganda, Zambia, South Africa and India by 2009 (UNCTAD, 2009).

In Tanzania, contract farming was formally introduced in 2010, and its use began in the cotton industry in the 2011/12 season. Contract farming was subsequently adopted as part of the National Agricultural Policy (NAP) (2013) for different reasons, including improved production and productivity, access to inputs, extension services, and allow farmers to utilise a variety of technical, management, and extension services, farm consulting services, and farm equipment (United Republic of Tanzania (URT), 2013 and URT, 2016). Furthermore, the Agricultural Sector Development Strategy - II 2015/2016 – 2024/2025 (ASDS-II) spells out a need of enhancing the use of contract farming (URT, 2015). Although Tanzania's NAP 2013 included the formal adoption provision of contract farming in Tanzania, the practice for conventional cash crops like tobacco, cotton, tea, coffee, sisal and sugarcane, its implementation somewhat started in 1990s in response to loosen marketing restrictions on conventional crops exports (URT, 2016).

Contract farming participation in Tanzania varies across crops or value chains, as some crops show a relatively higher participation of farmers in contracting farming than others. For example, in a study by URT (2016) which measured famers' participation in contract farming by focusing on the proportion of land dedicated for farming in contract arrangement it was found that 84 percent of sisal and 49 percent of sugarcane farmers had allocated about 75 percent of their land in contract farming. Conversely, a research conducted by Meemken & Bellemare (2019) on smallholder farmers' involvement in contract farming, in Tanzania, Cote d'Ivoire, Uganda, Nigeria, Mozambique, and Bangladesh found that the contract farming participation rate of Tanzanian smallholder farmers exceeds 70 percent. These variations for the two

subsectors shows a vivid indicator of different level of participation of farmers in contract farming in Tanzania and beyond.

The tea industry is a major driver of rural development, reduction of poverty, and food security in several developing nations. The annual tea production exceeds USD 17 billion, and the global tea market is worth roughly USD nine point five billion, making it a sizable revenue source from export (FAO, 2022). The developing and growing nations, particularly those in East Asia, Africa, Latin America, the Caribbean, and the Near East, where significant development in tea production has been noted, have mostly been responsible for the 2.5 percent increase in worldwide per capita tea consumption over the past ten years. Notably, smallholders produce 60 percent of the tea consumed worldwide. Tea production creates worthwhile employment in rural areas, helping families and communities to improve their nutritional health and food security (FAO, 2022).

In the same context, tea is a strategic cash crop in Tanzania. It provides direct employment for approximately 50,000 individuals in tea farms and processing facilities, while also benefiting around 2 million people indirectly. Additionally, tea production involves around 32,000 smallholder farmers, however, the proportion of farm size in hectares (11,360) is about 7 percent only compared to that cultivated by Kenya tea smallholder farmers (163,120 hectares). Connectedly, the government of Tanzania earns approximately 45 million US dollars in foreign exchange from the tea industry (URT, 2023). Smallholder tea farmers in Tanzania have small farm sizes, averaging less than 3.5 acres. In the specific districts examined in this study, the

average tea farm sizes are Njombe (1 acre), Rungwe (2 acres), and Busokelo (2 acres), respectively (IDH, 2021a; 2021b).

The tea sector in Tanzania is comprised of different actors, including; Tea Board Tanzania (TBT), the regulator, Tanzania Smallholders Tea Development Agency (TSHTDA), Tea Research Institute of Tanzania (TRIT), Tea Association of Tanzania (TAT) which is an association of large tea producers and processors, 49 primary cooperatives, 2 secondary cooperatives, 24 tea processing factories (22 large factories, 2 small factories), and 15 tea packaging companies out of which one is a speciality tea packer. Of the five most tea growing countries in East Africa, Tanzania ranks fourth in terms of total land size cultivated with tea, Kenya, Uganda, and Rwanda being the first, second and third respectively. Besides, by 2022 it ranked the last in terms of average annual production (URT, 2023). See the details in Figure 1.1.

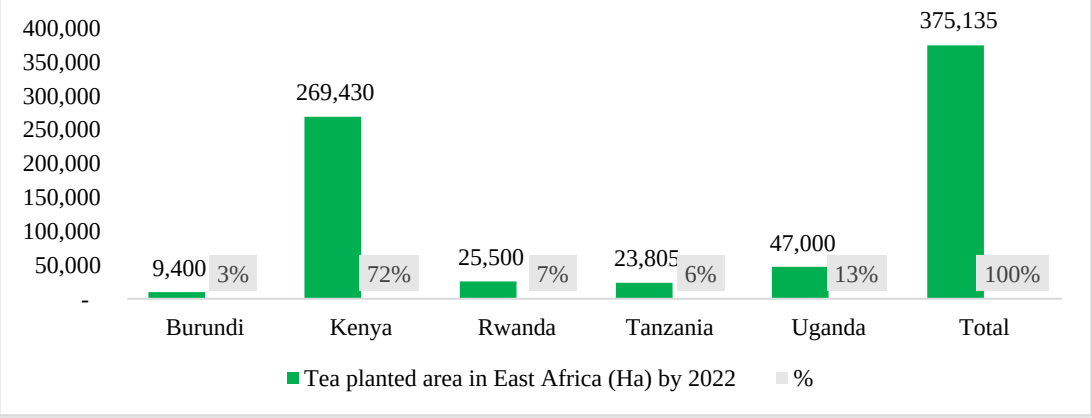

Figure 1.1: Tea Planted Area in East Africa by 2022 (Ha)

Source: URT, 2023

Connectedly, the average annual growth of tea production is lowest in Tanzania compared to other countries in East Africa. Kenya's annual growth in terms of

production volumes in metric tons is leading followed by Uganda, Rwanda, and Burundi respectively. The details are shown in Figure 1.2.

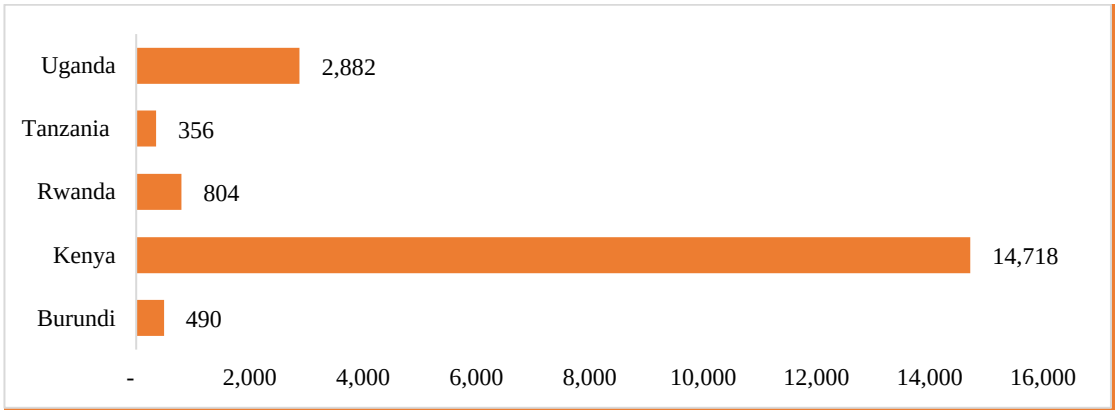

Figure 1.2: Annual Tea Production Growth (Tons) in East Africa by 2022

Source: URT, 2023

Tea cultivation is constrained geographically, as it necessitates specific conditions for successful growth. Consequently, only specific regions in Tanzania meet the criteria for tea cultivation. In Tanzania, tea is grown in six regions, namely Mbeya, Njombe, Iringa, Tanga, Kagera and Mara regions. Specifically, tea is grown in 14 districts, namely, Rungwe, Busokelo, Njombe District and Town Councils, Ludewa, Wanging'ombe, Mufindi, Kilolo, Muheza, Lushoto, Korogwe, Bukoba, Muleba, and Tarime (URT, 2023). The specific tea-growing areas are indicated in Figure 1.3.

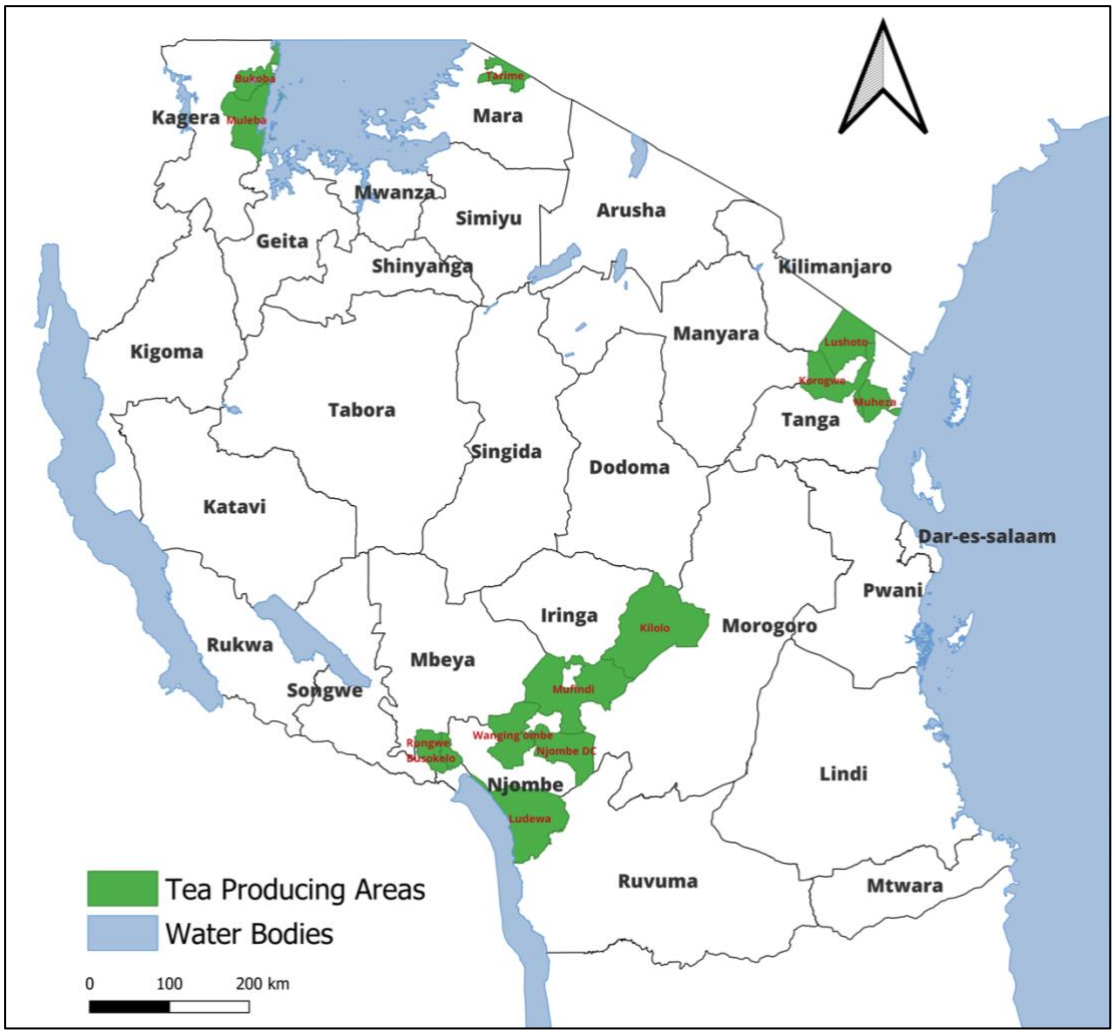

Figure 1.3: Tanzania Tea Producing Regions

Source: Researcher's Construct, 2023

Tea production in Tanzania involves two systems: large-scale farmers, primarily tea processor estates, and smallholder farmers. The total tea production area in Tanzania is 23,805 hectares, with around 51 percent attributed to large-scale farmers and approximately 49 percent to smallholder farmers. Despite smallholders tea farmers occupy nearly half of the tea cultivation land, in the past five years they contributed only an average of 35 percent to the national production output, while the private

estates produce about 65 percent of the total tea production output (URT, 2023; IDH, 2021a).

During the previous five-year period, tea production in Tanzania has experienced a notable decrease, attributable to multiple factors such as an unstable market for green-leaf tea, concerns regarding production quality, restricted access to inputs, and increased input costs (URT, 2023). The made tea production trend disaggregated by tea farmers category is shown in Table 1.1.

Table 1.1: Made Tea Production Trend (2017/2018 – 2021/2022) (Tons)

Year	Smallholder farmers		Large scale farmers		Total
	Tons	%	Tons	%	Tons
2017/2018	12,360	36%	21,650	64%	34,010
2018/2019	13,744	40%	23,448	69%	37,192
2019/2020	11,820	35%	16,895	50%	28,715
2020/2021	11,479	34%	1,630	5%	13,109
2021/2022	10,804	32%	14,020	41%	24,824
Average	**12,041**	**35%**	**15,529**	**46%**	**27,570**

Source: URT, 2023

Smallholder tea farmers face challenges in achieving high yields, with an average of approximately 2,000 kg/acre. In contrast, private estates achieve significantly higher yields, averaging around 4,272 kg/acre. The lower yields among smallholders can be attributed to factors such as heavy reliance on rainfall, inadequate tea field management practices, and limited investment in their operations (IDH, 2021a; 2022b).

The Tea Board of Tanzania exercises regulatory control over the green-leaf tea prices to be paid by all the tea processors across Tanzania. As per section 49 (1) through (3)

of the Tea Regulation, 2010 the Board collaborates with stakeholders to establish an indicative price each year, serving as the minimum price for purchasing green-leaf tea. Negotiations for determining the actual price within specific tea-growing regions involve tea growers, cooperatives, and buyers. Consequently, companies and factories are obligated to pay farmers a minimum price per kilogram of green-leaf tea, which was TZS 314 during the last (2022) tea production season. This uniform pricing across Tanzania indicates that income variations in tea across the studied districts cannot be attributed to price differences. This price (TZS 314 per kg) has remained unchanged for about five years, starting from the period under review in 2022.

The alternative segment of the tea market, known as made tea, is distinct from the dominant green-leaf tea market controlled by tea processing companies. Made tea is both exported and sold domestically, with the domestic market, mainly comprising tea packers, accounting for 15 percent, while the export market represents 85 percent (35 percent through Mombasa auction in Kenya and 50 percent through direct sales in various countries like Russia, Pakistan, and United Kingdom (URT, 2023). Notably, the price of made tea has remained relatively stable in both domestic and export markets for the past decade, indicating that income generated from made tea cannot be attributed to price fluctuations, but production volumes. The tea price trend for ten years from 2020/2011 production season to 2019/20 is shown in Figure 1.4.

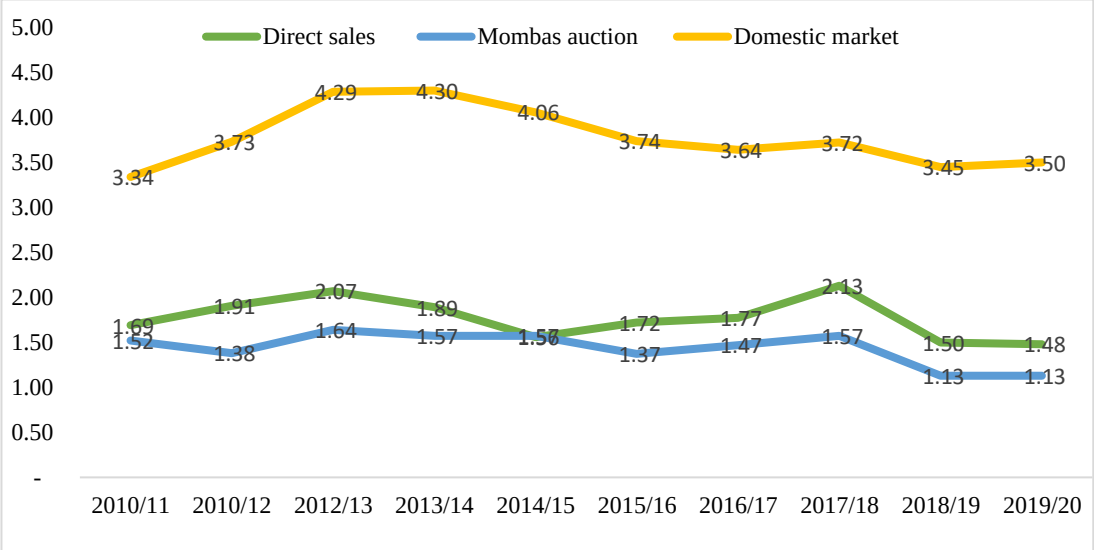

Figure 1.4: Made Tea Price Trend (2010/2011-2019/2020) (US$/Kg)

Source: URT, 2023

Section 40 (1) of the Tanzania Tea Regulations 2010 provides an option for farmers to engage in contract farming with financiers (investors) (URT, 2010). Some studies show that tea farmers in various tea growing areas, including Korogwe, Mufindi, Njombe, Rungwe and Busokelo are involved in tea contract farming with some tea processing factories out of the 22 available tea processing factories in Tanzania, including Mohamed Enterprises Limited, Unilever Tanzania (Ikatera), Ikanga Tea Company Limited (Ikanga) and Wakulima Tea Company (WATCO) (IDH, 2021b). However, farmers' involvement in the tea production process in contract farming spans a spectrum, ranging from full participation across the entire tea value chain, including green-leaf production and selling, to the majority of farmers primarily engaged in the upward node, specifically green-leaf tea selling. This emphasis on the upward node aligns with the tea regulation of 2010, which places significant importance on this

aspect of the tea industry because of the vulnerable nature of green-leaf tea quality, freshness and flavour maintenance (URT, 2010).

A study conducted by IDH (2021b) in Njombe shown that farmers engaged in contract farming had relatively higher incomes due to factors such as increased tea bushes density and effective farm management. They produced approximately 3,238 Kg of green-leaf tea per acre per year, which is more than 50 percent higher compared to non-contract farming smallholder farmers producing 1,821 Kg of green-leaf tea per acre per year. Similarly, another study by IDH (2021a) in Rungwe and Busokelo found that farmers that use contracts for their farming with tea processors like WATCO had a relatively higher net annual income of approximately Tanzanian Shillings (TZS) 1,234,000 compared to non-contract farming farmers whose earning stood at an average net income of TZS 560,000, which is approximately two times lower.

Evidence from those studies emphasises the economic benefits of contract farming for both farmers and tea processors. The findings show that contract farming improves tea bush density, production, and net income for farmers, indicating its potential to enhance livelihoods and overall performance in the tea sector in the three districts under study and Tanzania in general. This is because farmers in this arrangement are likely to practice effective farm management, timely plucking, access to reliable transportation of green tea to the processing facilities, and have overall access to a dependable market (IDH, 2021a; IDH, 2021b).

A similar pattern of higher income among smallholder farmers' participating in contract farming is evident in a study conducted by Meemken and Bellemare (2019) that examined farmers' involvement in contract farming across six developing

countries, including Tanzania. The study findings indicate that contract farmers generally achieve higher income levels compared to those who are not engaged in contract farming.

However, further evidence from literature review show that, some smallholder tea farmers in districts involved in this study, precisely Rungwe, Busokelo, and Njombe DC do not engage in contract farming. For instance, in Njombe, only 52 percent of 6,147 farmers supplying green-leaf tea to Ikanga Tea Factory were involved in annual sourcing contracts. This suggests that approximately 48 percent of registered farmers with Ikanga were not involved in contract farming. The smallholder tea farmers in contracts with Ikanga received extension services, on good agricultural practices (GAP) training, and credit for quality inputs (fertilizers and herbicides) from Ikanga (IDH, 2021a; 2021a).

The mismatch on different levels of participation of farmers in contract farming is explained by different determinants like farm size, age, sex, farming experience, unit produce price, access to credit, educational level, contract duration agreement, membership in cooperatives, experience in contract farming, access to training, contracting process/arrangement, cooperative membership, good-roads, access to market infrastructure, family labour, production location, side-selling and transaction costs (Loquias et al.,2021; Hoang & Nguyen, 2023; Nazifi & Ibrahim, 2021; Hirpesa et al., 2020; Nsimbila, 2021; Maina, 2015; and Msami & Ngaruko, 2014). Some attributes that affect participation of farmers in contract farming like experience, income level and experience are regarded as features of farmer quality (Huang-ping & Chuan-fang, 2012).

Though, transaction cost is among the critical determinants of participation of farmers in contract farming, studies examining the impact of transaction costs on farmers' participation in contract farming remain pretty scanty. Even studies which explored the association between transaction cost and participation of farmers in contract farming focused on identification of transaction cost in a generalised manner or with a focus on search, negotiation and enforcement costs and not specific transaction costs which may occur during implementation of the contract across the entire agricultural value chain. For instance, studies by Taslim et al. (2021) in Bangladesh, Tuyen et al. (2022) in Vietnam, Chazovachii et al. (2021) in Zimbabwe, Musara et al. (2018) in Zimbabwe, Arouna et al. (2021) in Benin, Yeshitila et al. (2020) in Ethiopia, and Maina (2015) in Kenya suggest that transaction cost variables such as information search, information asymmetry and uncertainty, contract negotiation, payment delays, side selling, and overall contract enforcement significantly influence participation of farmers in contract farming.

Similarly, studies undertaken in Tanzania regarding participation of farmers in contract farming and market channel selection by various scholars like Ngaruko and Lyanga (2021); Mmbando et al. (2016); Ismail et al. (2015); and Msami and Ngaruko (2014) concluded that various transaction costs, categorized in line with Coase's (1937) transaction cost classification as information search, negotiation, and enforcement or policing, significantly affect participation of farmers in contract farming. These studies indicate limited evidence of a focused approach to understand the specific effect of transaction costs across various nodes of a typical cash crop value chain and their impact on farmers' participation in contract farming.

It is argued that, if transaction costs are overlooked contract farming benefits may be overstated (Rehber, 2007). This argument suggests that the failure to systematically identify, measure, and reduce significant transaction costs in a focused and coordinated manner can result in a limited understanding of the costs and their potential effects on farmers' participation in contract farming. This lack of understanding may lead to a lack of sound and significant information for making informed decisions and policies related to contract farming, ultimately affecting the effectiveness and efficiency of the arrangement. With a focus on Tanzania's tea subsector, this research sought to establish the influence of transaction costs with a focus on the entire value chain node (upward and downward transaction costs) on farmers' participation in contract farming.

1.2 Research Problem Statement

Contract farming entails a relationship between producers and investors to enhance forward and backward market linkages amongst value chain actors. Contract farming provides farmers with assured product markets, access to input services, reliable supply of quality and quantity inputs, extension services and various production techniques. Investors, on the other hand are also assured of supply in both quality and quantity of products. Despite its benefits, the engagement of farmers in contract farming across the world is not uniform. For example, contract farming practice is higher in developed countries than in developing countries (Rehber, 2007; UNCTAD, 2009). Moreover, its application differs across various agri-value chains, whereby it is highly used in high-value crops like vegetables, unlike traditional crops like tea, coffee and cotton (UNCTAD, 2009). It is evident that engaging in contract farming has an

impact on increased agricultural output and, consequently livelihood of smallholder farmers in developed and developing nations. Therefore, weak relationships and lack of trust, for example, side selling between market actors, i.e. producers and processors, prompt the contract farming arrangement to create a win-win situation (Fischler, 2020).

Several studies which focused on different subsectors like fruits and vegetable, cash crops like cotton and sunflower, cereals like beans, maize and paddy, and other value chains like pig, dairy and poultry both in developed and developing countries which mainly used quantitative research approaches show similar determinants on participation of farmers in contract farming. For instance, studies by Loquias et al. (2021); Hoang and Nguyen, (2023); Nazifi and Ibrahim (2021); Hirpesa et al., (2020), Nsimbila (2021), Yeshitila et al., (2020); Maina (2015); Ngaruko and Lyanga (2021) and Msami and Ngaruko (2014) showed various determinants of farmers' engagement in contract farming, including size of the farm, age, sex, experience in farming, unit produce price, access to credit, educational background and level of education, duration of contract agreement, membership in cooperatives, contract farming experience, frequency of extension contact, access to training, contracting process/arrangement, cooperative membership, good-roads, flock/livestock count, access to market infrastructure, family labour, production location, side-selling and transaction costs.

Though transaction cost is identified as one of the determinants of participation of famers in contract farming, studies examining the transaction cost determinants of participation of farmers in contract farming with a focus of traditional agricultural

production value chains like tea, cotton, tobacco, coffee, sisal and sugarcane remain pretty scanty. Besides, there are researchers who attempted to examine transaction cost in relationship to farmers' participation in contract farming or products marketing channel selection. For example, a study by Yeshitila et al., (2020) on the influence of related factors of transaction cost economics in minimizing side selling in Ethiopia and a study by Maina (2015) relating to how Kenyan small-scale farmers' revenue and choice of mango marketing channel are affected by transaction costs, focused mainly in a generalised manner by specifically concentrating on the general three forms of transaction costs as classified by Coase (1937), which are search, negotiation and contract enforcement transaction costs. Furthermore, other scholars have classified and studied transaction costs in various forms, for example, fixed or intangible transaction costs, observable or non-observable (Key et al., 2000), and intangible or tangible (Holloway et al., 2000), amongst other classifications.

Besides, there is limited evidence which show that an attempt has been made to classify, measure/quantify the transaction costs in relation to contract farming with a focus on various nodes of a traditional value chain continuum and relate those transaction costs to farmers' participation in contract farming. Following limited evidence on transaction cost effect on contract farming participation with a focus on value chain node, specifically on upward and downward value chain nodes, this study focused, firstly to classify and quantify transaction costs in contract farming, across a typical traditional cash crop value chain such as tea. Furthermore, the study examined the extent at which each of the identified transaction cost affect farmers' engagement in contract farming in the tea subsector in Tanzania. Additionally, selected farmer

quality variables were examined as intervening variables to determine whether they affect contract farming participation or the effect of transaction costs on contract farming participation

1.3 Research Objectives

1.3.1 General Objective

This study aimed to assess the influence of transaction costs on farmers' participation in contract farming in the tea subsector in Tanzania.

1.3.2 Specific Research Objectives

The specific objectives of the study were:

i. To quantify differential transaction costs across value chain nodes in the tea subsector in Tanzania.

ii. To assess effect of downward transaction costs on farmers' participation in contract farming in the tea subsector in Tanzania.

iii. To examine effect of upward transaction costs on farmers' participation in contract farming in the tea subsector in Tanzania.

iv. To analyse the influence of farmer quality intervening variables on farmers' participation in contract farming in the tea subsector in Tanzania.

1.4 Research Hypothesis

The following null hypothesis guided this study:

i. H_0: There is no difference in transaction cost across value chain nodes in the tea subsector in Tanzania.

ii. H_0: Downward transaction costs have no effect on farmers' participation in contract farming in the tea subsector in Tanzania.

iii. H_0: Upward transaction costs do not affect farmers' participation in contract farming in the tea subsector in Tanzania.

iv. H_0: There is no influence of farmer quality intervening variables on farmers' participation in contract farming in the tea subsector in Tanzania.

1.5 Significance of the Study

This study is critical as it contributes to the vast body of knowledge regarding transaction costs and contract farming. Within the transaction cost theory, the research adds to the identification and measurement of transaction costs, precisely transactions associated with farmers' involvement in contract farming in two broad classifications, namely downward and upward transaction costs. Moreover, the study raises awareness amongst various actors on the effect of downward and upward transaction costs on farmer's engagement in contract farming for the different conventional cash crops, including tea, tobacco, cotton, coffee, sisal and sugarcane thus informing practical and policy aspects related to managing transaction costs.

Additionally, by understanding specific transaction costs across the value chain nodes will aid various stakeholders, such as tea processors, development partners, and the government, in devising focused strategies, including capacity building and policies, to address specific transactions costs that negatively affect farmers' involvement in contract farming. Reducing transaction costs can potentially impact farmers' participation in contract farming, thereby enhancing their likelihood of improving efficiency, effectiveness, profitability, and livelihood.

1.6 Scope of the Study

Data from the tea farm level were used in this research, entailing that views from other value chain actors in the contract farming arrangement mainly, the tea processors were not explored. Future research may consider focusing on understanding the transaction

costs determinants among various marketing agents, such as investors/processors in contract farming for the tea subsector and other conventional cash crops. Moreover, this study focused on selected tea growing districts located in the Southern Highlands of Tanzania (Rungwe, Busokelo, and Njombe), as representation of the most tea growing areas in Tanzania. Other districts apart from these districts were out of scope of this study.

1.7 Thesis Organisation

This thesis is organised into eight chapters. The first chapter stipulates background information of the study. The second chapter contains a literature review focusing on conceptual definitions, review of theory used in this study, review of empirical studies, research gap, conceptual framework, and hypothesis statements. Chapter three shows the methodology of the study, comprising the research design, strategies, research area, sampling design and procedures, methods of data collection, and data processing and analysis. The research findings are presented in chapters four through six. Chapter four focuses on descriptive findings related to farmers' participation in contract farming. Chapter five covers descriptive findings on transaction costs and farmer quality. while, chapter six explores the effects of transaction costs and farmer quality on contract farming participation. On the other hand, chapter seven provides a discussion of the research findings. Finally, chapter eight presents the conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Chapter Overview

This chapter provides conceptual definitions and review of the theory that guided this study. It also delves into an empirical literature review, which specifically focused on participation of smallholder farmers in contract farming and the application of transaction cost in contract farming. Furthermore, it considered a review of policies relevant to this study, which was proceeded by description of the research gap. Finally, the conceptual framework which formed basis in describing the variables used in this study were presented.

2.2 Conceptual Definitions

2.2.1 Transaction Cost

Parada (2002) defines transaction costs as the costs of negotiating contracts, monitoring performance and getting to know trading partners. However, according to Singh 2002, transaction costs may be referred to as costs related to market exchange. These definitions are in line with Coase (1937), who initiated the transaction costs concept concomitant with information search, negotiation, and contract enforcement, which are reduced by the occurrence of an intermediary firm. Likewise, Williamson characterized transactions costs to different factors, including asset specificity, frequency and uncertainty (Rehber, 2007). This study defines transaction costs as hidden costs such as frustrations and service or payment waiting time faced by farmers to access various services across the agricultural value chain nodes while participating in contract farming.

2.2.2 Contract Farming

Contract farming does not have a single comprehensive definition. For example, Akumu et al. (2020) define contract farming as a form of vertical coordination aimed at correcting market failures associated with spot markets that arise due to imperfect information. This definition focused on market imperfections caused by product price. Relatedly, Glover (1984) and Grosh (1994) defines contract farming in the context of microeconomic theory as an institutional arrangement to correct market imperfection. Conversely, Roy (1963) focused its definition on quantity and price and defined contract farming as the contractual arrangement between farmers and other firms, whether oral or written, specifying one or more conditions of production and/or marketing of an agricultural product.

Furthermore, UNCTAD (2009) defines contract farming as a non-equity form of Transnational Corporations (TNC) participation in agricultural production. Contract farming is referred as being a lead factor in improved skills transfer, technology, method of production, access to inputs, credit and market for numerous smallholder farmers (Ietto-Gillies, 2012). As the cited definitions have limitations in specificity towards the agri-value chain, this study defines contract farming as a verbal or written agreement between farmers and buyers to address forward and backward production and market challenges.

2.2.3 Famer Quality

The term Farmer Quality is not widely used within the agricultural community, leading to limited literature and a lack of a universally recognised definition in the agricultural industry. Huang-ping & Chuan-fang (2012) suggests that attributes such as education

level, experience, and income are considered facets of farmer quality, potentially distinguishing farmers' capacity to engage in agriculture. Specific attributes associated with farmer's participation in tea production and agriculture in general other than transaction cost, include, land access, experience, and level of education level (Pingali et al., 2005).

This study defines farmer quality as a group of specific factors, which are not in themselves transaction costs but can somewhat, influence transaction cost as such, subsequently affect farmers' participation in contract farming. Specific selected relevant factors considered to define farmer quality in this study, included a few farmer attributes related to farmers' engagement in contract farming in the tea value chain in Tanzania. The four factors used in this study in line with Pingali (2005) are, experience in contract farming, knowledge of various aspects of the tea subsector/value chain, access to land for tea production, and availability of farming equipment required for tea cultivation.

2.2.4 Famers' Participation in Contract Farming

This study refers farmers' participation in contract farming if a farmer was undertaking tea production under contract farming arrangement since the last production season (2022), with a contract with the investor covering activities ranging from production to selling of the tea produced. This study posits that participation in contract farming has various forward and backward market benefits, including improved access to inputs, technical upgrading and market access, leading to enhanced productivity, income and overall livelihood. Contract farming offers small-scale farmers with easier credit access, inputs, and technical support.

Defining contract farming in this regard, helped the researcher to identify and measure specific transaction costs incurred by tea smallholder farmers across a typical cash crop value chain such as tea while engaged in contract farming. This study assumed that all farmers in the selected areas do reasonably understand contract farming and its benefits. Therefore, the decision for smallholder farmers to engage in contract farming exclusively depends on the farmer's choice.

2.3 Theory Guiding the Study

Transaction Cost Theory provided the theoretical direction for this research. Other theories like theory of the firm, moral hazard and agency theory were explored but transaction cost theory was preferred because it better explains the relationships between the dependent and independent variables of this study, which focuses on classification and measurement of transaction cost across the value chain nodes, i.e. downward and upward transaction costs.

Transaction Cost Theory is part of new institutional economics which assumes bounded rationality (no perfect information) (Ngaruko, 2012). Contracting cost rises with the need for more specification of rights and benefits exchanged (asset specificity) and depend on how the economic system is organised (North, 1992). This means transaction cost extend beyond quantifiable and visible costs which can be factored in the price of products or services. It is argued that if transaction costs are not carefully considered and managed, the benefits of vertical integration such as through contract farming may be overstated (Rehber, 2007). Therefore, transaction participating parties like farmers and buyers need to organize themselves to maximize benefits from a transaction. The chosen organisation structures are referred to as

governance structure by Williamson (1995, 2000), while Ngaruko (2012) terms them as mechanisms to shield parties from the risks involved in participating in a transaction.

In the agricultural value chain, various scholars conceptualize transaction costs differently. For example, Pingali et al. (2005) consider transaction costs based on the physical location, thus, costs of inputs and market access costs differ based on the farmer's location. They further argued that crops like vegetables have higher transaction costs than cereals and cash crops because they are perishable. However, Holloway et al. (2000) classify transaction costs as tangible (transportation and communication costs) and intangible (risks and uncertainties). Besides, Key et al. (2000) describe transaction costs as a variable or proportional (transportation of inputs) and fixed (negotiation and enforcement costs). From another perspective, Key et al. (2000) categorised transaction costs as observable transaction (transport, handling, spoilage and storage), and unobservable costs, including fixed or intangible transaction costs like information search cost, bargaining, and contract enforcement of costs.

This study built on contrasting classifications of transaction costs found in Pingali et al. (2005), which focused on a specific agri-value chain, and the consideration of intangible transaction costs by Key et al. (2000). A modified definition was developed to align with the objectives of this study. Precisely, this study classifies transaction costs with a focus on agri-value chain nodes (upward and downward transaction costs) to better explain how transaction costs influence engagement of farmers in contract farming. Downward/backward transaction costs are hidden costs within the contract farming arrangements related to crop production, i.e., from farm preparation, planting

and management (growing). Conversely, upward/forward transaction costs are the hidden costs within the contract farming arrangements related to crop selling, i.e., from harvesting (plucking), aggregation, sorting, transportation and sale. This study built on Coase's (1937) main forms of transaction costs, information search, negotiation, and contract enforcement costs to identify and measure the transaction costs in each of the two categories (downward and upward transaction costs).

Even though TCE is valuable for understanding economic transactions, including contract farming, its main limitation is that transaction costs are challenging to quantify and measure, and theory does not provide a clear-cut framework for measuring transaction costs. It is argued that, unlike the measurable accounting costs of production, transaction costs, as argued by Williamson (1985), present difficulties in measurement. According to Man et al. (2017), the scarcity of empirical studies on transaction costs, including in contract farming can be explained by the inherent challenges associated with transaction costs measurement.

Since TCE lacks a specific transaction cost measurement framework, this study employed a measurement approach similar to behavioural studies. Smallholder tea farmers' transaction costs perceptions related to participating in contract farming were assessed using question constructed on a Likert like scale to quantify respondents' agreement levels based on devised transaction cost proxy indicators. Likert like scales provide a structured and standardised method for measuring behaviour, enabling the quantification and comparison of respondents' perceptions or attitudes. This allows for an examination of the relationship between these perceptions and the levels of high or low transaction costs (Cheng et al., 2021; León-Mantero et al., 2020; Kim, 2011).

2.4 Empirical Literature Review

This section presents a review of empirical studies that are pertinent to this research focusing on engagement of farmers in contract farming, participation determinants, application of transaction cost theory in agricultural value chains focusing on contract farming, farmer quality, and policy review.

2.4.1 Famers' Participation in Contract Farming

Farmers' participation in contract farming cannot be overemphasized. Several studies indicate contract farming to be critical to improved forward and backward market linkages to farmers, households and community livelihood. For example, a study on contract farming and smallholder farmers in developing nations by Meemken & Bellemare (2019) shows that contract farming can help farmers access markets, enhance household welfare, and advance rural development. Similarly, a study by Ncube (2020) on the value of contract farming to smallholder farmers in Africa and its policy implications shown that contract farming results to increased smallholder farmer participation in commercial markets. Likewise, a systemic review of cross-sectional studies on contract farming in developing countries by Ton et al. (2017) shows that income of farmers' participating in farming contract arrangement is higher than non-contract farmers. These examples show that farming contractual arrangement is critical to the overall improved farmers production, productivity, access to market and overall livelihood.

Various studies show that engagement of famers in contract farming is attributed to various factors. For instance, a cross-sectional study by Loquias et al., (2021) on the determinants of smallholder Cavendish banana producers in the Philippines'

participation in contract farming, showed that credit access and production experience affect farmers' involvement in contract farming. Similarly, a mixed method study by Hoang & Nguyen (2023) on factors affecting farmers' involvement in contract farming in emerging nations, with a case of Vietnam, showed that business development services access, investor size, quality certification, membership in cooperatives and location of good roads have direct relationship with farmers' engagement in contract farming.

Relatedly, a cross-sectional study by Nazifi and Ibrahim (2021) on factors affecting smallholder maize farmers in North-Western Nigeria's participation in contract farming showed that contract farming experience, extension services access, credit and training in good agricultural practices had a significant and favourable relationship ($p < 0.05$) on the involvement of maize producers in contract farming. According to Huang-ping & Chuan-fang (2012), some determinants of farmers' engagement in contract farming like education, experience and level of income are considered as facets of farmer quality. This implies that the quality of farmers is also likely to affect their participation in contract farming.

A similar cross-sectional study undertaken by Hirpesa et al., (2020) on factors influencing of dairy farmers' engagement in contract farming in Ethiopia, showed that sex, age, price uncertainty perception, access to training, and extension services contact frequency, positively and significantly ($p<0.05$) impact participation of smallholder dairy farmers in contract farming but time used at the collection centres negatively affected famer's involvement in contract farming. Likewise, a cross-sectional study by Nsimbila (2021) on factors affecting cotton farmers' participation

in contract farming in Tanzania showed that household head gender, age, cotton farming experience, access to credit, cattle ownership, bicycle ownership and being wage-earner positively influenced cotton farmers' participation in contract farming. These attributes also include factors such as farming experience, suggesting that farmer quality is likely to influence participation in contract farming. Besides, these studies did not critically consider transaction cost as one of the crucial determinant to farmers' engagement in contract farming.

2.4.2 Transaction Costs and Farmers' Participation in Contract Farming

A study conducted by Kozhaya (2020) relating to contract farming and how it affects Lebanon's poultry producers, using the propensity score matching model, revealed that payment and delivery delays, as well as side selling due to market price changes, negatively affect the effectiveness of contract farming. Likewise, in a research by Chazovachii et al. (2021) in Zimbabwe examined the viability of centralised contract farming among smallholder farmers growing tobacco through thematic analysis and using Pearson Correlation Coefficient. The findings indicated that engagement of farmers in contract farming may be negatively affected by information asymmetry and uncertainty. These factors may be associated with the information search and contract negotiation costs. These findings emphasize the influence of contract enforcement transaction costs on contract farming participation by smallholder farmers.

Similarly, a study conducted by Tuyen et al. (2021) in Vietnam explored the determinants of performance of rice farming through contract farming using Rank Based Quotient (RBQ), content analysis and constant comparison. The research identified several factors, such as delayed payments, late delivery of inputs, and

potential delays in harvesting and delivering the output, that affect how effective contract farming agreements are. Likewise, a study undertaken by Rokhani et al. (2020) using a logistic regression model, assessed the variables influencing farmers' engagement in sugarcane contract farming in Indonesia. The study found that, among other factors, extension services access positively affected involvement of farmers in contract farming. Provision of extension service to contract farmers may be related to contract enforcement transaction cost, aligning with Coase's (1937) major classification of transaction costs.

Another study undertaken by Arouna et al. (2021) by using Ordinary Least Squares regression on contract farming and rural transformation in Benin, revealed that the simplicity or complexity of contracts does not have an impact on farmers' participation in contract farming. These costs may be related to contract information search transaction costs. To put this differently, complex contracts do not negatively influence engagement of farmers in contract farming. In a study undertaken by Anavrat et al. (2017) by using a t-test on the acid lime growers perceptions about contract farming's viability, it was asserted that price uncertainty is a risk factor that affects farmers' participation in contract farming. This risk factor may be associated with contract negotiation transaction costs, as mentioned by Coase (1937). In the current study, the risk factor of limited likelihood of price change (UNTC1) in the upward node of the tea value chain may be related to this factor.

A study conducted by Negasi and Mebrahatom (2019) using chi-square and student t-test demonstrates that expected services from the contract, such as management skills, technology, credit, and inputs, positively influence engagement of farmers in contract

farming. These determinants can be related with negotiation and contract enforcement transaction costs. Similarly, in a study conducted by Ruml and Qaim (2020) on farmers' discontent with contracting programmes, it was found that factors such as mistrust and lack of transparency have a significant negative impact on involvement of farmers in contract schemes. These factors may be related to information search and contract enforcement costs in the transaction economic theory.

Relatedly, based on a study that was done by Taslim et al. (2021) using binary logistic regression on the farmers' engagement in contract farming in Bangladesh, it was found that services provided through contract farming, such as savings and training, positively influence farmers' engagement in contract farming. These variables are related to the negotiation transaction cost and contract policing and enforcement costs in contract farming. Likewise, a study undertaken by Tuyen et al. (2022) by using RBQ, constant comparison and content analysis in Vietnam, on the investigation into the contract farming: views, issues, and future prospects indicated that farmers dropping out of contract farming arrangements was significantly associated with buyers breaching contract terms. This factor can be related to enforcement transaction costs.

In a research undertaken by Ewusi Koomson et al. (2022) by using binary probit regression on contract farming for rubber production in Ghana, it was found that factors such as delays in services including transport, weighing services, and payment significantly influenced farmers to engage in side selling. Put simply, these variables, which are related to contract enforcement costs, indicate a significant negative impact on involvement of farmers in contract farming. Moreover, a cross-sectional study by

Yeshitila et al., (2020) used a structural equation model on transaction cost economics factors in minimizing side selling in Ethiopia, showing that trust had a positive significant direct effect in reducing transaction costs (0.248 effect coefficient). Similarly, satisfaction, trust, communication, and asset specificity combined significantly positively impact lowering side selling. However, the same study indicated that higher transaction costs influenced side selling. These variables may be related to contract enforcement transaction costs.

In a cross-sectional study by Maina (2015) using the multinomial logit regression model on the impact of transaction costs on Kenyan small-scale farmers' income and channel of selling for mangoes showed that age, gender, extension visit, market price search, level of trust, transportation cost, information cost, group membership, negotiation time and distance from the market significantly influenced the marketing channel selection ($p<0.05$). Similarly, according to a study done by Mulbah et al. (2020) on smallholder rubber farmers in Liberia, the selection of selling outlets is significantly affected by socio-economic variables and transaction costs. These results emphasize the need to consider these factors, including contract farming and direct sales when farmers are making decisions about where to sell their products.

In a study conducted by Rondhi (2021), logistic regression analysis was used to look into how farmers' decisions to engage in Tobacco Voor-Oogst Kasturi contract farming are affected by asymmetric knowledge and transaction costs. The findings indicated that information asymmetry had a significant negative effect on contract farming participation by farmers. Similarly, in a cross-sectional study conducted by Musara et al. (2018) on smallholder sorghum farmers' participation and marketing

channel preferences in Zimbabwe, employing multinomial logit and probit-based double hurdle models, it was discovered that age of the principal decision-maker, number of buyers in the market, payment time, and distance to the market significantly influenced farmers' market participation decisions.

Likewise, Ngaruko and Lyanga (2021) applied the TCE in a cross-sectional study to ascertain the transaction cost of sunflower seed production in Tanzania. The results exhibited that the total output of sunflower seed production is negatively influenced by transaction cost aspects related to information search and negotiation. Besides, enforcement cost positively influenced sunflower production, but the effect was not statistically supported at $p<0.05$. Relatedly, another cross-sectional study by Msami and Ngaruko (2014) used transaction cost theory to identify factors influencing poultry business institutional marketing arrangements in Tanzania. The logistic regression analysis results indicated that institutional arrangement choice by the firms is influenced by total transaction cost variables ($p<0.05$), whereby, search and screening costs had a more significant impact (Wald = 8.745), proceeded by the cost of enforcement (Wald=4.735) and the cost of negotiation (Wald=4.735).

In a study conducted by Mmbando et al. (2016) on market channel selection among smallholder pigeon pea and maize farmers in Tanzania, multinomial logit regression analysis revealed that various factors, including transaction cost variables, such as price information search, quality of road to the market, and business trust with buyers, significantly influenced farmers' choices of market channels. This entails that these factors affect farmers' perceptions of advantages and disadvantages of various market channels, as such influencing their choices accordingly. Moreover, in a study done by

Ismail et al. (2015) that examined the impact of transaction costs on smallholder farmers' decisions to participate in the maize market, binary logistic regression analysis revealed that transaction costs associated with market levy, middlemen costs (costs for searching information like those related to buyers and prices), transportation costs, market and government levy significantly affect the decision of farmers to engage in market. A synthesis of these literature review findings, evident that transaction costs play a crucial role in shaping farmers' decisions regarding market participation.

2.5 Policy Review

Since 1960s, Tanzania's agricultural policy has been heavily impacted by changes in the country's economic policy framework. In mid 1980s, Tanzania pursued extensive economic reform measures to restore internal and external balances. The economy's liberalization was the catalyst for the reforms, which concentrated on de-constricting agricultural markets and prices. These initiatives attempted to increase agricultural output, market possibilities, employment, farmer income, sectoral linkages, and foreign exchange generation (URT, 2016). Currently, Tanzania agriculture sector is guided by the ASDS-II (2015/2016 – 2024/2025) and NAP 2013. By 2025, the NAP 2013 envisions an agricultural sector in Eastern and Central Africa that is highly productive, commercial, modernised, and profitable; that uses natural resources in an overall sustainable manner; and that serves as a solid foundation for linkages between sectors. (URT, 2013). Both ASDS-II (2015/2016 – 2024/2025) and NAP 2013 provide specific provisions focusing at improved utilization of contract farming (URT, 2013 and URT, 2015).

The policy specifically indicates that, in addition to regulating contract farming and advancing commodity supply chains, the government must also make sure that the rights of farmers, especially women and men, are upheld (URT, 2013). To operationalize the aspects related to contract farming and implementation, NAP 2013 specified the need to have a contract farming Act. Unfortunately, the contract farming act is yet to be developed to date. Lack of a focused legal framework may hinder effectiveness of various contract farming arrangements and initiatives across the country.

Moreover, Tanzania's tea regulations (2010) provide a broad framework for participation of farmers in contract farming. However, the emphasis is primarily placed on selling agreements, particularly highlighted in section 41, where farmers have the opportunity to enter into one-year agreements with green-leaf buyers for green-leaf tea sales (URT, 2010). This observation suggests a greater focus on the upward node (green-leaf tea selling) rather than the downward node (green-leaf tea production) within the tea value chain. Consequently, farmers may prioritize selling agreements over production agreements, potentially leading to a shift in their priorities and decision-making processes. This could impact production practices, resource allocation, and overall efficiency and effectiveness of contract farming in the tea subsector.

2.6 Research Gap

Literature review has identified several factors affecting participation of farmers in contract farming in different agricultural value chains across the world, including farm size, age, sex, farming experience, unit produce price, access to credit, educational

background and level, duration of contract agreement, membership in cooperatives, contract farming experience, frequency of extension contact, access to training, contracting process/arrangement, cooperative membership, good-roads, flock/livestock count, access to market infrastructure, family labour, production location, side-selling and transaction costs (Loquias et al., 2021 (Philippines); Hoang & Nguyen, 2023 (Vietnam); Nazifi & Ibrahim, 2021 (Nigeria); Yeshitila et al., 2020 (Ethiopia); Nsimbila, 2021; Ngaruko & Lyanga, 2021; Maina, 2015; Msami & Ngaruko, 2014 (Tanzania)). Besides, these studies did not critically evaluate how various transaction costs across the value chain nodes with a focus on downward and upward transaction costs can influence farmers' participation in the value chain or marketing channel selection.

Moreover, research on transaction cost as a determinant to farmers' participation in contract farming with a focus on agricultural value chain nodes is still surprisingly limited. Studies that sought to explain transaction costs in connection to farmers' participation in contract farming or products marketing channel selection, such as those undertaken by Arouna et al. (2021), Taslim et al. (2021), Tuyen et al. (2022), Ewusi Koomson et al. (2022) Yeshitila et al., (2020), and Ngaruko and Lyanga (2021) approached the influence of engagement of farmers in contract farming by focusing on the three broad forms of transaction costs classification (search, negotiation and contract enforcement) by Coase (1937), and not in agri-value chain lens. Likewise, scholars have classified transaction costs in various forms, for example, fixed or intangible transaction costs, observable or non-observable (Key et al., 2000), intangible or tangible (Holloway et al., 2000), but there is limited evidence on attempt

to classify and measure transaction costs and their effects on contract farming with a focus on various nodes of a traditional cash crops value chain. The gaps in the literature, specifically the limited studies that classify, measure, and establish the effect of transaction costs, with a focus on the agricultural value chain continuum for cash crops such as tea, motivated this study. This study explicitly sought to classify, quantify and investigate the impact of transaction costs on farmers' participation in contract farming, with a specific focus on two key value chain node groups: downward and upward transaction costs. This research is particularly relevant in the context of traditional cash crops production and markets, such as the Tanzanian tea subsector, where participating in contract farming is an essential option for farmers.

2.7 Conceptual Framework

The conceptual framework is a visual, graph, figure or chart presentation to explain the critical things, factors, variables/concepts and their underpinning relationship between them. The conceptual framework may be elementary or intricate, theory-driven, narrative, casual or commonsensical construct or adaptation from available frameworks (Miles & Huberman, 1994: pp.18-20). This study has four main variables grouped into three categories, independent, intervening and dependent variables, as outlined below and plotted in Figure 2.1.

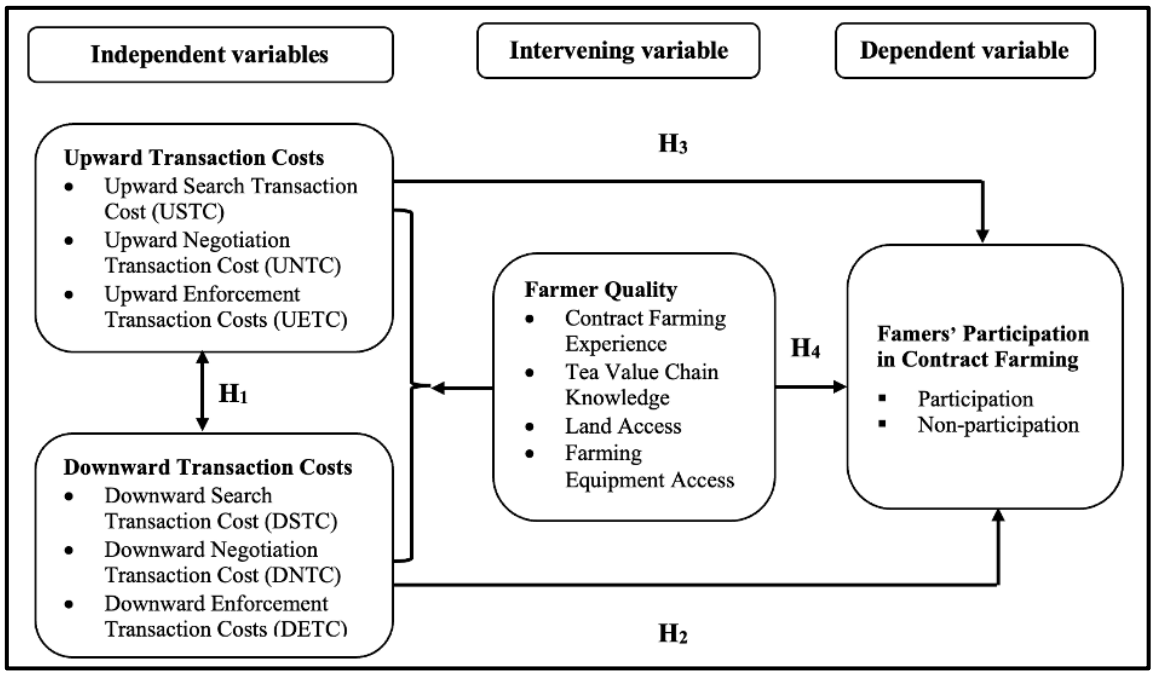

Figure 2.1: Conceptual Framework

Source: Researcher's Construct, 2023

The variables used in this study are discussed in the following subsections using the framework potted in Figure 2.1.

2.7.1 Farmers' Participation in Contract Farming

The dependent variable in this study is farmers' participation in contract farming, measured as a dichotomous variable. It indicates if farmers had engaged in tea contract farming during the previous production season (2022). In the estimation model, "1" represents participation in contract farming, while "0" represents non-participation. This binary representation enables a clear distinction among farmers involved in contract farming and those who were not.

The measurement of engagement of farmers in contract farming as dichotomous enabled a clear categorisation of farmers into participants and non-participants. This

approach with two distinct groups (contract farming participants and non-participants) facilitated separate analysis and comparison of their characteristics, behaviours, and outcomes. Statistical analysis and model development, precisely the binary logistic regression analysis allowed for the estimation of transaction cost factors influencing participation of farmers in contract farming.

The use of binary representation simplified the interpretation and communication of results, making the findings to be likely easily understandable for a broader audience. Moreover, this approach facilitated a clear estimation and understanding of the transaction cost determinants on the downward and upward stream of the tea subsector.

2.7.2 Transaction Costs Clusters Across Tea Value Chain Nodes

A typical traditional cash crop value chain, such as tea and coffee, involves multiple activities, including farm preparation, planting and management (growing), harvesting (plucking), aggregation, sorting, and selling. In this study, the focus is on analysing the transaction costs incurred by smallholder tea farmers at various nodes of the tea value chain within the context of contract farming. To better understand these transaction costs, the study classified them into two main categories: upward transaction costs (UTC) and downward transaction costs (DTC).

Therefore, DTC focused on the transaction costs incurred by smallholder tea farmers during various activities in the value chain for tea's downward stream, particularly in crop production, within the context of contract farming. These activities include farm preparation, planting, and management (growing). In contrast, UTC signifies the transaction costs faced by smallholder tea farmers during various operations in the

upward stream of the tea value chain, specifically in crop selling. These activities encompass harvesting (plucking), aggregation, sorting, and selling.

To systematically classify the transactions costs into the two categories established in this study (UTCs and DTC), the three broad transaction costs proposed by Coase (1937) - information search, negotiation, and enforcement were adopted. Figure 2.2 illustrates how transaction costs are categorised in this study, congruent to the transaction cost theory.

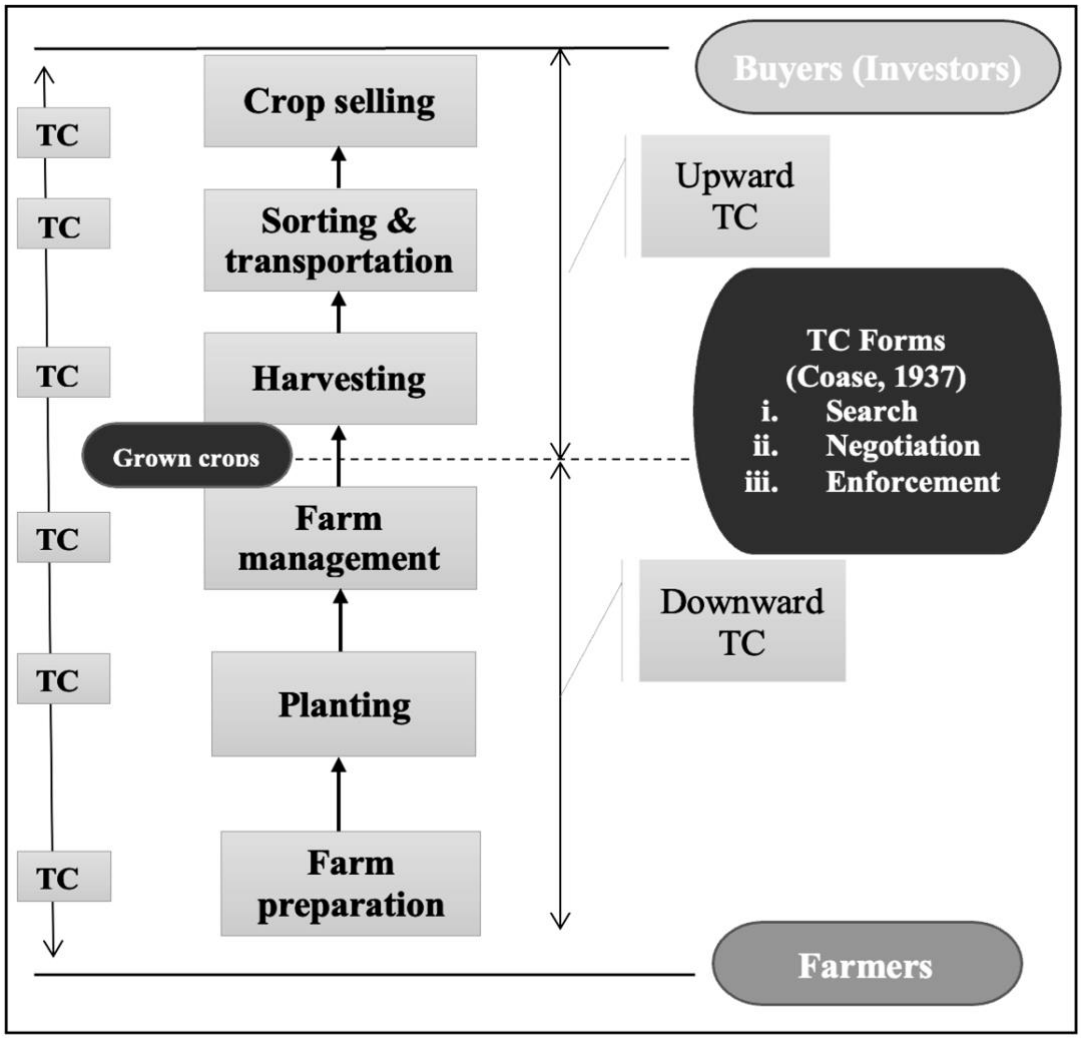

Figure 2.2: Transaction Costs Classification Across Agri Value Chain Nodes

Source: Researcher's Construct, 2023

From the above transaction cost classification framework and application of Coase (1937), transaction costs classification, three constructs for each of the two transaction costs classification in this study were developed. This was meant to simplify the process of measurement and quantification of transaction costs experienced by smallholder tea farmers' participating in contract farming with a focus on the downward and upward nodes of the tea value chain (see the details in Table 2.1).

Table 2.1: Transaction Cost Classification Vs Transaction Cost Constructs

Transaction cost group/cluster	Transaction cost constructs
1. Downward Transaction Costs (DTC)	i. Downward Search Transaction Cost (DSTC)
	ii. Downward Negotiation Transaction Cost (DNTC)
	iii. Downward Enforcement Transaction Cost (DETC)
2. Upward Transaction Costs (UTC)	i. Upward Search Transaction Cost (USTC)
	ii. Upward Negotiation Transaction Cost (UNTC)
	iii. Upward Enforcement Transaction Cost (UETC)

Source: Researcher's Construct, 2023

These two groups of transaction costs were computed and compared to establish which amongst the two constitute a significant proportion of total transaction costs identified across the value chain nodes.

2.7. 3 Effect of Downward Transaction Costs on Farmers' PCF

This postulation measures whether the increase or decrease of downward transaction costs affects farmers' participation in contract farming. Identification of downward transaction costs was made in line with Coase's (1937) main classification of transaction costs (search, negotiation, and enforcement). Therefore, transaction costs of farmers' involvement in tea contract farming were identified on the downward stream of the tea value chain from farm preparation, planting, and growing (farm

management to when tea is ready for harvesting) in line with three Course's classifications.

Total downward transaction cost (TDTC) composite score was established and related to participation of farmers in contract farming to ascertain how it positively or negatively affects farmers' engagement in contract farming in total, or the individual elements comprising downward transaction costs.

The negative coefficients (B) in the binary logistic regression model for DTC indicators imply that higher transaction costs reduce the likelihood that farmers will engage in contract farming. Conversely, positive coefficients suggest that certain transaction costs can make it more likely that farmers will use contract farming. These effects are statistically significant at a 5 percent precision level.

2.7.4 Effect of Upward Transaction Costs on Farmers' PCF

This aspect aimed to establish whether the increase or decrease of upward transaction costs affects farmers' participation in contract farming. Identification of upward transaction costs has been done in line with Coase's (1937) main classification of transaction costs (search, negotiation, and enforcement). Therefore, transaction costs of farmers' involvement in tea contract farming were identified on the upward stream of the tea value chain from harvesting (plucking), aggregation, sorting and selling in line with three Course's classifications.

The total upward transaction cost (TUTC) composite score was established and associated with farmers' involvement in contract farming to ascertain how it positively or negatively affects farmers' participation in contract farming in total or the individual

elements comprising upward transaction costs. The logistic regression model's negative coefficients (B) on the UTC indicators indicate that an increase in a specific transaction cost element reduces the likelihood of farmers' involvement in contract farming, while the positive coefficients indicate the opposite effect. These effects are considered statistically significant at a 5 percent precision level.

2.7.5 Influence of Farmer Quality on Farmers' PCF

This variable intended to establish how a farmer's quality as an intervening variable to transaction cost and participation of farmers in contract farming positively or negatively affect their participation or nonparticipation in contract farming. Farmer quality was determined using four main elements; contract farming experience, knowledge of various nodes of the tea value chain, specifically farm preparation, planting, growing (farm management), harvesting (plucking), aggregation, sorting and selling, land access for production for production of tea and access to tea farming equipment.

A farmer quality composite score was computed and compared to farmers' participation in contract farming, along with transaction cost indicators, to determine the impact of farmer quality and its indicators on participation. The analysis examined how farmer quality, in its entirety or specific components, positively or negatively influenced farmers' engagement in contract farming. Additionally, the study explored the connection between farmer quality and transaction cost indicators in affecting engagement of farmers in contract farming. The logistic regression model's negative coefficients (B) on the farmer quality indicators indicate that an increase in specific farmer quality indicators, reduces the effect of transaction cost effect on the possibility

of farmers' involvement in contract farming, while the positive coefficients indicate the opposite effect. These effects are regarded statistically significant at a 5 percent precision level.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Chapter Overview

This chapter presents the methodology used in this study. The study employed a quantitative approach aligned with a positivist philosophy, focusing on quantifiable variables and their responses to interventions. It involved 393 smallholder tea farmers selected from 37 villages located in Rungwe, Busokelo, and Njombe districts in Tanzania. Data collection involved face-to-face interviews using a structured questionnaire and digital data gathering devices. Both descriptive and inferential statistics were used to analyse the acquired data. The validity and reliability of the measurement instrument were ensured through expert reviews and statistical tests. Moreover, ethical considerations, such as research clearances, data confidentiality, and voluntary informed consent, were upheld throughout the research.

3.2 Research Strategy

This research used a quantitative approach as such a positivist philosophy fitted well with this study. Positivist philosophy focuses on the cause-and-effect principle. It mainly focused on investigating quantifiable, observable variables under particular controllable circumstances and describe how these variables respond to the researcher's interventions (Saunders & Lewis, 2012). Connectedly, a descriptive research design was used. Descriptive research entailed using the criteria of validity, reliability, objectivity, accuracy, and generalisability to assess quantitative research's rigour to characterize, forecast, and test the hypothesis (deductive theoretical

reasoning approach) (Antwi & Hamza, 2015). In this regard, a descriptive research design was used to establish the relationship between transaction costs and farmers' engagement in contract farming by explicitly testing the developed hypothesis. Exploratory and explanatory study designs were not considered because of their inherent limitation of requiring a relatively longer time to gather the needed data and conclude the study (inductive approach) (Saunders and Lewis, 2012; Jonker & Pennink, 2010).

3.2.1 Survey Population

A survey population referred to all the individuals or units with specific characteristics from which a small representative subgroup (sample) was chosen (Bordens & Abbott, 2011). In this research, the survey population encompassed the tea farmers in Tanzania who had participated in, or refrained from, contract farming in the last production season (2022) or before. It was estimated that as of December 2022, Tanzania had approximately 32,000 smallholder tea farmers (IDH, 2021a). Besides, the study purposively targeted farmers served by selected tea processors/investors, precisely, Ikanga Tea Processing Company and Njombe Outgrowers Services Company (NOSC) in Njombe DC (Njombe region) and WATCO through Rungwe Busokelo Tea Cooperative Joint Enterprise (RBTC-JE) in Rungwe and Busokelo districts in Mbeya region because they work with farmers both engaged and not engaged in contract farming. These entities in total serve about 21,700 farmers, which is approximately 68 percent of total estimated number of smallholder tea farmers in Tanzania (IDH, 2021a, 2021b; Wood Food Foundation & Gatsby, 2020). As a result, the study's sampling

framework included 21,700 smallholder tea producers, 70 percent of whom were contract farmers and the remaining 30 percent were not.

3.2.2 Study Area

This research was undertaken in three districts located in two regions of the Southern Highlands of Tanzania: Njombe DC in Njombe region, Rugwe and Busokelo District Councils in Mbeya region. The three districts were chosen because they are located in the most tea-growing regions in Tanzania, and constitute at least 70 percent of smallholder tea farmers in Tanzania unlike other regions such as Tanga, Mara and Kagera (IDH, 2021a, 2021b; Wood Food Foundation & Gatsby, 2020). Additionally, these Southern-Highland regions have actors who engage farmers in contract farming, both formally and informally, across the tea value chain continuum. For example, Unilever (Ikatera) in Mufindi, Ikanga Tea Processing Company and NOSC in WATCO through RBTC-JE in Rungwe and Busokelo districts in Mbeya engage farmers through various contract farming arrangements. Mufindi district was only involved in the survey instrument piloting phase of this study.

Njombe District Council (DC) is situated in the southern highlands of Tanzania, and it is one of the 6 administrative districts within the Njombe region. Njombe DC is located at approximately 09°12'33" latitude south and 35°7'57" longitude east. The district spans an area of around 3,153 km^2, about 12.6 percent of the total Njombe land size and has a population of approximately 96,817 residents. Njombe DC shares borders with Wanging'ombe DC to the west, Morogoro region to the east, Mufindi DC and Makambako Town Council to the north, Ruvuma region to the southwest , Njombe Town Council to the south (URT, 2020).

Rungwe district located in the Mbeya region of Tanzania, is one of the eight district councils in the region. It shares borders with Kyela, Ileje, Makete, and Mbeya districts. With a land area of 1,668.259 Km^2, the district features a mountainous terrain, including Rungwe Mountain and Livingstone Mountain ranges. The district's favourable altitude-influenced climate, characterized by moderate temperatures ranging from 18°C to 25°C, and varying rainfall levels of 900 mm in lowland areas to 2700 mm in highland areas, makes it suitable for tea production (URT, 2023b).

Busokelo district on the other hand, is amongst the eight district of the Mbeya region established in 2012 splitting from Rungwe district. It is located between latitudes 8° 30' East and 9° 30' South, and longitudes 33' and 34' East. It has borders with the districts of Kyela, Rungwe, Makete, and Mbeya. The district, which covers 969.14 square kilometres, dedicates 85 percent of its territory to agricultural activities, with the remainder covered by woods, mountains, and residential areas. With an altitude range of 770 metres to 2,265 metres, the climate varies over the mountainous landscape, with rainfall ranging from 900mm to 2700mm and temperatures ranging from 18° to 25°C all year (URT, 2023c). These attributes closely resemble those of Rungwe district, thereby rendering this district also conducive for tea cultivation. The geospatial mapping of the districts involved in this research is shown in Figure 3.1.

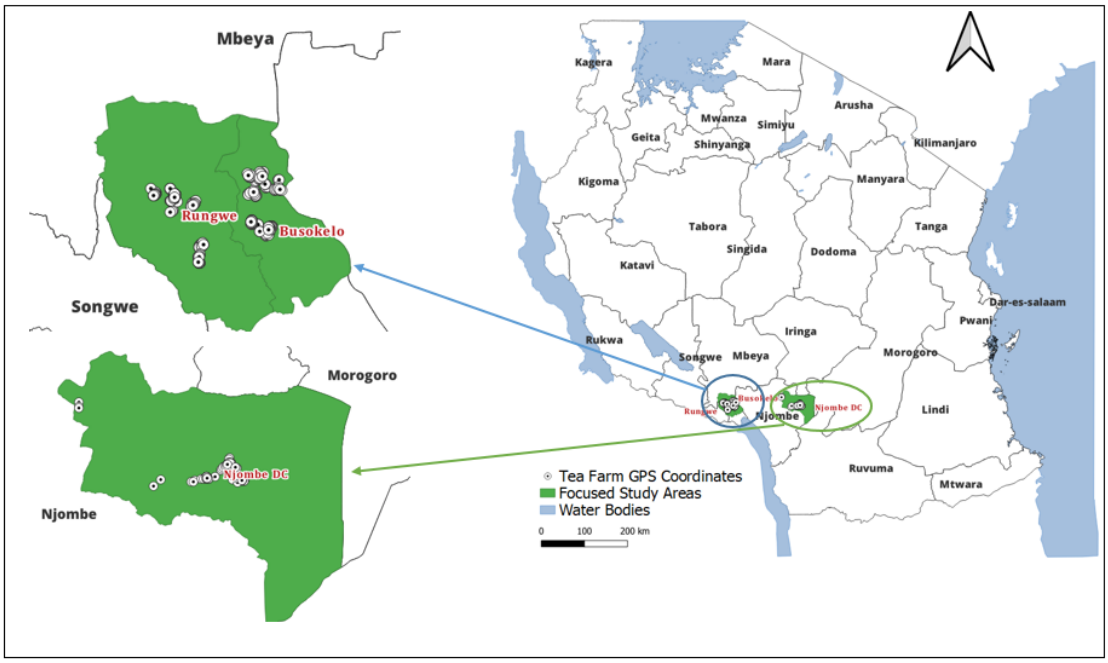

Figure 3.1: Study Locations

Source: Research Data, 2023

3.3 Sampling Design and Procedures

This research used a quantitative approach, whereby primary data were collected from 393 smallholder tea farmers from Njombe DC in Njombe region, Rungwe and Busokelo districts in Mbeya Region. This sample was computed by using a sampling frame of 21,700 smallholder tea farmers working with Ikanga Tea Processing Company and NOSC in Njombe DC, and WATCO through RBTC-JE in Rungwe and Busokelo districts in Mbeya as summarised in Table 3.1.

Table 3.1: Sampling Frame (N=21,700)

District	Tea Processor/Company	Number of Target Beneficiaries	% of N
Njombe DC	NOSC and Ikanga	7,700	35%
Sub-total Njombe district/region		**7,700**	**35**
Rungwe	RBTC-JE/WATCO	6,860	32%
Busokelo	RBTC-JE/WATCO	7,140	33%
Sub-total Mbeya region		**14,000**	**65%**
Total number of farmers (N)		**21,700**	**100%**

Source: IDH, 2021a, 2021b, NOSC, 2020

By using this sampling frame, this study used the level precision formula developed by Yamane (1967) with the 95 percent Confidence Interval and 5 percent precision level as indicated in equation (1):

$$n = N/\{1 + N(e)^2\} \quad \ldots\ldots(1)$$

Whereby: n= Sample size;

N=Sampling frame;

e= Precision level.

Therefore in line with equation 1, the study sample size for this study at N=21,700; and e=5% was determined as follows:

$$\text{Sample size (n)} = 21{,}700/\{1 + 21{,}7000\ x\ (0.05)^2\} = 393$$

The 393 sampled smallholder tea farmers to participate in this study were chosen from the three districts based on their participation or non-participation in the contract farming arrangement that encompassed both production and selling activities. This research used a stratified and cluster sampling techniques to provide a representative sample. The study population was split into two groups (strata), those who participated in contract farming and those who did not participate in contract farming, and within

each group, particular clusters were chosen, precisely wards and then villages where the smallholder tea farmers lived. In sample clustering, participants were divided into contract and non-participants, with proportions of 70 percent and 30 percent respectively. This proportion was chosen to reflects representation of farmers in two groups in line with literature which shows that the percentage of farmers in contract farming in Tanzania is relatively higher when equated to those not engaged in contract farming. For instance, Meemken & Bellemare (2019) study on small-scale farmers in developing nations and the practice of contract farming found that over 70 percent of Tanzanian farmers participate in contract farming. Similarly, CARE International (2023) and IDH (2021a, 2021b) studies revealed that approximately 70 percent of tea producers are men, indicating a higher proportion of men in this field. Consequently, this study aimed to ensure equal representation of men and women by targeting both groups in the same proportion.

Therefore, from each selected cluster, a sample was drawn using simple random sampling, ensuring representation from different strata. This combination of stratified sampling and cluster sampling allowed for a representative sample to be obtained, capturing the diversity within the studied population. In total the study covered 37 villages scattered in 20 wards of the three districts based on the availability of targeted farmers for this study (see Table 3.2 for details).

Table 3.2: Wards and Villages Surveyed

Region	District	Ward	Village
Mbeya	Busokelo	10	19
Mbeya	Rungwe	5	9
Njombe	Njombe DC	5	9
Total		**20**	**37**

Source: Research Data, 2023

The distribution of the respondents per district was in line with the sampling framework provided in Table 3.2. This study reached 393 smallholder tea farmers across the three study districts, which is 100 percent response rate. Achieving this response rate can be associated with various factors, including clear communication and engagement, building trust and rapport with the targeted smallholder tea farmers and the district focal persons who were identifying them, adequate time and resources, persistence, and follow-up with the respondents. The distribution of sample per district and actual number of respondents reached is provided in Table 3.3.

Table 3.3: Sample vs Reached Respondents (n=393)

District	Sample (n)	% to total sample	Reached Respondents (n)	% of reach to sample
Njombe DC	139	35%	138	99.28%
Rungwe	124	32%	124	100.00%
Busokelo	129	33%	131	101.55%
Total sample (n)	**393**	**100%**	**393**	**100.00%**

Source: Researcher Computation, 2023

The farmers were randomly chosen from the specific clusters as describe in the selection procedure to ensure that the questionnaire was administered to both farmers involved and not involved in contract farming during the 2022 production season. Therefore, as described in the sampling procedure, 393 farmers: 277 (70%)

participating in contract farming and 116 (30%) who were not involved in contract farming during the 2022 production season, were sampled. The selection process was based on the locations (wards and villages) where the tea farmers work, considering the presence of tea processors/companies across the three districts.

3.4 Variables and Measurement Procedures

3.4.1 Dependent Variable

The dependent variable for this study is farmers' participation in contract farming, which is measured as a dichotomous variable. This variable was used to determine if farmers had participated in tea contract farming, their engagement in tea production under a contract farming arrangement since the previous production season (2022) was considered.

During the survey, farmers selected for this study were asked about their involvement in tea production through contract farming during the last tea production season (2022) or before. This was approach aided to measure engagement of farmers in contract farming because identification of farmers' participating in contract farming and those who did not participate was done without ambiguity. This was also in line with sampling frame which itemised farmers engaged in contract farming and those not engaged in contract farming.

In the formulated model, farmer participation in contract farming was denoted by "1" if they had engaged in contract farming, and "0" if they had not participated in contract farming. This binary representation allows for a clear distinction between farmers who were engaged in contract farming and those who were not. Moreover, this binary measurement approach allowed the researcher to compare and analyse the differences

between farmers who engaged in contract farming and those who did not, providing insights into the transaction cost-related factors influencing farmers' engagement in this specific agricultural arrangement in the tea sub sector.

3.4.2 Explanatory Variables

The study's explanatory variables consisted of two independent variables (downward transaction costs and upward transaction costs) and one intervening variable (farmer quality). Each independent variable had three constructs with three indicators (statements), and farmer quality had one construct with four indicators (statements). In total, the study had 7 constructs (3 for downward transaction costs, 3 for upward transaction costs, and 1 for farmer quality) and 28 indicators (12 for downward transaction costs, 12 for upward transaction costs, and 4 for farmer quality).

The study measured respondents' opinions and perceptions quantitatively using a five-point Likert like scale (1-5), as proxy indicators reflecting farmers' perceptions and attitudes towards transaction costs and farmer quality. The scale provided a structured framework for participants to express their levels of agreement or disagreement with the statements related to transaction costs and farmer quality. The range from 1 to 5 allowed for capturing a spectrum of responses, enabling finer differentiation among the participants' viewpoints. This approach allowed for a more nuanced analysis and interpretation of the data, as it provided a degree of variability in the responses. For each of the three constructs of DTC and UTC, three measurement items (indicators) were developed to measure specific transaction costs incurred by farmers across the tea value chain nodes while participating in contract farming. Therefore, in total 24 items were used to measure transaction cost (12 for DTC and 12 for UTC). Similarly,

farmer quality intervening variable was also measured by using four items (statements). These items encompassed various aspects related to transaction costs and farmer quality. Smallholder tea farmers involved in this study were asked to provide their ratings by considering their own perspectives and experiences related to contract farming. Detailed information on indicators measurement are presented from Table 3.4 to Table 3.6.

Table 3.4: Downward Transaction Costs Measurement

Contract farming stage	Construct	Specific transaction cost measurement
Production {Farm preparation, planting and management (growing)}	DSTC	DSTC1: Contract length
		DSTC2: Time used to know the contract terms
		DSTC3: Cost to know contract opportunities and terms
		DSTC4: Visiting frequency to the investor
	DNTC	DNTC1: Contract terms rigidity
		DNTC2: Contract negotiation frustration
		DNTC3: Time to understand contract terms
		DNTC4: Comprehension of the contract terms
	DETC	DETC1:Delays in receiving the agreed services
		DECT2: Reputation of not complying to contract
		DECT3: Time use in contract monitoring
		DNCT4: Fear of legal reprisal production techniques non-compliance

Source: Researcher Constructs, 2023

Table 3.5: Upward Transaction Costs Measurement

Contract farming stage	Construct	Specific transaction cost
Selling {harvesting (plucking), aggregation sorting and selling}	USTC	UTSC1: Frustration to know harvesting and collection dates
		UTSC2: Visits to the buyer (investor) to know net amount payable
		UTSC3: Cost to know net amount payable
		UTC4: Time spent to wait for payment status
	UNTC	UNTC1: Price-renegotiation in case of market changes
		UNTC2: Frustration with re-negotiation price
		UNTC3: Time used to understand revised price setting mechanism
		UNTC4: Frustration in agreeing on the net amount to be paid on the acceptable quality supplied
	UETC	UETC1: Delays in payments
		UETC2: Loss due to quality-based products rejection
		UETC3: Product inspection time
		UETC4: Side-selling penalty

Source: Researcher Constructs, 2023

Table 3.6: Farmer Quality Measurement

Item	Item description	Measurement
FQ1	CFE=Contract Farming Experience	Experience to engage in contract farming
FQ2	TVCK=Tea Value Chain Knowledge	Knowledge on various tea value chain aspects
FQ3	LNA=Land Access	Land access for tea production
FQ4	FEA=Farming Equipment Access	Farming equipment access to engaged in tea production

Source: Researcher Constructs, 2023

3.5 Data Collection Methods

This cross-sectional study gathered quantitative primary data using a structured questionnaire from 393 farmers in three tea-growing districts of the Southern Highlands Tanzania. To ensure maximum farmer participation, the enumerators who

were oriented for data collection conducted face-to-face interviews with the farmers. The enumerators utilised digital data gathering devices equipped with KoBo Toolbox (KoBo), which facilitated not only data collection but also the collection of Global Positioning System (GPS) coordinates of the interviewed farmers.

This data collection approach by using a structured questionnaire enabled a standardized data collection, thus enhanced consistency and comparability of responses across the sample. This also augments the validity and reliability of the study findings because a similar tool was used across the same sample. Similarly, by conducting face-to-face interviews, the study maximized farmer participation as farmers were reached at their respective household across the sampled districts. Additionally, this personal interaction allowed for clarifications and ensured 100 percent response rate, and contributed in reducing non-response amongst the farmers (attrition).

Moreover, employing digital data gathering devices with KoBo Toolbox streamlined the data collection process. It facilitated efficient and accurate data entry, minimized the chances of data entry errors because it had specific data validation features for example those relate to text and numeric variables. This approach contributed to a reduced overall time required for data collection, data processing and data analysis. Further to this, collecting GPS coordinates of the interviewed farmers provided valuable spatial information and distribution patterns of smallholder tea farmers, involved in this study.

3.6 Data Processing and Analysis

The collected quantitative data were exported from KoBo to Excel and cleaned before undertaking the analysis. Data cleaning focused on typed-in responses like those related to number of acres planted with tea, production and income from green leaf tea. The cleaned data were analysed by using IBM SPSS Statistics for Mac Version 26.

Data analysis involved both descriptive and inferential statistics which was done at three levels, namely univariate, bivariate and causality. In univariate analysis, descriptive analysis with a focus on central tendency measure like, median, mean and range was used to summarise results for numerical variables, specifically the respondents' demographics, age, number of household members, production volumes and income from green leaf tea.

In bivariate analysis, cross-tabs and the Pearson Chi-Square test was employed to assess disparities among groups concerning categorical variables such as sex, level of education, age categories, farmers' participation in contract farming and the surveyed districts. Similarly, correlation test was used to test the association between transaction cost indicators. Moreover, independent sample t-test, and paired t-test were used to test mean differences between composite score of downward and upward transaction costs. Furthermore, Analysis of Variance (ANOVA) was used to explain transaction cost clusters across the tea value chain.

In order to establish the causal relationship between independent variables, intervening variables, and contract farming participation, a binary logistic regression (BLR) analysis was employed to test the causality between transaction cost and farmer quality

variable on farmers' participation in contract farming. BLR was used because the dependent variable was dichotomous (contract farming participation or non-participation). This analytical approach allowed for the estimation of the influence and significance of various determinants on the likelihood of farmers' engaging in contract farming. Data visualisation techniques such as pie charts, bar graphs, and tables were employed to visually represent the study results. Additionally, the GPS coordinates of the interviewed farmers in the three districts were mapped using the QGeographical Information System (QGIS). A summary of statistical test for each of the four hypothesis for each of the four objectives of this study, as well as the expected direction/sign (positive (+ve) or negative (-ve) of the tested relationship amongst variables is summarized in Table 3.7.

Table 3.7: Summary of Statistical Tests and Expected Relationship Sign

Hypothesis	Statistical Test	Test Level	Expected Sign
H_0: There is no difference in transaction cost across value chain nodes in the tea subsector in Tanzania	Paired samples t-test	Bivariate	+ve
H_0: Downward transaction costs have no effect on farmers' participation in contract farming in the tea subsector in Tanzania	BLR analysis	Causality	-ve
H_0: Upward transaction costs do not affect farmers' participation in contract farming in the tea subsector in Tanzania	BLR analysis	Causality	-ve
H_0: There is no influence of farmer quality intervening variables on farmers' participation in contract farming in the tea subsector in Tanzania	BLR analysis	Causality	+ve

Source: Researcher Constructs, 2023

3.7 Structural Model Formulation

A farmer was said to participate in contract farming if she/he was engaged in contract farming in the tea subsector since the last production season (2022). The decision to

participate in contract farming exclusively based on the farmer's choice. Farmers' likelihood to engage in contract farming was estimated using the following binary logistic regression equation:

$$ln(FPCF_j) = \frac{exp(ln(FPCF_j))}{[1 + exp(ln(FPCF_j)]} = f(TC, FQ) \quad \text{.....(2)}$$

Whereby:

$ln(\text{FPCF}_\text{j})$= Log-odds (likelihood) of Farmer Participation in Contract Framing for the j^{th} farmer, where 1 = log-odd of farmer participated in contract farming; 0 = log-odds of non-participation in contract farming in a range of 0 to 1 to the range of -∞ to +∞.

$\exp(\ln(\text{FPCF}_\text{j}))$ = Exponent of the logit which specifically, undo the logit transformation, to the value to the original odds scale.

$1 + \exp(\ln(\text{FPCF}_\text{j})$ = Exponent of the logit added to 1.

$\frac{\exp(\ln(\text{FPCF}_\text{j}))}{[1 + \exp(\ln(\text{FPCF}_\text{j})]}$ = Estimation of probability (FPCF_j), which is computed by dividing the exponent of the logit by the sum of the exponent and 1 to ensures that the probability falls from the range of 0 to 1. This entails probability (FPCF_j) is estimated by applying the logistic function to the log-odds, ensuring it remains within the 0 to 1 range.

TC=Transaction cost

FQ=Farmer Quality

Structurally, equation 2 can be presented as in equation 3 when an error term is introduced.

$$ln\ (FPCF_j) = \beta_0 + \beta_1 TC_j + \beta_2 FQ_j + \epsilon_j \quad \text{.....(3)}$$

Given the fact that TC is a composite of both Upward Transaction cost (UTC) and Downward Transaction Cost (DTC), equation 3 can therefore be presented as indicated in equation 4.

$$ln(FPCF_j) = \beta_0 + \beta_1 DTC_{ij} + \beta_2 UTC_{ij} + \beta_3 FQ_{ij} + \epsilon_j \quad \text{.....(4)}$$

Whereby:

j=Farmer identity where j=1-n (each value of "j" corresponds to a specific farmer within the range of 1 to "n", which entails from the 1st to the last farmer, included in the estimation model)

i=disaggregated variable where i=1-n

β_1 = the regression coefficient

ϵ = error term

As indicated in Figure 2.1, DTC, UTC and FQ are functions of various variables as presented in equations 5, 6 and 7 respectively.

$$\text{DTC} = \text{f}(\text{DSTC}, \text{DNTC}, \text{DETC}) \quad \text{.....(5)}$$

$$\text{UTC} = \text{f}(\text{USTC}, \text{UNTC}, \text{UETC}) \quad \text{.....(6)}$$

$$\text{FQ} = \text{f}(\text{CFE}, \text{TVCK}, \text{LNA}, \text{FEA}) \quad \text{.....(7)}$$

Following disaggregation of UTC, DTC and FQ in equations 5-7, various equations was generated for specific analysis undertaken in this study. To estimate the effect of disaggregated downward transaction costs (DTC) on farmers' engagement in contract farming likelihood, equation 5 can be reformulated as shown in equation 8.

$$ln(FPCF_j) = \beta_0 + \beta_1 DSTC_{ij} + \beta_2 DNTC_{ij} + \beta_3 DETC_{ij} + \epsilon_j \quad \text{.....(8)}$$

Likewise, to estimate the effect of disaggregated upward transaction costs (UTC) on likelihood of farmers' participation in contract farming, equation 6 can be reformulated as shown in equation 9.

$$ln(FPCF_j) = \beta_0 + \beta_1 USTC_{ij} + \beta_2 UNTC_{ij} + \beta_3 UETC_{ij} + \epsilon_j \quad (9)$$

On the other hand, to establish the effect of farmer quality intervening variables, four steps were involved. The effect of aggregated effect of downward transaction cost (DTC) and upward transaction cost (UTC) was established without taking into account the aggregated farmer quality score as shown in equation 10.

$$ln(FPCF_j) = f(DTC, UTC) \quad (10)$$

To establish the effect of disaggregated transaction cost indicators on farmers' participation in contract farming, equation 10 may be rewritten by using equation 8 and 9 as presented in equation 11.

$$ln(FPCF_j) = \beta_0 + \beta_1 DSTC_{ij} + \beta_2 DNTC_{ij} + \beta_3 DETC_{ij} + \beta_4 USTC_{ij} + \beta_5 UNTC_{ij} + \beta_6 UETC_{ij} + \epsilon_j \quad (11)$$

To understand the effect of aggregated farmer quality intervening variable on farmers' participation in contract farming, farming quality equation 2 and equation 10 are presented as indicated in equation 12.

$$ln(FPCF_j = f(DTC, UTC, FQ) \quad (12)$$

Moreover, the effect of disaggregated farmer quality intervening variables on famers' participation in contract farming, equation 4 was rewritten in the form as presented in equation 13.

$$ln(FPCF_j) = \beta_0 + \beta_1 DSTC_{ij} + \beta_2 DNTC_{ij} + \beta_3 DETC_{ij} + \beta_4 USTC_{ij} + \beta_5 UNTC_{ij} + \beta_6 UETC_{ij} + \beta_7 CFE_j + \beta_8 TVCK_j + \beta_9 LNA_j + \beta_{10} FEA_j + \epsilon_j \quad (13)$$

Whereby:

DSTC=Downward Search Transaction Costs

DNTC=Downward Negotiation Transaction Costs

DETC=Downward Enforcement Transaction Costs

USTC=Upward Search Transaction Costs

UNTC=Upward Negotiation Transaction Costs

UETC=Upward Enforcement Transaction Costs

CFE=Contract Farming Experience

TVCK=Tea Value Chain Knowledge

LNA=Land Access

FEA=Farming Equipment Access

3.8 Variables Interpretations

This study identified, described, and measured transaction costs along the traditional cash crops value chain with a focus on the tea sub-sector. Additionally, it investigated how these transaction costs either positively or negatively impact farmers' involvement in contract farming. As discussed in other parts of this thesis, this study classified transaction cost into two major categories, namely downward transaction (DTC) and upward transaction cost (UTC). Moreover, the effect of farmer quality as intervening variable on farmers' participation in contract farming was established.

To measure the perception of tea farmers on various transaction costs relating to participation in contract farming across the tea value chain, both the independent and intervening variables a Likert like scale with five scales, ranging from 1 for strongly disagree to 5 for strongly agree, was used to measure them. Various literature indicates

that quantification and descriptive analysis on individual questions and individual scores cannot make any sense unless the raw data are transformed into scores to establish total or mean value within the construct (variable with specific items measuring a specific attribute) and the use of weighted averages of individual's items mean on each construct, included in the study (Okolie, 2023; León-Mantero et al., 2020; Ngaruko, 2022).

When using a Likert like scale in a specific construct, mean on individual items are computed and then after the individual items (mean) are used to compute weighted average to aid interpretation of individual means relative to weighted average in a specific construct. Weighted average considers varying importance of values by multiplying them with corresponding weights and dividing the sum of these weighted values by the sum of weights to determine the overall average (Cheng et al., 2021; León-Mantero et al., 2020; Stevens, 2012).

In this study, the weighted average for each construct was calculated based on the mean of individual transaction cost items within that construct. These weighted averages were then utilised to determine the level of agreement among farmers regarding whether specific transaction cost items, within each construct, were perceived as being high or low. The decision rule employed was as follows: if the mean of an individual transaction cost item was below its corresponding construct's weighted average of individual item means, it was classified as a "low transaction cost." Conversely, items with a mean above their construct's weighted average of individual item means were categorised as "high transaction cost."

Additionally, as part of the measurement of transaction costs, an intervening variable called "farmer quality" was considered. Farmers' perception of possessing a specific farmer quality attribute as either high or low was determined by comparing the individual farmer quality attribute with the weighted average of the farmer quality construct. The computation of the weighted average was based on the individual farmer quality items. The decision rule on farmer quality whether being high or low was done as it was done in transaction cost that, if the mean of an individual farmer quality item was below the construct's weighted average of individual item means, it was classified as a "low farmer quality" and vice-versa for the items with mean above the construct's weighted average.

Moreover, in order to assess the overall perception of various constructs related to transaction costs in contract farming within the tea value chain, composite scores were computed for each construct. These scores were then utilized to calculate central tendency measures, including mode, median, mean, range, maximum, minimum values, and standard deviation.

Therefore, for each of the six transaction cost variables (constructs) (DSTC, TNTC, DETC, USTC, UNTC, UETC), which consisted of four items/indicators (statements), measured using a Likert like scale, the mean of individual items within each transaction cost construct was computed. Subsequently, a weighted average for each construct was calculated based on the obtained mean of individual items for each of the six transaction cost constructs. To assess the perception of low or high transaction cost for each of the four items within the construct, for instance DSTC, its mean was compared with the weighted average of that specific construct. Items with a mean

below the weighted average were classified as perceived low transaction costs, while items with a mean above the weighted average were classified as perceived high transaction costs.

Likewise, for each of the 4 farmer quality variable indicators (statements), mean of individual items within the farmer quality construct was computed, and a weighted average was calculated for the obtained mean of individual items. The perception of low or high farmer quality in each item within the farmer quality construct was assessed by comparing its mean with the weighted average for this construct. Items with a mean below the weighted average were classified as perceived low farmer quality, while items with a mean above the weighted average were classified as perceived high farmer quality.

To establish the interpretation ranges for the mean values constructs and specific items composite scores, the mean between minimum and maximum mean values of the measurement scales for each of the seven constructs included in this study was determined. Two mean groups for each composite score were created with a group with a low mean range denoted as low transaction cost while the second group with a high mean range was denoted as high transaction cost. This approach, known as the mean range approach, was adapted from a similar study conducted by Ngaruko (2022) in Tanzania, which examined transaction costs of group microfinancing schemes and their effect on the performance of family-owned enterprises. Table 3.8 presents an interpretation matrix that showcases the composite scores for individual constructs and provides an overview of the overall downward and upward transaction costs.

Table 3.8: Data Interpretation Matrix

Variable	Number of Items	Measurement (Mean score)	Mean (M) interpretation
1: DTC			
DSTC	4	4-20	Low=4-11.9; High=12-20
DNTC	4	4-20	Low=4-11.9; High=12-20
DETC	4	4-20	Low=4-11.9; High=12-20
Total TDC	12	12-60	Low=12-35.9; High=36-60
2: UTC			
USTC	4	4-20	Low=4-11.9; High=12-20
UNTC	4	4-20	Low=4-11.9; High=12-20
UETC	4	4-20	Low=4-11.9; High=12-20
Total UTC	12	12-60	Low=12-35.9; High=36-60
Total TC	24	24-120	Low=24-71.9; High=72-120
3: Farmer Quality			
3: Farmer Quality	4	4-20	Low=4-11.9; High=12-20
Total Variables	**28**		

Source: Researcher's Constructs, 2023

3.9 Validity and Reliability

3.9.1 Validity

Validity refers to the accuracy of a measuring instrument, ensuring that it precisely measures what it claims to measure (Pallant, 2016). The data collection tool was prepared in line with previous studies, such as Ngaruko (2022) and Mudaheranwa et al. (2022), which used a similar tool design of five point Likert like scale with different constructs, as such adds to its external validity. Prior data collection the tool was reviewed by the supervisors to establish its rigor commensurate to the study objectives. This review process, questions clarity and appropriateness, linkage of the questions to the study objectives, provides more reasonable assurance of the tool's external validity.

Moreover, a pilot study was undertaken to establish robustness of the data collection instrument. Questionnaire were administered with 103 smallholder tea farmers in Mufindi district in the Iringa region. Mufindi district was chosen because of similar context as it has smallholder tea farmers who are engaged in tea production with similar characteristics like the three districts (Rungwe, Busokelo and Njombe DC), included in this study.

Furthermore, construct validity, a common validity measure, which include convergent and discriminant validity, was conducted, by using Exploratory Factor Analysis (EFA). Convergent validity confirms that the expected relationships between constructs exist, while discriminant validity confirms that different constructs measure different phenomenon. Discriminant validity is established when the Factor Loading (FL) in the rotated matrix of EFA exceeds 0.7. FL, also known as factor-variable correlation, represents the association between variables and factors, reflecting the underlying construct effectively (Fabrigar & Wegener, 2011).

Convergent validity was confirmed by aligning construct factors, while discriminant validity required the FL above 0.70 for the factors included in this study. Principal component analysis and varimax rotation with Kaiser Normalisation were employed in EFA. Communality assessed variance shared by each dimension, with a cut-off point of 0.5. All 28 variables tested surpassed this threshold, indicating eligibility for further analysis. Bartlett's Test of Sphericity demonstrated significant correlations among factors in each construct (Chi-square = 7013.365, $p < 0.005$), supporting EFA suitability. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA) or content validity was 0.842 which is above the recommended threshold 0.70.

The analysis yielded seven constructs, explaining 75.869 percent of the data's variation, which is above recommended range from 60 to 70 percent (Fabrigar & Wegener, 2011). EFA results show that all the 28 tested factors aligned with the theoretical proposition of seven constructs in this study, affirming convergent and discriminant validity with the variables loading above 0.7 in their respective constructs. The overall model fitted at 10 percent which is less than the recommended threshold (50%) (Fabrigar & Wegener, 2011). The validity test results are shown in Table 3.A1 appended to this thesis.

3.9.2 Reliability

Reliability is a statistical test used to assess the consistency and steadiness of measurements or scales. Its purpose is to determine the extent to which items or questions within a measurement instrument yield consistent outcomes or scores across multiple observations. Reliability is crucial in research as it ensures dependable and trustworthy data, enabling meaningful conclusions and reliable inferences (Fitzner, 2007).

Cronbach's alpha, which is one of the commonly used reliability test was adapted in this study. By calculating the scale's internal consistency, it gauges how closely scale elements correlate with one another (Bonett & Wright, 2014). Each pair of items on the scale has a correlation coefficient that can range from 0 to 1, with values closer to 1 suggesting more internal consistency. This study adapted 0.7, which is considered as an acceptable cut-off point (Nunnally, 1978, Pallant, 2016). The average Cronbach's alpha for the composite score of variables is 0.886. Moreover, none of the individual

items scored below 0.7, as such internal consistency is assumed. The results for reliability test are provided in Table 3.9.

Table 3.9: Reliability Test Results

Composite variable	Number of indicators	Cronbach's alpha value
TFQ	4	0.911
TDSTC	4	0.906
TDNTC	4	0.894
TDETC	4	0.853
TUSTC	4	0.804
TUNTC	4	0.929
TUETC	4	0.906
Average Cronbach's Alpha value		**0.886**

Source: Research Data, 2023

These items encompassed various aspects related to transaction costs and farmer quality. Based on their unique perspectives and experiences, participants were asked to give their view point which formed basis of the data used in this analysis. By using a Likert like scale, the study measured respondents' opinions and perceptions quantitatively. The scale provided a structured framework for farmers involved in this study to show their levels of agreement or disagreement with the statements associated with transaction costs and farmer quality. The range from 1 to 5 allowed for capturing a spectrum of responses, enabling finer differentiation among the participants' viewpoints. This allowed for a more nuanced analysis and interpretation of the data, as it provided a degree of variability in the responses. Each of the three constructs for each DTC and UTC, three measurement items were devised to measure specific transaction cost incurred by farmers across the tea value chain nodes while participating in contract farming. Therefore, in total 24 items were used to measure

transaction cost (12 for DTC and 12 foe UTC). Similarly, FQ intervening variable was measured by using four items (statements).

3.10 Ethical Consideration

Ethical concerns was at the forefront of all procedures and actions used to perform this research. It involved safeguarding participants' rights, welfare, and dignity while maintaining the integrity and credibility of the study. Research ethics principles and guidelines were carefully examined and applied to ensure the research was conducted ethically and responsibly.

The primary safeguard measures included requesting research clearance letters from the OUT's Directorate of Post-Graduate Studies. The acceptance letters were also obtained from the three respective districts from which the research was conducted. Even though the verbal clearance to undertake data collection was provided by all the three districts between 22 and 23 May 2023, the formal letters were issued between 30 May and 1 July 2023. Moreover, data confidentiality was one of the other ethical issues that was observed. For example, even though respondents personal details such age and sex were collected, respondents were not identified by their names, rather by using unique identification numbers. Likewise, the collected data were carefully secured in the KoBo database which had password, the access of which was limited to the researcher. Furthermore, the study obtained verbal consent from respondents before administering the questionnaire. Voluntary participation was ensured, with respondents freely choosing to participate without coercion or pressure. Farmers who participated in this study were free to choose whether or not to participate, and their willingness to do so determined their involvement.

CHAPTER FOUR

DESCRIPTIVE ANALYSIS FINDINGS ON FARMER PARTICIPATION IN CONTRACT FARMING

4.1 Chapter Overview

This chapter summarizes the research findings on farmers' participation in contract farming within the tea subsector in Rungwe, Busokelo, and Njombe DC districts of Tanzania. It examines demographic and farm characteristics, explores the relationship between participation and factors such as gender, age, education, and green-leaf tea production. Moreover, it offers a comprehensive overview of the status of farmers' participation in contract farming within the study districts.

4.2 Smallholder Tea Farmers Profiles

4.2.1 Household Demographics

This section offers a synthesis of the demographic information of the smallholder tea farmers involved in this study, specifically examining their age, gender, educational level, and household size across the three districts involved in this study.

4.2.1.1 Response Rate

This study reached 393 smallholder tea farmers across the three districts involved in this study, equivalent to 100 percent response rate. The attainment of this response rate may be ascribed to various of factors, like transparent communication and active involvement of the districts' focal persons and lead farmers across the study areas, fostering trust and connection as such maximised farmers engagement in the data collection task. Moreover, appropriate allocation of time and resources, perseverance,

and consistent follow-up with the farmers to participate in the study are likely to be the contributing factors to reach the planned study sample.

4.2.1.2 Respondents Gender

The findings indicate that the proportion of males respondents was higher (57.3%) than females (42.7%). Moreover, Rungwe district exhibited a higher proportion of male respondents (66.1%) compared to other districts. See the details in Table 4.1.

Table 4.1: Tea Farmers Distribution by Districts and Sex (n=363)

District	Description	Sex		Total
		Female (n=168)	Male (n=225)	(n=393)
Rungwe	Count	42	82	124
	% within district	33.9%	66.1%	100.0%
	% within sex	25.0%	36.4%	31.6%
Busokelo	Count	57	74	131
	% within district	43.5%	56.5%	100.0%
	% within sex	33.9%	32.9%	33.3%
Njombe DC	Count	69	69	138
	% within district	50.0%	50.0%	100.0%
Total	% within sex	41.1%	30.7%	35.1%
	Count	168	225	393
	% within district	42.7%	57.3%	100.0%
	% within sex	100.0%	100.0%	100.0%

Source: Research Data, 2023

This finding aligns with the general tea sector demographics in Tanzania, where the majority of tea farms (about 70%) are owned and managed by men, despite women making up a significant labour force (IDH, 2021a, 2022b). This observation suggests inequalities in access and opportunities for women due to limited resources, land control, financial constraints, and socio-cultural norms. The gender imbalance has broader implications for rural development, gender equality, and poverty reduction, as

women farmers take a significant part in agricultural production and the growth of the tea sector.

4.2.1.2 Respondents Age

The study found a significant age disparity among smallholder tea farmers. The majority of participants were adults aged 35 years and above (85.8% of the sample), while the youth represented only 14.2 percent of the participants (see the details in Figure 4.1).

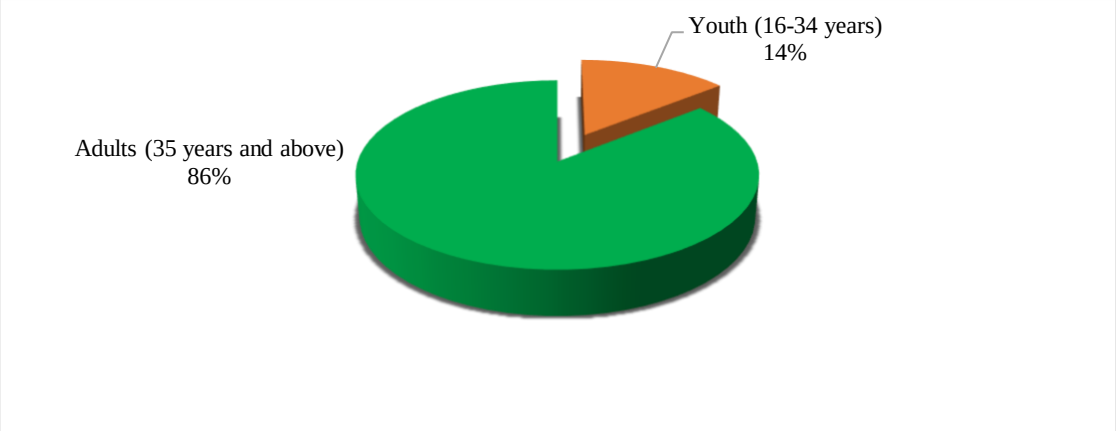

Figure 4.1: Respondents Age Categories (n=393)

Source: Research Data, 2023

The findings further indicate that Njombe DC had the lowest proportion of youth participation, accounting for only 8.7 percent of the sample. This aligns with previous studies that suggest tea farming is mainly dominated by adults. For instance, a recent study by CARE International (2023) in Tanga, Iringa, Njombe, and Mbeya regions found that youth perceive tea farming as less lucrative compared to other opportunities such as vegetable farming and small businesses. Similar results were reported in a study by Munishi et al. (2017) that assessed factors affecting farmers' performance in Tanzania. Additionally, tea farming presents challenges for farmers, including youth,

as it typically takes several years for tea bushes to yield returns after planting (Gatsby, 2020).

Moreover, this study found that female youth represented a higher percentage (20%) compared to male youth (9.8%). The study's smallholder tea farmers ranged in age from 20 to 80 years old, with an average age of 47 years. This age diversity may potentially influence farmers' choice to engage in contract farming with aged farmers preferring engaging in tea production unlike the young farmers (see the details in Table 4.A1 appended to this thesis).

4.2.1.2 Education Level

The study findings reveal that most of the smallholder tea farmers' participating in this study (89.8%) had completed primary school, while only a small proportion (10.2%) had not completed primary education. Interestingly, the percentage of men who had not completed primary school was slightly higher (10.7%) compared to women (9.5%) (see the details in Table 4.A2 appended to this thesis). Besides, Chi-Square test results show that the association between respondents sex and level of education lack statistical significance at 5 percent level of precision.

4.2.1.3 Household Size

The study findings shows that smallholder tea farmers across the three districts involved in this study have an average household size of 5.2 individuals, with limited differences across the three districts (see Figure 4.2). The one sample t-test results show that, this average household size of 5.2 persons is statistically different from the national average of 4.6 persons at 5 percent precision level (URT, 2019).

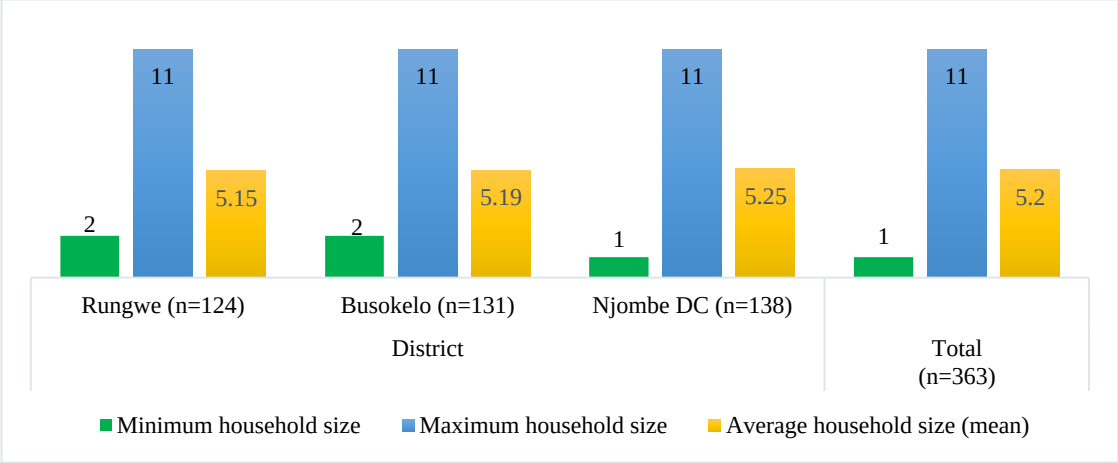

Figure 4.2: Respondent's Household Size

Source: Research Data, 2023

4.2.2 Farm Characteristics

A synthesis of this part focuses on tea smallholder characteristics with a focus on tea farm holding, average green lead production per acre per year, and average annual income from green leaf tea across the three study districts (for details see Table 4.2).

Table 4: Farm Characteristics in 2022 Tea Production Season (n=393)

District	n	Average number of acres	Average green leaf production per acre (Kg)	Average income from tea per year (TZS)
Rungwe	124	1.7	3,688	1,180,097
Busokelo	131	1.7	3,476	1,112,314
Njombe DC	138	1.3	2,808	898,676
Overall	**393**	**1.5**	**3,308**	**1,058,683**

Source: Research Data, 2023

4.2.2.1 Tea Farm Size Holding

The study found variations in reported farm sizes across the three districts: Rungwe (1.7 acres), Busokelo (1.7 acres), and Njombe (1.5 acres) (Table 4.2). The average farm size for tea cultivation until the previous production season (2022) was 1.5 acres.

The reported tea farm sizes in this study differ slightly from other recent studies conducted in the same districts. A study by IDH (2022a) found slightly larger average farm sizes in Rungwe and Busokelo, while another study by IDH (2022b) reported slightly smaller average farm sizes in Njombe. These differences may be attributed to the self-reported nature of the farm size data and the lack of production and sales records among smallholder tea farmers.

4.2.2.2 Green-Leaf Production

The study findings indicate that the average green-leaf production per acre in the last season (2022) was 3,308 Kilograms (Kgs). Variations in production levels were observed across the three districts, with Rungwe and Busokelo showing higher production compared to Njombe (refer to Table 4.2 for details). The reported average green-leaf tea yield per acre aligns with existing literature, indicating that smallholder tea farmers typically achieve productivity ranging from 1,300 kilograms to 3,300 kilograms per acre. However, these levels of production are generally lower compared to private estates, which produce on average between 4,272 Kg and 5,200 Kg of green-leaf tea per acre per annum (URT, 2021, IDH, 2021b).

4.2.2.3 Income From Green Leaf Tea

The study findings reveal that the average annual income from green leaf tea is TZS 1,058,683. Rungwe and Busokelo districts exhibit higher tea income compared to Njombe DC, which aligns with their larger tea farm sizes and higher average annual production (refer to Table 4.2 for detailed information). These results correspond with findings from prior studies conducted in the same locations, which indicate that the average income from green leaf tea for smallholder farmers in Rungwe, Busokelo,

Njombe DC, and Mufindi districts ranges between TZS 560,000 and TZS 1,234,000 (IDH, 2021a, 2021b; and CARE International, 2023).

4.3 Farmers' Participation in Contract Farming Status

The research findings show that 70.5 percent of smallholder tea farmers were involved in contract farming (PCF), while 29.5 percent were not part of that arrangement (see Figure 4.3). This observation aligns with existing literature which indicate that while contract farming opportunities are available for tea smallholder farmers in Tanzania, not all of them participate in such arrangements (URT, 2010; DH, 2021a; 2021b).

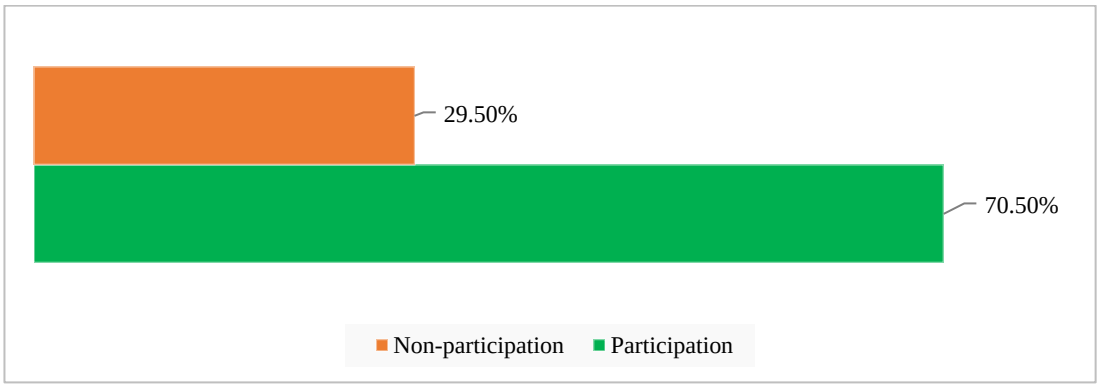

Figure 4.3: Farmers' Participation in Contract Farming Status (n=393)

Source: Research Data, 2023

4.3.1 Contract Farming Participation by District and Sex

Table 4.A3 appended to this thesis shows the details related to farmers' participation in contract farming with disaggregation per district and sex. Notably, the percentage of smallholder farmers involved in contract farming was higher in Rungwe (84.7%) and Busokelo (77.1%) compared to Njombe, where participation was somewhat lower (51.4%). The findings indicate a higher proportion of small-scale farmers engaged in tea contract farming when compared to those not involved. This aligns with a study by

Meemken and Bellemare (2019), which found that approximately 23 percent of farmers in Tanzania do not participate in any form of contract farming. Regarding gender differences, the analysis reveals a relatively higher participation rate among male farmers (77.8%) compared to women (60.7%). Upon conducting statistical analysis using the Pearson Chi-Square test, a noteworthy correlation was observed between farmers' participation in contract farming and gender and district (p-value < 0.05) (p=0.000), indicating real differences in participation based on gender and across districts rather than by chance.

4.3.2 Contract Farming Participation by Age

The results of the study demonstrate that the youth participation rate in contract farming for the 2022 tea production season (71.4%) was slightly higher than the participation rate of adults (70.3%), despite the lower overall youth participation rate (14.2%) in green leaf tea production compared to adults (85.8%) (see the details Table 4.3). This findings suggests that contract farming could be a potential opportunity for youth to engaged in the tea value chain. However, it should be noted that this observation was not statistically significant at 5 percent precision level (p=0.867)

Table 5: Contract Farming Participation by Age (n=393)

PCF status	Description	Age Category		Total
		Youth	Adults	
Not PCF	Count	16	100	116
	% within PCF status	13.8%	86.2%	100.0%
	% within Age Category	28.6%	29.7%	29.5%
PCF	Count	40	237	277
	% within PCF status	14.4%	85.6%	100.0%
	% within Age Category	71.4%	70.3%	70.50%
Total	Count	56	337	393
	% within PCF status	14.2%	85.8%	100.0%
	% within Age Category	100.0%	100.0%	100.0%

Source: Research Data, 2023

4.3.3 Contract Farming Participation by Education Level

The study findings indicate that smallholder tea farmers who reported participating in contract farming and completed primary school was slightly higher (70.5%) than those who did not complete primary school (70.0%) (see the details in Table 4.4). This finding indicate that educated smallholder tea farmers like those who have completed primary school have a higher probability to engage themselves in contract farming. However, this observation does not reach statistical significance at the p=0.05 significance level (p=0.944).

Table 4.4: Contract Farming Participation by Education Level (n=393)

PCF status	Description	Education Level		Total
		Not completed primary school	Completed primary school	
Not PCF	Count	12	104	116
	% within PCF status	10.3%	89.7%	100.0%
	% within Education	30.0%	29.5%	29.5%
PCF	Count	28	249	277
	% within PCF status	10.1%	89.9%	100.0%
	% within Education	70.0%	70.5%	70.5%
Total	Count	40	353	393
	% within PCF status	10.2%	89.8%	100.0%
	% within Education	100.0%	100.0%	100.0%

Source: Research Data, 2023

4.3.4 Contract Farming Participation by Green-Leaf Tea Production Level

The study findings indicate that smallholder tea farmers with high green-leaf tea production per year had a higher participation rate (75.1%) compared to those with low production (63.7%) (see the details in Table 4.5). Moreover, the association between production level and farmers' engagement in contract farming displayed statistical significance at p=0.014 which is less than the 5 percent precision level

threshold. Farmers were classified as high producers if they produced above the mean (3,308 Kg) of green-leaf tea, while those producing below the mean were classified as low producers. This findings suggests that farmers with higher green leaf tea production per acre are more likely to be engaged in contract farming, possibly due to increased demand and profitability associated with their higher yields, compared to smallholder tea farmers with lower production.

Table 4.5: Contract Farming Participation by Tea Production Level (n=393)

PCF status	Description	Production Categories		Total
		Low production	High production	
Not PCF	Count	58	58	116
	% within PCF status	50.0%	50.0%	100.0%
	% within Production Categories	36.3%	24.9%	29.5%
PCF	Count	102	175	277
	% within PCF status	36.8%	63.2%	100.0%
	% within Production Categories	63.7%	75.1%	70.5%
Total	Count	160	233	393
	% within PCF status	40.7%	59.3%	100.0%
	% within Production Categories	100.0%	100.0%	100.0%

Source: Research Data, 2023

CHAPTER FIVE

DESCRIPTIVE ANALYSIS FINDINGS ON TRANSACTION COSTS AND FARMER QUALITY IN TEA SUBSECTOR

5.1 Chapter Overview

In this chapter, the focus is on presenting descriptive results derived from the research, particularly concerning transaction costs and factors related to farmer quality within the tea subsector. The examination is conducted in the context of the Rungwe, Busokelo, and Njombe DC districts of Tanzania, aiming to offer a comprehensive overview of the dynamics surrounding transaction costs and the dimensions associated with farmer quality in the local tea industry. Furthermore, this chapter presents the results examining the association between downward and upward transaction costs, aligning with null hypothesis 1 and specific objective 1.

5.2 Transaction Cost Descriptive Results

This section provides a descriptive analysis of transaction costs experienced by tea smallholder farmers at various nodes in the tea subsector's value chain during contract farming participation.

5.2.1 Downward Transaction Costs

This study categorizes downward transaction costs into three specific forms: Downward Search Transaction Costs (DSTC), Downward Negotiation Transaction Costs (DNTC), and Downward Enforcement Transaction Costs (DETC), aligned with Coase's (1937) classification. The findings for each type of transaction cost in relation

to the respondents level of agreement on how low or high concerning contract farming participation by smallholder tea farmers are discussed in the subsequent sections.

5.2.1.1 Downward Search Transaction Costs (DSTC)

This study aspect focused on smallholder tea farmers' perceptions of transaction costs associated with information search at the lower node of the tea value chain. The analysis classified transaction costs based on a comparison between the weighted average score of 2.27 for the DSTC construct and the mean of individual items within this construct. Items scoring above the mean were classified as high transaction costs, while those scoring below the mean were considered low transaction costs.

The study findings indicate that respondents perceived DSTC2 (time required to understand contract terms) and DSTC3 (cost of acquiring information on contract opportunities and terms) as higher transaction costs compared to DSTC1 (contract length) and DSTC4 (visiting frequency to the investor/tea processor for contract farming information) (see the details in Table 5.1).

Table 5.1: Overall Respondent's Agreement Level (%) on DSTC Indicators (n=393)

Cost item	Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree	Mean	Cost Classication
DSTC1	11.7%	51.7%	35.6%	1.0%	0.0%	2.26	Low
DSTC2	12.0%	49.6%	35.6%	2.8%	0.0%	2.29	High
DSTC3	10.7%	51.7%	35.1%	2.5%	0.0%	2.30	High
DSTC4	14.0%	52.4%	32.1%	1.5%	0.0%	2.21	Low
DSTC weighted average						**2.27**	

Source: Research Data, 2023

Regarding farmers' perception of downward transaction costs (DSTC) in contract farming focusing on gender, men identified three items as high transaction costs (DTC1, DSTC2, and DSTC3), while women identified two items (DSTC2 and DSTC3). Specifically, men considered contract length (DTC1), time required to understand contract terms (DSTC2), and cost of acquiring information on contract opportunities and terms (DSTC3) as high transaction costs. In contrast, women mentioned time required to understand contract terms (DSTC2) and cost of acquiring information on contract opportunities and terms (DSTC3) only as high transaction costs (see the details in Table 5.2). These results indicate gender-related nuances in DSTC perception.

Table 5.2: Respondent's Agreement Level (Mean) on DSTC Indicators by Sex

Description	Average			Overall Cost Classification
	Men (n=225)	Women (n=168)	Overall (n=393)	
DSTC1	2.22	2.32	2.26	Low
DSTC2	2.22	2.39	2.29	High
DSTC3	2.24	2.36	2.30	High
DSTC4	2.13	2.32	2.21	Low
DSTC weighted average	**2.20**	**2.35**	**2.27**	

Source: Research Data, 2023

Similarly, the study found that farmers in Rungwe and Busokelo districts had similar perceptions of search transaction costs in contract farming. They considered certain transaction costs, such as time required to understand contract terms (DSTC2) and cost of acquiring information on contract opportunities (DSTC3), to be relatively low compared to contract length (DSTC1) and visiting frequency to the investor/tea processor (DSTC4). This observation was different in Njombe which shown three

variables (DSTC1, DSTC2 and DSTC3), as high transaction cost. This indicates that these transaction costs are common challenges for farmers in the studied districts, but with some slight variations based on their geographic location (see the details in Table 5.3).

Table 5.3: Respondent's Agreement Level on DSTC Indicators by District

Description	Average				Overall Cost Classification
	Rungwe (n=124)	Busokelo (n=131)	Njombe DC (n=138)	Overall (n=393)	
DSTC1	2.26	2.12	2.56	2.26	Low
DSTC2	2.29	2.12	2.60	2.29	High
DSTC3	2.30	2.19	2.55	2.30	High
DSTC4	2.21	2.07	2.46	2.21	Low
DSTC weighted average	**2.27**	**2.13**	**2.54**	**2.27**	

Source: Research Data, 2023

5.2.1.2 Downward Negotiation Transaction Costs (DNT)

This aspect of the study examined smallholder tea farmers' perceptions of transaction costs related to contract negotiation in various aspects of tea production activities (farm preparation, planting, and farm management) (lower value chain node). Respondents' perceptions of downward negotiation transaction costs (DNTC) were classified as high or low based on a comparison with the mean score of 3.99 for the DNTC construct. The study findings show that DNTC1 (contract terms rigidity), and DNTC2 (contract negotiation frustration) as low transaction cost compared to DNTC3 (time required to understand contract terms) and DNTC4 (comprehension of contract terms) which were regarded as high transaction costs in contract farming engagement (see the details in Table 4.10).

Table 5.4: Overall Respondent's Agreement Level (%) on DNTC Indicators (n=393)

Cost item	Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree	Mean	Cost Classication
DNTC1	0.0%	0.0%	30.3%	59.8%	9.9%	3.80	Low
DNTC2	0.0%	0.0%	20.6%	61.8%	17.6%	3.97	Low
DNTC3	0.0%	0.0%	17.6%	59.3%	23.2%	4.06	High
DNTC4	0.0%	0.0%	11.5%	63.6%	24.9%	4.13	High
DNTC weighted average						**3.99**	

Source: Research Data, 2023

Further study findings indicate that, there was no substantial disparity in farmers' perceptions of downward negotiation transaction costs (DNTC) based on gender and study districts in relation to their participation in contract farming (see the details in Table 5.A1 and Table 5.A2 appended to this thesis). This suggests similar levels of perceived negotiation transaction costs among farmers regardless of gender or locality.

5.2.1.3 Downward Enforcement Transaction Costs (DETC)

This study part examined smallholder tea farmers' perceptions of transaction costs related to contract enforcement in the lower stream of the value chain. The lower stream comprises production activities such as tea farm preparation, planting, and farm management. Respondents' perceptions of downward enforcement transaction costs (DETC) were categorised based on a comparison with the weighted average score of 4.13 for the DETC construct. Items scoring above this mean were classified as high transaction costs, while those scoring below construct's mean were grouped as low transaction costs.

The study findings indicate that delays in receiving agreed services (DETC1) and reputation loss due to non-compliance with contracts (DETC2) were perceived as high transaction costs in contract farming. Conversely, time spent on contract monitoring (DETC3) and fear of legal reprisal for non-compliance with production techniques (DNCT4) were seen as less significant transaction costs (see Table 5.5 for details).

Table 5.5: Overall Respondent's Agreement Level (%) on DETC Indicators (n=393)

Cost item	Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree	Mean	Cost Classication
DETC1	0.0%	0.0%	4.6%	55.2%	158 (40.0%)	4.36	High
DETC2	0.0%	0.3%	11.5%	58.0%	119 (30.3%)	4.18	High
DETC3	0.0%	0.0%	14.2%	65.9%	78 (19.8%)	4.06	Low
DETC4	0.0%	0.8%	23.4%	57.8%	71 (18.1%)	3.93	Low
DETC weighted average						**4.13**	

Source: Research Data, 2023

Moreover, the study findings indicate that no substantial variation were found in smallholder tea farmers' perceptions of downward enforcement transaction costs (DETC) related to their participation in contract farming across different study districts and gender groups. For detailed data on farmers' perceptions of DETC disaggregated by sex and district, refer to Table 5.A3 and Table 5.A4 appended to this thesis. These findings indicate that the challenges and costs associated with contract enforcement are consistently perceived by smallholder tea farmers, irrespective of gender or district.

5.2.2 Upward Transaction Costs

This study classified upward transaction costs according into three category in line with Coase's (1937) transaction costs framework. The three upward transaction costs

are, Upward Search Transaction Costs (USTC), Upward Negotiation Transaction Costs (UNTC), and Upward Enforcement Transaction Costs (UETC). The upper node of the tea value chain encompasses various activities such as tea harvesting (plucking), aggregation, sorting, and selling. The findings for each type of transaction cost in relation to the respondents level of agreement on how low or high in relation to farmers' participation in contract farming are discussed in the subsequent sections.

4.2.2.1 Upward Search Transaction Costs (USTC)

This study aspect focused on quantification of smallholder tea farmers' perceptions of transaction costs related to information search at the upper node of the tea value chain, specifically in activities such as tea harvesting, aggregation, sorting, and selling. The classification of respondents' perceptions of upward search transaction costs (USTC) was based on a comparison between the weighted average score of 2.23 for the USTC construct and the mean of individual indicators within this construct. Indicators scoring above the mean were considered high transaction costs, while those scoring below construct's mean were considered low transaction costs.

The study findings indicate that respondents perceived UTSC3 (cost to know net amount payable) as a relatively high transaction cost compared to UTSC1 (frustration to know harvesting and collection dates), UTSC2 (visits to the buyer to know net amount payable), and UTC4 (time spent waiting for payment status) (see Table 5.6).

Table 5.7: Overall Respondent's Agreement Level (%) on USTC Indicators (n=393)

Cost item	Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree	Mean	Cost Classication
USTC1	20.1%	61.8%	18.1%	0.0%	0.0%	1.98	Low
USTC2	12.5%	57.0%	30.3%	0.3%	0.0%	2.18	Low
USTC3	7.4%	29.5%	58.3%	0.0%	4.8%	2.61	High
USTC4	11.5%	61.8%	26.0%	0.8%	0.0%	2.16	Low
USTC weighted average						**2.23**	

Source: Research Data, 2023

Further analysis show that no significant differences were noted in smallholder tea farmers' perceptions of upper-level search transaction costs (USTC) in relation to their participation in contract farming focusing on gender and study districts. This implies that the perception of transaction costs associated with information search at the upward node of the tea value chain is consistent among farmers, irrespective of gender or geographical location (see Table 5.A5 and Table 5. A6 appended to this thesis).

5.2.2.2 Upward Negotiation Transaction Costs (UNTC)

This aspect of the study examined smallholder tea farmers' perceptions of transaction costs related to contract negotiation at the upper node of the tea value chain. To classify farmers' perceptions of upward negotiation transaction costs (UNTC), the weighted average score of 2.57 for the UNTC construct was compared with the mean scores of individual indicators within this construct. Indicators scoring above the mean were categorized as high transaction costs, while those scoring below construct's mean were classified as low transaction costs. The study findings indicate that UNTC2 (frustration with re-negotiation price) and UNTC4 (frustration in agreeing on the net amount to be paid on the acceptable quality supplied) are perceived as higher transaction costs in

contract farming compared to UNTC1 (price-renegotiation in case of market changes) and UNTC3 (cost to know net amount payable) (see Table 5.8).

Table 5.8: Overall Respondent's Agreement Level (%) on UNTC Indicators (n=393)

Cost item	Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree	Mean	Cost Classication
UNTC1	12.0%	55.0%	27.7%	5.1%	0.3%	2.27	Low
UNTC2	3.1%	30.3%	51.1%	13.2%	2.3%	2.81	High
UNTC3	8.9%	45.3%	38.2%	6.9%	0.8%	2.45	Low
UNTC4	3.1%	34.6%	49.1%	11.2%	2.0%	2.75	High
UNTC weighted average						**2.54**	

Source: Research Data, 2023

Moreover, the analysis of smallholder tea farmers' perceptions of upward negotiation transaction costs (UNTC) did not show any gender or geographical differences (see the details in Table 5.A7 and Table 5.A8 appended to this thesis).

5.2.2.3 Upward Enforcement Transaction Costs (UETC)

This study examined smallholder tea farmers' perceptions of upward enforcement transaction costs (UETC) in contract farming. The upward node of the tea value chain, which includes activities like harvesting, aggregation, sorting, and selling, was the focus of analysis. By comparing the weighted average score of 3.26 for the UETC construct with individual indicator means, transaction costs were categorised as either high or low based on the indicators' scores in relation to the overall mean.

The research results indicate that most of the farmers involved in this study perceived UETC1 (delays in payments) and UETC4 (side-selling penalty) to be relatively high compared to UETC2 (loss due to quality-based product rejection), UETC3 (product inspection time) in relation to farmers' engagement in contract farming (see Table 5.9)

Table 5.9: Overall Respondent's Agreement Level (%) on UETC Indicators (n=393)

Cost item	Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree	Mean	Cost Classication
UETC1	0.0%	8.7%	42.2%	41.7%	7.4%	3.48	High
UETC2	0.8%	22.6%	45.5%	29.3%	1.8%	3.09	Low
UETC3	0.8%	20.1%	49.9%	27.0%	2.3%	3.10	Low
UETC4	0.5%	11.5%	44.5%	38.4%	5.1%	3.36	High
UETC weighted average						**3.26**	

Source: Research Data, 2023

The findings show that perception that delays in payments (UETC1) and side-selling penalties (UETC4) are relatively high transaction costs in relation to farmers' engagement in contract farming implies that these factors may act as barriers to farmers' participation.

Further results, show that, no significant differences were found based on gender or district in the examination of smallholder tea farmers' perspectives on upward enforcement transaction costs (UETC) and their engagement in contract farming. These findings imply that the perception of transaction costs related to contract enforcement within upward node of the tea value chain is similar among farmers, regardless of gender or location (see Table 5.A19 and Table 5.A10 appended to this thesis).

5.2.3 Transaction Costs Comparison Across Tea Value Chain Nodes

The aim of this section was to examine whether significant variations exist in transaction costs associated with farmers' involvement in contract farming between the upward and downward segments of the tea value chain. Specifically, this section addresses the first hypothesis that there is no difference in transaction costs across

value chain nodes in the tea subsector in Tanzania, consistent with the initial objective of this research.

Before undertaking comparison of transaction costs associated with farmers' engagement in contract farming across the tea value chain, normality tests were conducted on the composite scores of upward and downward transaction variables. Quantile-Quantile (Q-Q) plots and normal distribution plots were used for this assessment, both indicating a normal distribution pertaining to the data. Moreover, central tendency metrics, precisely mean, mode, and median, were computed to confirm their similarity, with the expected results if the data are normally distributed. The results demonstrate that all composite score variables associated with downward and upward transaction costs exhibit a normal distribution because the measure of central tendency values are similar (see the details in Table 5.10). Due to the assumption of a normal distribution in the transaction cost variables, parametric tests like ANOVA and paired sample t-tests are applied. The composite score which are all scale variables were classified based on the composite scores interpretation matrix devised in Table 3.8.

Table 5.10: Comparison of Transaction Costs Across Value Chain Nodes (n=393)

Variable	Measure of central tendency					Cost classification
	Mean	Median	Mode	Minimum	Maximum	
Downward Transaction Cost (DTC)						
TDSTC	9.1	9	8	4	14	Low
TDNTC	16	16	16	12	20	High
TDETC	16.5	16	16	12	20	High
TDTC	**41.5**	**41**	**40**	**30**	**52**	**High**
Upward Transaction Cost (UTC)						
TUSTC	8.9	9	9	5	13	Low
TUNTC	10.3	10	10	4	20	Low
TUETC	13.0	13	14	5	20	High
TUTC	**32.2**	**32**	**34**	**16**	**44**	**Low**
TTC	**73.8**	**74**	**79**	**55**	**91**	**High**

Source: Research Data, 2023

The study findings indicate that smallholder tea farmers, in general, have a perception that transaction costs related with farmers' involvement in contract farming are relatively high. This is evident from the overall composite score mean of Total Transaction Cost (TTC), which stands at approximately 74. It should be noted that this mean falls within the established high cost range for TTC for this particular study, which spans from 72 to 120 (see Table 3.8 for the composite transaction cost interpretation range).

5.2.3.1 Association of Downward Transaction Cost Indicators

The study findings indicate that, when examining DTC variables as composite score of various indicators, majority of the respondents perceived DNTC (downward negotiation transaction cost) and DETC (downward enforcement transaction cost) to be relatively high compared to DSTC (upward transaction cost) (see Table 5.11 on the composite mean scores for each DTC variables). ANOVA was used to investigate the

statistical significance of mean differences among composite score of downward transaction cost (DTC) variables across three districts (see Table 4.16 for details)

Table 5.11: Multiple Comparisons for Downward Transaction Cost Constructs (ANOVA)

Dependent Variable	(District	District	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
LSD_a							
TDSTC	Rungwe	Busokelo	-0.149	0.291	0.610	-0.72	0.42
		Njombe DC	-1.804*	0.287	0.000	-2.37	-1.24
	Busokelo	Rungwe	0.149	0.291	0.610	-0.42	0.72
		Njombe DC	-1.655*	0.283	0.000	-2.21	-1.1
	Njombe DC	Rungwe	1.804*	0.287	0.000	1.24	2.37
		Busokelo	1.655*	0.283	0.000	1.1	2.21
TDNTC	Rungwe	Busokelo	0.442	0.26	0.090	-0.07	0.95
		Njombe DC	-.733*	0.257	0.005	-1.24	-0.23
	Busokelo	Rungwe	-0.442	0.26	0.090	-0.95	0.07
		Njombe DC	-1.175*	0.253	0.000	-1.67	-0.68
	Njombe DC	Rungwe	.733*	0.257	0.005	0.23	1.24
		Busokelo	1.175*	0.253	0.000	0.68	1.67
TDETC	Rungwe	Busokelo	0.371	0.232	0.110	-0.08	0.83
		Njombe DC	-1.600*	0.229	0.000	-2.05	-1.15
	Busokelo	Rungwe	-0.371	0.232	0.110	-0.83	0.08
		Njombe DC	-1.971*	0.225	0.000	-2.41	-1.53
	Njombe DC	Rungwe	1.600*	0.229	0.000	1.15	2.05
		Busokelo	1.971*	0.225	0.000	1.53	2.41

a; LSD = Least Significant Difference method for post hoc testing

*** The disparity in means is statistically significant at the 0.05 significance level**

Source: Research Data, 2023

The ANOVA results indicates that there were variations in the values of the mean for DTC variables among the districts. Specifically, the mean differences for DSTC, DNTC, and DETC were found to be similar between the Rungwe and Busokelo ($p > 0.05$), as such, no significant variation in the mean values of these DTC variables when

comparing Rungwe and Busokelo. This could be due to both districts being in the same location, potentially resulting in farmers sharing similar characteristics. However, when comparing both Rungwe and Busokelo with Njombe DC, there was a significant difference in the mean values of the DTC variables ($p < 0.05$). This indicates that the DTC variables exhibit varying mean values when comparing either Rungwe or Busokelo with Njombe DC. The variation in locations of Njombe DC from the other two districts (Rungwe and Busokelo) within the Southern Highlands of Tanzania may account for the observed differences.

5.2.3.2 Association of Upward Transaction Cost Indicators

The study findings show that, when scrutinising UTC variables specifically in terms of composite score of individual items, UETC, was perceived as relatively high compared to upward transaction costs (USTC) and upward negotiation transaction costs (UNTC). This observation is supported by the composite mean scores of the constructs constituting UTC presented in Table 4.15. ANOVA test was run to assess the statistical significance of mean differences among composite score of upward transaction cost (UTC) variables across three districts (see Table 5.12).

Table 5.12: Multiple Comparisons for Upward Transaction Cost Constructs (ANOVA)

Dependent Variable	District	District	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
LSD						Lower Bound	Upper Bound
USTC	Rungwe	Busokelo	0.239	0.256	0.350	-0.26	0.74
		Njombe DC	0.114	0.253	0.653	-0.38	0.61
	Busokelo	Rungwe	-0.239	0.256	0.350	-0.74	0.26
		Njombe DC	-0.126	0.249	0.614	-0.62	0.36
	Njombe DC	Rungwe	-0.114	0.253	0.653	-0.61	0.38
		Busokelo	0.126	0.249	0.614	-0.36	0.62
UNTC	Rungwe	Busokelo	-0.069	0.351	0.844	-0.76	0.62
		Njombe DC	-0.341	0.347	0.326	-1.02	0.34
	Busokelo	Rungwe	0.069	0.351	0.844	-0.62	0.76
		Njombe DC	-0.272	0.342	0.427	-0.94	0.4
	Njombe DC	Rungwe	0.341	0.347	0.326	-0.34	1.02
		Busokelo	0.272	0.342	0.427	-0.4	0.94
UETC	Rungwe	Busokelo	1.691*	0.33	0.000	1.04	2.34
		Njombe DC	.986*	0.326	0.003	0.35	1.63
	Busokelo	Rungwe	-1.691*	0.33	0.000	-2.34	-1.04
		Njombe DC	-.705*	0.321	0.029	-1.34	-0.07
	Njombe DC	Rungwe	-.986*	0.326	0.003	-1.63	-0.35
		Busokelo	.705*	0.321	0.029	0.07	1.34

*** The disparity in means is statistically significant at the 0.05 significance level**

Source: Research Data, 2023

The research results demonstrates absence significant differences in the values of mean for upward negotiation transaction cost (UNTC) and upward transaction cost (USTC) across the three districts ($p > 0.05$), which show that no substantial variation in the mean values of these UTC variables when comparing Rungwe, Busokelo and Njombe DC. However, when comparing both Busokelo and Njombe DC with Rungwe, a substantial distinction was observed in the mean values for upward enforcement transaction cost (UETC) ($p < 0.05$), which entails varying mean values when comparing either Busokelo or Njombe DC with Rungwe. The observed variations in UETC values among the three districts may be associated with distinct enforcement

processes which are specific to the localities and relationship between tea smallholder farmers and the tea processors (buyers).

5.2.3.3 Association Between Upward and Downward Transaction Cost

The section is meant to examine and test the first null hypothesis (H_1) of this study, which states that there is no difference in transaction costs across the value chain nodes in the tea subsector in Tanzania, consistent with the first objective of this study.

The findings show that when analysing transaction costs with a focus on the upward transaction costs (UTC) and downward transaction costs (DTC), majority of the farmers perceived that DTC are generally high compared to UTC. This observation is supported by the composite mean scores for total downward transaction (TDTC) (41.53) and total upward transaction cost (TUTC) (32.23) (TDTC > TUTC) as indicated in Figure 5.1. The difference between TDTC and TUTC are statistically significant at precision level of 5 percent (p=0.000) (see Table 5.13).

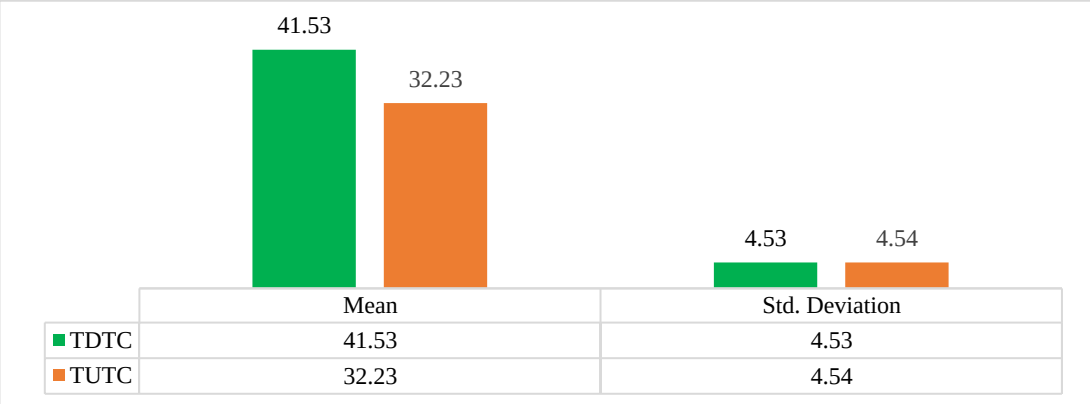

Figure 5.1: Upward and Downward Transaction Cost Association (n=393)

Source: Research Data, 2023

Table 5.13: Paired Samples (TDTC and TUSTC) Statistical Test Results

Paired Samples Statistics	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
TDTC - TUTC	9.295	5.329	0.269	8.767	9.824	34.579	392	0.000

Source: Research Data, 2023

Anchoring on these results, the null hypothesis is not supported, instead the alternative hypothesis is considered that there is differential transaction costs across the tea value chain nodes in Tanzania in relation to contract farming. Specifically, DTC are statistically higher than UTC.

5.3 Farmer Quality Descriptive Results

This study examined smallholder tea farmers' perceptions of farmer quality indicators and their relationship to participation in contract farming and transaction costs. The perceptions were categorised as high or low based on a comparison of individual mean scores to the weighted average score of 3.85 for the farmer quality construct. The results of the study show that majority of the smallholder tea farmers involved in this study perceived to highly possess TVCK (tea value chain knowledge), LNA (land access), FEA (farming equipment access). Besides, majority of the respondents perceived to have low contract farming experience (CFE) (see the details in Table 5.14).

Table 5.14: Overall Respondent's Agreement Level (%) on FQ Indicators (n=393)

FQ	Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree	Mean	SD	FQ Classication
CFE	6.9%	12.5%	13.0%	43.3%	24.4%	3.66	1.2	Low
TVCK	2.0%	12.5%	11.7%	41.2%	32.6%	3.90	1.2	High
LNA	0.0%	10.9%	21.1%	33.1%	34.9%	3.92	1.0	High
FEA	0.8%	10.2%	18.1%	38.7%	32.3%	3.92	1.0	High
TFQ weighted average						**3.85**		

Source: Research Data, 2023

These results suggest that higher levels of tea value chain knowledge, land access, and farming equipment access can potentially reduce transaction costs because farmer with these attributes are likely to navigate and manage contracts more effectively, leading to lower transaction costs (Nsimbila, 2021; Nazifi & Ibrahim, 2021). The analysis of farmer quality perception about participation in contract farming, disaggregated by gender, did not reveal significant differences compared to the overall findings Similarly, district-wise analysis showed similar results across the three districts, except in Rungwe, where farmers perceived higher levels of tea value chain knowledge (TVCK) compared to contract farming experience (CFE), land access (LNA), and farming equipment access (FEA) (see the details in Table 5.A11 and Table 5.A12 appended to this thesis). This observation suggests that tea smallholder farmers' perceptions of farmer quality are unrelated to gender and location.

5.4 Summary of Composite Scores for Transaction Cost and Farmer Quality

This section summarises descriptive statistics for composite scores of the main explanatory variables (independent and intervening) included in the study. Measures of central tendency were computed for downward transaction cost (DTC), upward

transaction cost (UTC), and farmer quality (FQ) to establish farmers' overall perceptions of these variables. The findings reveal that transaction costs related to contract farming participation were generally perceived as high. Further research results demonstrates that smallholder tea farmers involved in the study perceived downward transaction costs to be higher than upward transaction costs. Additionally, most farmers perceived high farmer quality attributes (see the details in Table 5.15). The classification of whether the a certain composite variable classification is perceived as high or low is based on the mean score interpretation matrix presented in Table 3.8.

Table 5.15: Summary of Composite Scores for Transaction Cost and Farmer Quality (n=393)

Variable	Measure of central tendency					Cost classification
	Mean	Median	Mode	Minimum	Maximum	
Downward Transaction Cost (DTC)						
TDTC	41.5	41	40	30	52	High
Upward Transaction Cost (UTC)						
TUTC	32.2	32	34	16	44	Low
TTC	**73.8**	**74**	**79**	**55**	**91**	**High**
FQ	15	16	18	6	20	High

Source: Research Data, 2023

CHAPTER SIX

FINDINGS ON EFFECTS OF TRANSACTION COSTS AND FARMER QUALITY ON CONTRACT FARMING PARTICIPATION

6.1 Chapter Overview

This chapter conducts an in-depth inferential analysis of the determinants of transaction costs and the influence of intervening variables, particularly those related to farmer quality, on farmers' participation in contract farming. The analysis includes testing the null hypotheses H2 to H4 in alignment with specific objectives 2 through 4 of this study. Estimation for these objectives utilized binary logistic regression analysis due to the dichotomous nature of the dependent variable. The insights gained from this chapter, combined with the findings from previous sections, will serve as the foundation for the subsequent discussion in the following chapter.

6.2 Transaction Cost and Farmer Quality Effect Estimation on Farmer's PCF

This section focuses on testing null hypotheses H_2 to H_4, aligned with research objectives 2 to 4. This research used binary logistic regression model to estimate the effects of transaction cost determinants and farmer quality on farmers' engagement in contract farming. This binary logistic regression model considered Farmer's Participation in Contract Farming (FPCF), denoted by values "1" for participation and "0" for non-participation. Before testing the association between transaction costs, farmer quality, and FPCF, relevant tests specific to this model were conducted, followed by estimation of the variables of interest, as summarised in the subsequent subsections.

6.2.1 Binary Logistic Model Assumptions

This section presents the results of key assumptions relevant for the estimation model (binary logistic regression model), which was employed to estimate the effect of transaction cost and farmer quality intervening variables on farmers' involvement in contract farming. The statistical test results and causality findings for the three variables are presented in the following sections of this thesis.

6.2.1.1 Multicollinearity Test

Multicollinearity arises from strong correlations among independent/intervening variables in multilinear regression, hindering the interpretation of individual variable effects. It leads to unstable coefficients, reduced significance, and unreliable model performance (Daoud, 2017). Methods to detect multicollinearity include correlation analysis, tolerance value, Variance Inflation Factor (VIF), and condition index. Correlations above 0.9 indicate potential collinearity issues (Tabachnick & Fidell, 2013; Field, 2018). However, in this study, composite scores of the constructs constituting the study objectives showed correlations coefficients below the highest potential 0.9, because the highest correlation coefficient was 0.336, signifying absence of the multicollinearity problem amongst the study variables and objectives (see Table 6.1).

Table 6.1: Correlation of Variables for Multicollinearity Test

Variable	CFP status	TFQ	TDSTC	TDNTC	TDETC	TUSTC	TUNTC	TENTC
Pearson Correlation								
CFP status	1							
TFQ	0.063	1						
TDSTC	0.062	0.242	1					
TDNTC	-0.102	0.269	0.182	1				
TDETC	-0.093	0.336	0.122	0.303	1			
TUSTC	0.016	0.086	0.312	0.037	0.058	1		
TUNTC	0.145	0.144	0.189	0.052	0.044	0.139	1	
TENTC	0.053	0.175	0.062	0.196	0.173	0.061	-0.07	1
Sig. (1-tailed)								
CFP status	.	0.106	0.11	0.021	0.033	0.378	0.002	0.146
TFQ	0.106	.	0	0	0	0.044	0.002	0
TDSTC	0.11	0.000	.	0.000	0.008	0.000	0.000	0.108
TDNTC	0.021	0.000	0.000	.	0.000	0.233	0.150	0.000
TDETC	0.033	0.000	0.008	0.000	.	0.125	0.191	0.000
TUSTC	0.378	0.044	0.000	0.233	0.125	.	0.003	0.113
TUNTC	0.002	0.002	0.000	0.150	0.191	0.003	.	0.084
TENTC	0.146	0.000	0.108	0	0	0.113	0.084	.

Source: Research Data, 2023

Additionally, a VIF larger than 10 indicates dependence among variables (Field, 2018; Lomax & Hahs-Vaughn, 2012). However, the VIF test conducted in this study showed values below 10, with an average VIF of 1.157 as such satisfying the pre-set threshold. Similarly, a tolerance value below 0.10 suggests a more serious collinearity problem (Lomax & Hahs-Vaughn, 2012; Pituch & Stevens, 2016). In this research, the mean tolerance value measured at 0.87, which is far above the minimum threshold of 0.10. Refer to Table 6.2 for detailed test results. These two test results also indicate that no significant collinearity issue.

Table 6.2: VIF Results for Multicollinearity Test

Variable	Collinearity Statistics	
	Tolerance (1/VIF)	**VIF**
TFQ	0.807	1.239
TDSTC	0.828	1.208
TDNTC	0.848	1.179
TDETC	0.831	1.203
TUSTC	0.892	1.121
TUNTC	0.936	1.068
TENTC	0.925	1.081
Average Tolerance and VIF	**0.870**	**1.157**

Source: Research Data, 2023

All the three tests suggests that there is no problem of multicollinearity amongst the critical variables and constructs used in this study.

6.2.1.2 Box-Tidwell Test

This test is intended to investigate the linear relationship between continuous independent variables and the logit transformation of the dependent variables. The assumption is considered fulfilled if a logistic regression using both the transformed and non-transformed values yields a non-significant p-value ($p > 0.05$). In this study, the continuous variables of interest (independent/intervening) are upward transaction cost, downward transaction cost, and farmer quality. The Box-Tidwell test indicates that all three variables' composite scores meet the assumption with $p > 0.05$. Table 6.3 displays the outcomes of the Box-Tidwell test.

Table 6.3: Box-Tidwell Test (n=393)

Description		Sig.
Step 1[a]	TFQ	0.056
	TDTC	0.335
	TUTC	0.383
	TFQ by lnTFQ	0.065
	TDTC by lnTDTC	0.319
	LnTUTC by TUTC	0.420
	Constant	0.128

(a) Variable (s) entered on step 1: TFQ, TDTC, TUTC, TFQ * lnTFQ , TDTC * lnTDTC , LnTUTC * TUTC

Source: Research Data, 2023

6.2.1.3 Significant Outliers Test

Outliers are extreme observations that deviate significantly from the overall pattern of the data (Ghosh & Vogt, 2012). Before running a BLR analysis, significant outliers are checked as they can have a substantial impact on the results and interpretation. In this study, visual inspection using a box plot was performed to establish the presence of significant outliers. All values outside the box plot are regarded as outliers, but this was not the case for this study when considering the composite scores of the items included in each of the three main variables (downward transaction cost, upward transaction cost and farmer quality).

Moreover, the Mahalanobis distance was calculated to identify outliers in the data, considering a threshold probability of less than 0.001 (Tabachnick & Fidell, 2013). None of the seven composite scores showed a Mahalanobis distance below 0.001. The least observed Mahalanobis probability was 0.003, indicating no significant outliers. A Cook's distance observations test was further conducted to detect influential data points that may excessively impact model estimation. This test identifies unusual

correlations among variables. To improve model estimation power, it is recommended to remove data points with Cook's distance values exceeding (n/4) (Cook & Beckman, 2006). In this study, the Cook's distance value threshold at n=393 is (393/4), equivalent to 0.01. By using this threshold 16 data points were identified as potential influential points to the model.

Therefore, 16 observations with Cook's distance values above 0.01 were excluded from the BLR analysis in this study. Removing those cases decreased the total number of observations from 393 to 377, a 4.3 percent reduction or 95.7 percent of the original sample. The exclusion of these cases enhanced the model's classification power from 77.4 percent to 79.8 percent and improved its prediction capacity from a Nagelkerke R Square value of 29.2 percent to 34.1 percent. This Nagelkerke R Square value, indicate that famer’s participation in contract farming is explained about 65.9 percent of other unaccounted factors not included in this study.

6.2.1.4 Overall Model Fit

In a BLR model, the term "fit" pertains the degree to which the statistical model accurately characterises the observed data. It serves as a quantitative measure of the alignment between the predicted probabilities or classifications generated by the model and the actual outcomes observed in the binary response variable. To assess the overall adequacy of the BLR model's fit, several tests are commonly employed, with the Omnibus test and the Hosmer and Lemeshow test being frequently utilized in social science research (Hébert et al., 2022).

The Omnibus test assesses if the BLR model is the best fit for the data by calculating a p-value, indicating the statistical significance of the association between model

predictions and outcomes. A p-value less than 0.05 indicates a robust fit. The Hosmer and Lemeshow test also evaluates the BLR model's fit using the p-value, with a threshold of 0.05. A p-value exceeding this threshold ($p > 0.05$) indicates robustness of the model as the best fit for the data.

In this study, both the Omnibus and Hosmer-Lemeshow tests assumptions were met, when the test was run by using the entire sample (n=393), and all the 28 variables relating to upward transaction cost, downward transaction cost and farmer quality. The Omnibus test showed a significant (p=0.000), signifying a strong fit between the adapted model and the data. The Hosmer-Lemeshow test produced a non-significant (p=0.178), implying that the adapted model accurately represents the observed data and aligns well with the binary response variable's outcomes.

6.2.2 Effect of Downward Transaction Costs on Farmer's PCF

This section specifically addresses null hypothesis H_2 of the study, which state that downward transaction costs have no effect on farmers' engagement in contract farming in the tea subsector in Tanzania, in line with research objectives 2. The effect of downward transaction cost (DTC) variables was analysed using a BLR model in two steps. Firstly, the analysis involved utilising composite scores of the DTC constructs (DSTC, DNTC, and DETC) based on the structural model equation (5). Additionally, further analysis was conducted by examining the individual exogenous indicators within each of the DTC constructs. The regression results for aggregated DTC indicators are given in Table 6.4.

Table 6.4: Logistic Regressions Results for Aggregated DTC Indicators

DTC		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1a	TDSTC	0.093	0.05	3.436	1	0.064**	1.097	0.995	1.211
	TDNTC	-0.143	0.061	5.499	1	0.019*	0.867	0.769	0.977
	TDETC	-0.116	0.064	3.295	1	0.069**	0.891	0.786	1.009
	Constant	4.428	1.202	13.581	1	0	83.767		

(a) Variable(s) entered on step 1: TDSTC, TDNTC, TDETC.

(b) Dependent variable: Farmers' PCF; Sig=0.003; Nagelkerke R Square= 0.054; Correct Classification=73.25%; *Significant at P = 0.05; **Significant at P = 0.1

Source: Research Data, 2023

The regression results on aggregated DTC indicate that both total downward negotiation transaction cost (TDNTC) and total downward enforcement transaction cost (TDETC) negatively affect farmers' participation in contract farming. Besides, TDNTC demonstrated as having statistical significance at the precision level of 5 percent (p=0.019) while TDETC was not significant at the same precision level (p=0.69). Further analysis reveals that total downward search transaction cost (TDSTC) had a positive effect regarding farmers' involvement in contractual agreements but the effect was not statistically significant at the 5 percent precision level (p=0.064).

Relatedly, the logistic regression results on disaggregated TDC variables in line with structural equation 8 are indicated in Table 6.5. The disaggregated regression results show that even though the aggregated DTC constructs had positive or negative effect on farmers' engagement in contract farming, the effect on specific indicators in each

construct are not uniform. For example, even though total downward search transaction cost (TDSTC) had positive outcome on farmers' involvement in contract farming, two items DSTC3 (cost to know contract opportunities and terms) and DSTC 4 (visiting frequency to the investor to qualify for entering in a farming contract) out of four DSTC had negative effect on farmers' engagement in contract farming. Besides, the impact of both DSTC3 and DSTC4 was not statistically significant at precision level of 5 percent.

Table 6.5: Logistic Regressions Results for Disaggregated DTC Indicators

Variables	Items 1a	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Downward	DSTC1	0.796	0.302	6.942	1	0.008	2.217	1.226	4.008
Search	DSTC2	0.201	0.301	0.447	1	0.504	1.223	0.678	2.207
Transaction	DSTC3	-0.104	0.285	0.134	1	0.715	0.901	0.516	1.575
Cost (DSTC)	DSTC4	-0.382	0.309	1.526	1	0.217	0.682	0.372	1.251
Downward	DNTC1	0.874	0.302	8.343	1	0.004	2.396	1.324	4.334
Negotiation	DNTC2	-0.572	0.34	2.827	1	0.093	0.564	0.29	1.099
Transaction	DNTC3	-1.027	0.345	8.879	1	0.003	0.358	0.182	0.704
Cost (DNTC)	DNTC4	0.121	0.327	0.137	1	0.711	1.129	0.594	2.143
Downward	DETC1	-0.618	0.301	4.208	1	0.040	0.539	0.299	0.973
Enforcement	DETC2	0.099	0.302	0.109	1	0.742	1.105	0.612	1.995
Transaction	DETC3	0.473	0.333	2.022	1	0.155	1.605	0.836	3.082
Cost (DETC)	DETC4	-0.46	0.27	2.908	1	0.088	0.631	0.372	1.071
	Constant	4.78	1.301	13.506	1	0.000	119.159		

(a) Variable (s) entered on step 1: DSTC1, DSTC2, DSTC3, DSTC4, DNTC1, DNTC2, DNTC3, DNTC4, DETC1, DETC2, DETC3, DETC4.

(b) Dependent variable: Farmers' PCF; Sig=0.000; Nagelkerke R Square= 0.16; Correct Classification=74.8%; Significant at P = 0.05

Source: Research Data, 2023

On the other hand, two DSTC items DSTC1 (contract length) and DSTC2 (time used to know the contract terms) had positive effect on farmers' engagement in contract farming. These results imply that shorter contracts and limited time used to understand the contract terms, increases the likelihood of farmers' involvement in contract farming. DSTC1 showed statistical significance at precision level of 5 percent while DSTC2 did not show a statistical significance at the same level.

Furthermore, consistent with theoretical expectations, two specific items within downward negotiation transaction costs (DNTC) exhibit a negative effect on farmer' engagement in contract farming. Specifically, DNTC2 (contract negotiation frustration) and DNTC3 (time required to understand contract terms) are found to have an adverse impact on farmers' willingness to participate. DNTC3 showed statistical significance at a precision level of less than 5 percent ($p=0.003$), whereas DNTC2 did not achieve statistical significance below 5 percent precision level ($p=0.093$).

In contrast to theoretical expectations, the findings reveal a nuanced relationship between downward negotiation transaction cost (DNTC) and farmers' involvement in contract farming. On the other hand, the aggregated DNTC has a negative influence on farmers' participation in contract farming, two specific items, namely DNTC1 (contract terms rigidity) and DNTC4 (legal document with terms and conditions that are difficult to comprehend), have a positive effect on farmer participation. DNTC1 was statistically significant at precision level of less than 5 percent, but DNTC4 did not reach statistical significance at the same precision level (5%).

On downward enforcement transaction costs (DETCs), DETC1 (delays in receiving the agreed services) and DETC4 (fear of legal reprisals for non-compliance with

production techniques) negatively influence participation, but the effect is not statistically significant at a 5 percent precision level. Conversely, DETC2 (reputation of not complying with the contract) and DETC3 (time spent on contract monitoring, for instance, in the enforcement of compliance with adherence to good agronomic practices) positively influence participation. Nevertheless, the influence of these variables is not statistically significant at the 5 percent precision level, as indicated in Table 4.24

6.2.3 Effect of Upward Transaction Cost on Farmer's PCF

This section specifically addresses the null hypothesis H_3 of the study, of which state that upward transaction costs have no effect on farmers' engagement in contract farming in the tea subsector in Tanzania, in line with research objectives 3. The effect of upward transaction cost (UTC) variables was assessed using a BLR model in two steps. Firstly, the analysis involved using the composite scores of the constructs USTC, UNTC, and UETC, as outlined in the structural model equation (6). Additionally, further analysis was conducted by examining the individual exogenous indicators within each of the UTC constructs (see the binary logistic regression results on composite UTC scores in Table 6.6).

Table 6.6: Logistic Regressions Results for Aggregated UTC Indicators

UTC		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1a	TUSTC	-0.016	0.06	0.069	1	0.792	0.984	0.875	1.107
	TUNTC	0.181	0.047	14.752	1	0.000*	1.199	1.093	1.315
	TENTC	0.066	0.045	2.186	1	0.139	1.069	0.979	1.167
	Constant	-1.494	0.872	2.938	1	0.087	0.224		

(a) Variable(s) entered on step 1: TUSTC, TUNTC, TENTC.

(b) Dependent variable: Farmers' PCF; Sig=0.000; Nagelkerke R Square= 0.068; Correct Classification=74.00%; *Significant at P = 0.05

Source: Research Data, 2023

These findings reveal that only total upward search transaction cost (TSTC) has a negative relationship with farmers' involvement in contract farming but the effect is not significant at a precision level of 5 percent. In contrast to theoretical expectations, total upward negotiation transaction cost (TUNTC) and total upward enforcement transaction cost (TUETC) exhibit a positive effect on farmers' participation in contract farming, but the outcome was not statistically significant at P=0.05 for TUETC (p=0.139) but the same was statistically significant for TUNTC (p=0.000).

Moreover, further logistic regression results on disaggregated UTC in line with structural equation 9 variables are indicated in Table 6.7. These results demonstrate that while the aggregated upward transaction cost constructs have varying effects on farmers' participation in contract farming, because the impact on specific indicators within each construct is not consistent. Detailed findings regarding these specific indicators are provided in the subsequent paragraphs.

For the upward search transaction costs (USTC), the analysis reveals that two specific items, namely USTC2 (visits to the buyer or investor to determine the net amount payable) and USTC4 (time spent waiting for payment status from the buyer), have a negative influence on farmers' engagement in contract farming. However, the effect UTSC2 and USTC4 did not reach a statistical significance at the precision level of 5 percent.

Table 6.7: Logistic Regressions Results for Disaggregated UTC Indicators

Variables	Items 1(a)	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Upward	USTC1	0.452	0.244	3.423	1	0.064	1.571	0.974	2.536
Search	USTC2	-0.316	0.27	1.372	1	0.241	0.729	0.43	1.237
Transaction	USTC3	0.084	0.225	0.139	1	0.709	1.088	0.699	1.691
Cost (USTC)	USTC4	-0.265	0.265	0.999	1	0.318	0.767	0.456	1.29
Upward	UNTC1	0.84	0.288	8.491	1	0.004	2.316	1.316	4.074
Negotiation	UNTC2	-0.031	0.352	0.008	1	0.931	0.97	0.487	1.932
Transaction	UNTC3	0.137	0.281	0.239	1	0.625	1.147	0.661	1.991
Cost (UNTC)	UNTC4	-0.094	0.353	0.071	1	0.79	0.91	0.456	1.817
Upward	UETC1	-0.082	0.252	0.105	1	0.746	0.922	0.562	1.511
Enforcement	UETC2	0.566	0.274	4.274	1	0.039	1.76	1.03	3.009
Transaction	UETC3	-0.356	0.301	1.4	1	0.237	0.701	0.389	1.263
Cost (UETC)	UETC4	0.167	0.255	0.43	1	0.512	1.182	0.718	1.946
	Constant	-1.512	0.921	2.694	1	0.101	0.22		

(a) Variable(s) entered on step 1: USTC1, USTC2, USTC3, USTC4, UNTC1, UNTC2, UNTC3, UNTC4, UETC1, UETC2, UETC3, UETC4.

(b) Dependent variable: Farmers' PCF; Sig=0.001; Nagelkerke R Square= 0.124; Correct Classification=73.70%; Significant at P = 0.05

Source: Research Data, 2023

Furthermore, the analysis reveals that USTC1 (efforts to determine net harvesting and collection dates) and USTC3 (costs associated with obtaining information on the net

amount payable) had a positive relationship with farmers' engagement in contract farming. Besides, the effect of both USTC1 and USTC3 was statistically not significant at precision level of 5 percent.

On upward negotiation transaction cost (UNTC), UNTC2 (frustration with re-negotiation price) and UNTC4 (frustration in agreeing on the net amount to be paid on the acceptable quality supplied) demonstrate a negative association with farmers' engagement in contract farming. However, the effect of both UNTC2 and UNTC4 was statistically not significant at a precision level of 5 percent.

In contrast, UNTC1 (price renegotiation in case of market price changes) and UNTC3 (time spent understanding the revised price setting mechanism) exhibit a positive relationship with farmers' involvement in contract farming. UNTC1 showed a statistical significance at precision level of 5 percent while UNTC3 did not achieve a statistical significance at the same precision level.

Further analysis in the context of contract enforcement costs (UETC), it was observed that UETC1 (delays in payments) and UETC3 (green-leaf tea inspection time) have a negative influence on farmers' engagement in contract farming. Besides, the effect of both UETC1 and UETC3 was statistically not significant at precision level of 5 percent.

Moreover, the analysis reveals that UETC2 (loss due to quality-based product rejection) and UETC4 (side-selling penalty) have a positive effect on farmers' participation in contract farming. UETC2 showed statistical significance at a precision

level of 5 percent, whereas UETC4 did not achieve statistical significance at the same precision level.

6.2.4 Effect of Farmer Quality Intervening Variable on Cost on Farmer's PCF

This section specifically addresses null hypothesis H_4 of the study, which state that, there is no influence of farmer quality intervening variables on farmers' involvement in contract farming in the tea subsector in Tanzania, in line with research objectives 4.

The impact of farmer quality intervening variables was examined using a BLR model based on structural equation (13). Initially, the analysis focused on assessing the relationship between the composite scores of total downward transaction cost (TDTC) and total upward transaction cost (TUTC) variables and farmers' participation in contract farming, without considering the influence of farmer quality. The second step involved conducting a binary logistic regression analysis that incorporated the composite scores of all constructs of TDTC, TUTC, and farmer quality to determine the overall influence of farmer quality as an intervening variable on farmers' engagement in contract farming. In the third step, the overall model included the disaggregated items for the transaction cost and farmer quality variables.

For the first step, the logistic regression results showing the effect of TDTC and TUTC without a composite score of farmer quality intervening variable on farmers' involvement in contract farming, in line with equation 10 are presented in Table 6.8.

Table 6.8: Logistic Regressions Results for Aggregated TC Indicators

Model		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1a	TDTC	-0.089	0.029	9.721	1	0.002*	0.915	0.865	0.968
	TUTC	0.122	0.03	16.57	1	0.000*	1.129	1.065	1.197
	Constant	0.881	1.213	0.527	1	0.468**	2.412		

(a) Variable(s) entered on step 1: TDTC, TUTC.

(b) Dependent variable: Farmers' PCF; Sig=0.000; Nagelkerke R Square= 0.08; Correct Classification=74.3%; *Significant at P = 0.05; **Significant at P = 0.1

Source: Research Data, 2023

These results demonstrate that TDC (Total Downward Transaction Cost) has a negative impact on farmers' engagement at a precision level of 5 percent, whereas TUC has a positive effect on farmers' participation at the same precision level. The second step examined the impact of 24 disaggregated upward (12) and downward (12) transaction cost indicators on farmers' participation in contract farming, without considering farmer quality, as per structural equation 11. The regression results for these disaggregated variables are appended to this thesis (see Table 6.A1 appended to this thesis). The findings revealed that six downward transaction cost indicators had negative regression coefficient signs, while six had positive regression coefficient signs, with four indicators showing statistical significance at a 5 percent precision level. Similarly, six upward transaction cost indicators had negative regression coefficient signs, while six had positive regression coefficient signs, with two indicators only demonstrating statistical significance at a 5 percent precision level.

To establish the effect of the aggregated farmer quality intervening variable on farmers' engagement in contract farming, the regression analysis comprising aggregated downward transaction cost, upward transaction cost, and farmer quality

was conducted. The logistic regression results, including downward and upward transaction costs determinants composite score and that of farmer quality in line with structural equation 12 are indicated in Table 6.9.

Table 6.9: Logistic Regressions Results for Aggregated TC and Farmer Quality Indicators

Model	Variables	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1a	TFQ	0.05	0.033	2.328	1	0.127**	1.051	0.986	1.121
	TDTC	-0.069	0.029	5.881	1	0.015*	0.933	0.882	0.987
	TUTC	0.076	0.027	7.916	1	0.005*	1.079	1.023	1.137
	Constant	0.583	1.144	0.26	1	0.61	1.791		

(a) Variable(s) entered on step 1: TFQ, TDTC, TUTC.

(b) Dependent variable: Farmers' PCF; Sig=0.000; Nagelkerke R Square= 0.08; Correct Classification=74.3%; *Significant at P = 0.05; **Significant at P = 0.15

Source: Research Data, 2023

The findings show that aggregated farmer quality has a positive effect on farmers' engagement in contract farming, although this effect is not statistically significant at a significance level of P=0.05. Conversely, total downward transaction cost (TDTC) exhibits a significant negative influence on farmers' participation in contract farming at P=0.05. Additionally, total upward transaction cost (TUTC) demonstrates a significant positive effect on farmers' involvement in contract farming at P=0.05. The effect of TDTC and TUTC on farmers' participation in contract farming remained unchanged. The regression coefficients and significance levels for both variables did not change, even after the introduction of the aggregated farmer quality variable.

In the analysis of disaggregated farmer quality intervening variables and transaction cost variables on farmers' participation in contract farming in line with structural equation 13, the impact of farmer quality on transaction cost effect was minimal. For example, among the 24 transaction cost indicators, 23 indicators maintained their sign of effect (positive or negative) compared to the analysis of these indicators individually on farmers' participation in contract farming without taking into account the farmer quality in structural equation 11. Furthermore, only two indicators out of the 24 showed a change in their statistical significance level when compared to their individual analysis on farmers' participation in contract farming without taking into account farmer quality in structural equation 11. The detailed output of the logistic regression with all transaction cost and farmer quality indicators is shown in Table 6.A2 appended to this thesis.

6.3 Hypothesis Test Results Summary

In this section, a summary of the tested hypotheses for all four study objectives is presented. The hypotheses are derived from the results obtained through various statistical tests conducted in the preceding sections of this thesis. The findings show that three out of the four hypothesis are not supported at the precision level of 5 precent (see the details in Table 6.10).

Table 6.10: Hypothesis Test Results Summary

Hypothesis	Test Done	Test Level	Sign		Test Results	Decision
			Expected	Results		
H_0: There is no difference in transaction cost across value chain nodes in the tea subsector in Tanzania	Paired t-test	Bivariate	+ve	+ve	0.000	Not supported
H_0: Downward transaction costs have no effect on farmers' participation in contract farming in the tea subsector in Tanzania	BLR analysis	Causality	-ve	-ve	0.015	Not supported
H_0: Upward transaction costs do not affect farmers' participation in contract farming in the tea subsector in Tanzania	BLR analysis	Causality	-ve	+ve	0.005	Not supported
H_0: There is no influence of farmer quality intervening variables on farmers' participation in contract farming in the tea subsector in Tanzania	BLR analysis	Causality	+ve	+ve	0.127	Supported

Source: Research Data, 2023

Hypothesis 1: The alternative hypothesis is considered for the first objective. The alternative hypothesis posits that there is a significant variation in transaction costs in relation to farmers' participation in contract farming across different nodes within the tea value chain in Tanzania.

Hypothesis 2: The alternative hypothesis is considered for the second objective, which indicate that, downward transaction costs have negative significant effect on farmers' participation in contract farming in the tea subsector in Tanzania.

Hypothesis 3: The alternative hypothesis is considered for the third objective, which suggest that, upward transaction costs have a positive significant effect on farmers' engagement in contract farming in the tea subsector in Tanzania.

Hypothesis 4: The null hypothesis, which state that, there is no influence of farmer quality intervening variables on farmers' participation in contract farming in the tea subsector in Tanzania is supported.

CHAPTER SEVEN

DISCUSSION OF RESEARCH FINDINGS

7.1 Chapter Overview

This chapter presents a discussion of the research results, emphasizing the implications and importance of the findings. Specifically, it examines farmers' perceptions of downward and upward transaction costs and their impact on participation in tea contract farming in Tanzania. The discussion is grounded in rigorously analysed research data, utilizing both descriptive and inferential statistics. The results highlight the effects of downward transaction costs, upward transaction costs, and farmer quality intervening variables on farmers' participation in contract farming. The insights gained from this study are significant for policymakers and stakeholders aiming to enhance participation and reduce transaction costs in the tea subsector

7.2 Transaction Costs Clusters Across Tea Value Chain Nodes

The study findings indicate that smallholder tea farmers, in general, perceive that transaction costs related with participation of farmers in contract farming are relatively high. This is in line with various previous studies, for example by Mulbah et al. (2020) and Rondhi (2021) who concluded that, high transaction cost negatively affect farmers' decision to engage in contract farming. The higher transaction cost reported by the smallholder tea farmers suggest that transaction costs may act as barriers, potentially discouraging farmers from engaging in contract farming arrangements. This could limit the adoption and benefits of contract farming in the tea subsector. A

discussion regarding specific transaction costs across the tea value chain nodes is provided in the subsequent subsections.

7.2.1 Association of Downward Transaction Cost Indicators

The study findings indicate that, considering DTC variables as composite score of various indicators, majority of the respondents perceived DNTC (downward negotiation transaction cost) and DETC (downward enforcement transaction cost) to be higher than DSTC (upward transaction cost). The perception of high downward transaction costs, such as negotiation and enforcement, can pose obstacles for farmers to engage in contract farming. These transaction costs can impact the profitability, efficiency, and fairness of contract farming agreements (Ngaruko & Lyanga, 2021). Similarly, high downward negotiation transaction costs (DNTC) may imply challenges on limited negotiation ability of tea smallholder farmers in reaching mutually beneficial agreements Chazovachii et al. (2021). Equally, the perception of high downward enforcement transaction costs (DETC) suggests potential difficulties in enforcing contractual obligations and resolving disputes (Yeshitila et al., 2020).

Furthermore, the findings indicated differences in the mean values of DTC variables between the districts. Specifically, the mean differences for DSTC, DNTC, and DETC were found to be similar between the Rungwe and Busokelo ($p > 0.05$). This finding implies that there is no significant variation in the mean values of these DTC variables when comparing Rungwe and Busokelo. However, comparison of both Rungwe and Busokelo with Njombe DC, shown a notable difference in the mean values of the DTC variables ($p < 0.05$). This result indicates that the DTC variables exhibit varying mean values when comparing either Rungwe or Busokelo with Njombe. Additionally, these

results suggest that Rungwe and Busokelo share similar mean values of DTC variables, indicating comparable levels of transaction costs. On the other hand, Njombe district exhibits significant mean different values of DTC variables compared to both Rungwe and Busokelo, indicating a distinct level of transaction costs in Njombe.

7.2.2 Association of Upward Transaction Cost Indicators

The findings show that UETC, was perceived as relatively high compared to upward search transaction costs (USTC) and upward negotiation transaction costs (UNTC). These findings suggest that farmers may encounter challenges related to the enforcement of contractual agreements when engaged in contract farming. This can include issues such as the monitoring and enforcement of quality standards, timely payment, and fair treatment by the contracting parties. The perceived difficulties in enforcing contracts may create uncertainties and risks for farmers, potentially affecting their willingness to engage in contract farming arrangements (Tuyen et al.,2022). In contrast, the relatively lower perceived levels of USTC and UNTC suggest that farmers may have a comparatively favourable perception of the transaction costs related with negotiating and engaging in upward transactions within the contract farming context. This implies that farmers may perceive fewer challenges when it comes to reaching mutually beneficial agreements and conducting transactions with the contracting parties.

Furthermore, the results indicates that there were no substantial differences in the mean values of upward negotiation transaction cost (UNTC) and upward transaction cost (USTC) across the three districts ($p > 0.05$). This suggests that there is no substantial variation in the mean values of these UTC variables when comparing Rungwe and

Busokelo. Besides, comparison of both Busokelo and Njombe DC with Rungwe, shown a significant difference in the mean values of upward enforcement transaction cost (UETC) ($p < 0.05$). This implies that the UETC variables exhibit varying mean values when comparing either Busokelo or Njombe DC with Rungwe.

These findings suggest that lack of substantial differences in the mean values of UNTC and USTC across the three districts suggests that search and negotiation transaction costs related to contract farming in the upward stream of the tea value chain are perceived to be relatively similar in Rungwe, Busokelo, and Njombe DC. This indicates that farmers in these districts may face comparable challenges and opportunities when engaging in upward transactions and negotiations. Moreover, the significant difference in the mean values of UETC when comparing Busokelo and Njombe DC with Rungwe highlights district-specific variations in the enforcement of contractual agreements in upward node of the tea value chain. Farmers in Busokelo and Njombe DC may encounter distinct challenges related to enforcing upward stream contract terms and conditions compared to their counterparts in Rungwe. These challenges could include issues such as difficulties in green-leaf quality compliance, delays in payment, and side selling (Yeshitila et al., 2020; and Kozhaya, 2020)

7.2.3 Association Between Upward and Downward Transaction Cost

The findings reveal that farmers mostly perceive downward transaction costs (DTC) as higher than upward transaction costs (UTC), because the mean difference between TDC and TUTC shown statistical significance at a precision level of 5 percent. These findings indicate substantial variations in the mean values of these transaction cost variables, as such, highlight the importance of considering the differential impact of

transaction costs at different stages of the tea value chain. High DTC suggests that farmers may face substantial burdens when engaged with the buyers in contract farming, specifically in the processes related to downward node of the tea value chain. This observation converge with other scholars who argued that high transaction cost negatively affect farmers' participation in contract farming (Tuyen et al.,2022; Taslim et al.,2021). Conversely, low upward transaction costs implies that farmers may perceive lower burdens when engaging in contract farming for activities related to upward node of the tea value chain. This may enhance their willingness to participate in contract farming arrangements as they perceive relatively lower costs associated with these aspects of the value chain.

7.3 Effect of Downward Transaction Costs on Farmer's PCF

The findings show on aggregated DTC, both total downward negotiation transaction cost (TDNTC) and total downward enforcement transaction cost (TDETC) have a negative impact on farmers' engagement in contract farming. Besides, TDNTC shown to be statistically significant at the precision level of 5 percent while TDETC was not significant at the same precision level. Further analysis reveals that total downward search transaction cost (TDSTC) had a positive effect on farmers' involvement in contract farming, but the effect was not statistically significant at P=0.05. The findings on DNTC and DETC are in line with other previous studies, which indicate that negotiation and contract enforcement transaction costs affect negatively farmers' participation in contract farming (Chazovachii et al., 2021; Arouna et al., 2021). These results suggest that, higher levels of downward stream negotiation and enforcement transaction costs are associated with lower farmer's participation in contract farming,

while increased search costs are linked to higher farmer's involvement in contract farming.

Besides, the positive effect of DSTC is contrary to the theoretical expectations and findings from other studies which indicate that search transaction costs, significantly negatively impact of farmers' participation in contract farming (Musara et al.,2018, Mmbando et al., 2016). The positive effect of DSTC implies that farmers are more likely to participate in contract farming when they actively seek and explore potential opportunities. Moreover farmers are likely to become aware of the benefits associated with contract farming, such as improved access to inputs like fertilizers and herbicides and extension support as result of searching for more information relating to contract farming. Consequently, they may possibly engage in contract farming with a better understanding of the opportunities it offers.

The results further show that, though the disaggregated DTC constructs had positive or negative effect on farmers' participation in contract farming (DSTC (-ve); TDNTC (-ve); and TDETC (+ve), the effect of specific indicators in each construct are not uniform. For example, even though total downward search transaction cost (TDSTC) had positive effect on farmers' participation in contract farming, two items DSTC3 (cost to know contract opportunities and terms) and DSTC 4 (visiting frequency to the investor to qualify for entering in a farming contract) out of four DSTC had negative effect on farmers' participation in contract farming. This entails that as these two transaction cost elements increase, the likelihood of farmers' participation in contract farming decreases.

On the other hand, two DSTC items DSTC1 (contract length) and DSTC2 (time used to know the contract terms) had positive effect on farmers' participation in contract farming. These results imply that shorter contracts and limited time used to understand the contract terms, increases the likelihood of farmers' participation in contract farming. These findings are consistent with the study conducted by Arouna et al. (2021), which argues that the simplicity or complexity of contracts does not significantly affect farmers' participation in contract farming.

Similarly, even though downward negotiation transaction costs (DNTC) exhibit a negative influence on farmer participation in contract farming, individual indicators within this construct reveal different effects. For instance, DNTC2 (contract negotiation frustration) and DNTC3 (time required to understand contract terms) have adverse impact on farmers' participation in contract farming. This finding is aligned with other previous research which indicate that transaction costs associated with contract negotiation discourage farmers from committing to contract farming arrangements (Chazovachii et al., 2021; Arouna et al., 2021). The negative influence of DNTC2 indicates that when farmers experience frustration during the contract negotiation process, it deters them from engaging in contract farming. Similarly, the negative effect of DNTC3 suggests that when farmers require a significant amount of time to comprehend contract terms, their inclination to participate in contract farming diminishes.

Conversely, DNTC1 (contract terms rigidity) and DNTC4 (legal document with terms and conditions that are difficult to comprehend), have a positive influence on farmer participation. The positive influence of DNTC1 and DNTC4 on farmers' participation

in contract farming is in line with other scholars who argue that appropriate contract complexities are critical to achieving satisfaction among contracting parties (Man et al., 2017; Shelanski & Klein, 1995). This unexpected positive outcome contrary of direct relationship between transaction cost and farmers' participation in contract farming suggests that certain aspects of negotiation transaction costs can encourage farmers to participate in contract farming. This may also possibly suggest that, the rigidity of contract terms (DNTC1) and the complexity of legal documents (DNTC4) may be perceived by farmers as providing a sense of security, clarity, or formality within the contract arrangement. Consequently, farmers are more likely to engage in contract farming, despite the associated negotiation costs.

Moreover, DETC2 (reputation of not complying with contract terms) and DETC3 (time spent on contract monitoring), had a positive influence on farmer participation. This finding aligns with the research conducted by Ngaruko (2022), which also observed unconventional result and concluded that contract policing and enforcement costs are inevitable for effective contract performance. The unexpected positive effect of DETC2 suggests that a reputation of non-compliance with contract terms has a marginal influence on their decision to participate in contract farming. Similarly, the positive effect of DETC3 suggests that increased monitoring of contract terms by farmers positively influences their participation in contract farming. This indicates that higher levels of monitoring activities is likely to enhance farmers' confidence in the contractual relationship, leading to increased motivation to participate.

On the other hand, both DETC1 (delays in receiving the agreed services) and DETC4 (fear of legal reprisal for non-compliance with production techniques) exhibited a

negative relationship with farmer participation in contract farming. This finding aligns with the conclusion of Kozhaya's study (2020), which found that delays in receiving agreed services have a significant negative impact on farmers' participation in contract farming. The implications of this finding is that, when farmers experience delays in receiving the services outlined in the contract or have concerns about potential legal consequences for not adhering to specific production techniques, their willingness to participate in contract farming is likely to decrease. These factors are likely to act as barriers, undermining farmers' confidence and motivation to engage in contractual arrangements.

7.4 Effect of Upward Transaction Cost on Farmer's PCF

The findings show that, total upward search transaction cost (TDSTC) has a significant negative relationship with farmers' engagement in contract farming while total upward negotiation transaction cost (TUNTC) and total upward enforcement transaction cost (TUETC) exhibit a positive impact on farmers' engagement in contract farming. The negative relationship between TUSTC and farmers' participation indicates that higher search transaction costs in the upward node of the tea value chain hinder farmers' willingness to engage in contract farming. This finding is in line with theoretical expectation and results from other previous researches, indicating that information search transaction cost negatively affect farmers' participation in contract farming (Rondhi., 2021; Ngaruko & Lyanga, and 2021, Ismail et al. 2015). This finding imply that increased upward search transaction costs may involve efforts, time, or expenses associated with finding suitable contract partners or gathering necessary information, creating barriers that discourage farmers' participation in contract farming.

On the other hand, TUNTC and TUETC positive impact on farmers' participation in contract farming suggests that negotiation and enforcement costs in the upward value chain node may be perceived by farmers to have limited impact to their participation in contract farming. This finding is aligned with a study by Ngaruko (2022), which also unexpectedly shown a positive significant relationship between policing and enforcement transaction cost and rural family owned business performance. This entails that a reasonable level of enforcement transaction costs is necessary for the contract farming to be attractive to farmers. This is because farmers obtain a reasonable assurance to obtain the expected benefits associated with their participation in contract farming.

On disaggregated variables, USTC2 (visits to the buyer or investor to determine the net amount payable) and USTC4 (time spent waiting for payment status from the buyer), have a negative effect on farmers' participation in contract farming. The negative effect of USTC2 and farmers' participation in contract farming suggest frequent visits to obtain information about the payment amount negatively impact farmers' participation in contract farming. This indicates that the time and effort spent on such visits act as a barrier, potentially discouraging farmers from actively engaging in contract farming. Similarly, the negative effect of USTC4 and farmers' participation in contract farming highlights that delays in receiving the green-leaf tea payment status information also negatively influence farmers' participation. This finding aligns with previous studies such as by Ewusi Koomson et al.(2022) Tuyen et al.(2021) and Kozhaya (2020) that also identified payment delays as a significant negative factor affecting farmers' participation in contract farming. These findings imply that lengthy

waiting periods can create uncertainties, which may decrease farmers' willingness to participate in contract farming.

Further analysis reveals that USTC1 (efforts to determine net harvesting and collection dates) and USTC3 (costs associated with obtaining information on the net amount payable) have a positive relationship with farmers' participation in contract farming. This finding is contrary to the theoretical expectation and other previous studies on the same topic, which indicate that higher search transaction costs negatively influence farmers' participation in contract farming (Chazovachii et al., 2021; Ruml & Qaim, 2020; Maina, 2015). The positive relationship between USTC1 and farmers' participation in contract farming suggests that when farmers invest more effort in understanding and planning for the timing of harvesting and collection, it positively influences their willingness to engage in contract farming. This possibly inform that farmers who proactively manage and coordinate these aspects are more likely to participate in contract farming arrangements.

Similarly, the positive relationship between USTC3 and farmers' participation implies that when farmers incur costs to gather accurate information about the net payment amount, it enhances their commitment to contract farming. This suggests that farmers who are willing to invest in obtaining price information are more likely to participate in contract farming because of their enhanced understanding of the same.

Besides, UNTC2 (frustration with re-negotiation price) and UNTC4 (frustration in agreeing on the net amount to be paid on the acceptable quality supplied) demonstrate a negative relationship with farmers' participation in contract farming. This finding is in line with theoretical expectations and other scholars who indicate that negotiation

of relevant negotiation transaction cost negatively influence farmers' participation in contract farming Ngaruko & Lyanga, 2021; Msami & Ngaruko, 2014).

The negative relationship between UNTC2 and farmers' participation suggests that when farmers experience frustration during the process of re-negotiating prices within the contract, it discourages their engagement in contract farming. This possibly indicates that difficulties or conflicts arising from price re-negotiation can act as barriers, deterring farmers from actively participating in contract farming arrangements.

Similarly, the negative relationship between UNTC4 and farmers' participation highlights that challenges related to reaching agreement on the net payment amount for green-leaf tea sales can hinder farmers' willingness to participate. This suggests that frustrations arising from these negotiations may create obstacles, potentially discouraging farmers from fully engaging in contract farming.

In contrast, UNTC1 (price renegotiation in case of market price changes) and UNTC3 (time spent understanding the revised price-setting mechanism) exhibit a positive relationship with farmers' participation in contract farming. This finding is not aligned with theoretical expectations and other previous studies which indicate that price uncertainty negatively affects farmers' participation in contract farming (Kozhaya, 2020; Anavrat et al., 2017). The positive relationship between UNTC1 and UNTC3 with farmers' participation in contract farming indicates that these factors positively influence farmers' engagement in contract farming. This finding suggests that when farmers have the flexibility to renegotiate prices in response to market changes and

when they are provided sufficient time and understanding of the revised price setting mechanism, their likelihood of participation in contract farming increases.

Moreover, UETC1 (delays in payments) and UETC3 (green-leaf tea inspection time) have a negative effect on farmers' participation in contract farming. This is in line with the theoretical expectations and other previous studies, which indicated that delayed payments and other processes negatively affect farmers' participation in contract farming. These findings underscore the importance of efficient payment processes and timely product inspections in promoting farmers' participation in contract farming.

The negative effect of UETC1 on farmers' participation in contract farming indicates that when smallholder tea farmers experience delays in receiving payments for their green-leaf tea, it hinders their willingness to engage in contract farming. Delays in payments can create financial uncertainties and constraints for farmers, which in turn discourages their active participation (Ewusi Koomson et al., 2022; Kozhaya, 2020).

The negative effect of UETC3 suggests that when there are lengthy delays in the inspection process for green-leaf tea, it negatively impacts farmers' participation in contract farming. Prolonged inspection times can lead to delays in product delivery, affecting farmers' ability to meet contractual obligations and potentially leading to financial losses bearing in mind the fragility of tea. This finding is aligned with other previous studies like Tuyen et al. (2021) and Kozhaya (2020) who concluded that delayed services during contract implementation negatively affect farmer's participation in contract farming.

Conversely, UETC2 (loss due to quality-based product rejection) and UETC4 (side-selling penalty) had positive effect on farmers' participation in contract farming . This finding is in line with a study by Ngaruko (2022) who concluded that a certain level of contract policing and contract enforcement transaction costs are necessary for effective contracts.

The positive effect of UETC2 on farmers' participation in contract farming suggests that when farmers face potential losses resulting from the rejection of their green-leaf tea due to quality issues, it likely influence farmers' participation in contract farming. This suggests that farmers value the many benefits of quality control practises used in contract farming agreements and are prepared to participate in order to prevent losses related to green-leaf tea that is rejected due to quality.

Similarly, the positive effect of UETC4 on farmers' participation in contract farming indicates that when farmers face penalties or consequences for engaging in side-selling activities (selling green-leaf tea of the contracted agreement), it positively influences their participation in contract farming. This suggests that the existence of penalties acts as a deterrent against side-selling and encourages farmers to actively participate in contract farming.

7.5 Effect of Farmer Quality Intervening Variable on Cost on Farmer's PCF

The study findings show that the aggregated farmer quality has a positive effect on farmers' participation in contract farming, although this effect is not statistically significant at a significance level of P=0.05. On the other hand, total downward transaction cost (TDTC) exhibits a significant negative effect on farmers' participation, while, total upward transaction cost (TUTC) demonstrates a significant positive effect

on farmers' participation in contract farming. Besides, further analysis on disaggregated farmer quality intervening variables and transaction cost variables on farmers' participation in contract farming indicated that the impact of farmer quality on transaction cost effect is minimal.

This finding suggests that variations in farmer quality attributes have limited effect on how transaction costs affect farmers' decisions to engage in contract farming. This deviates from other studies like those undertaken by Loquias et al., 2021; Hoang & Nguyen, 2023; and Nazifi & Ibrahim, 2021), which posits that some farmer quality attributes like contract farming experience and overall farming experience significantly positively or negatively effect on farmers' participation, yet did not show if the same variables can have effect on transaction costs variables in influencing farmers' participation in contract farming. Therefore, the results from this study possibly suggest that most of the transaction cost indicators retain their significance when considered alongside farmer quality variables, suggesting their robust and reliable relationship with farmers' decision to participate in contract farming.

7.6 Hypothesis Summary

This section offers a reflection on the four hypotheses that were tested in this study, corresponding to objectives one through four, as discussed below.

Hypothesis 1: The alternative hypothesis is considered for the first objective. The alternative hypothesis posits that there is a significant variation in transaction costs in relation to farmers' participation in contract farming across different nodes within the tea value chain in Tanzania. This implies that contract farming arrangements presents differential transactional dynamics across the upward and downward nodes of the tea

value chain. Moreover, it is likely that the disparity in transaction costs contribute to variations in efficiency, profitability, and overall performance within the tea value chain in Tanzania.

Hypothesis 2: The alternative hypothesis is considered for the second objective, which indicate that, downward transaction costs have negative significant effect on farmers' participation in contract farming in the tea subsector in Tanzania. This implies that higher transaction costs in downward stream of the tea value chain may act as barriers to farmers' participation in contract farming. These downward transaction costs encompass search costs associated with identifying contract opportunities and terms, visiting frequency to the investor, contract negotiation costs like frustrations and time required to comprehend contract terms, and contract enforcement or policing costs comprising delays in receiving agreed services and concerns over potential legal consequences due to non-compliance with the agreed tea production techniques and practices.

Comprehending this relationship and specific transaction costs herein holds paramount importance for policymakers and the tea industry stakeholders as they endeavour to identify effective strategies that mitigate transaction costs and foster higher farmers' participation in contract farming. Moreover, by addressing these costs, the tea subsector stands to gain improved efficiency, profitability, and overall development in terms of production and productivity.

Hypothesis 3: The alternative hypothesis is considered for the third objective, which suggests that, upward transaction costs have a positive significant effect on farmers' participation in contract farming in the tea subsector in Tanzania. According to this

result, farmers are more likely to engage in contract farming as a result of higher upward transaction costs, which include search costs related to calculating the net amount payable, negotiation costs for price adjustments due to market changes, and enforcement costs like losses from product rejections and fines for side-selling. Since they believe the prospective advantages outweigh the accompanying costs, these costs encourage farmers to establish contractual arrangements.

Hypothesis 4: The null hypothesis, which states that, there is no influence of farmer quality intervening variables on farmers' participation in contract farming in the tea subsector in Tanzania is supported. This implies that the he farmer quality intervening variables like knowledge on various tea value chain aspects and contract farming experience does not significantly affect transaction costs determinants across the tea value chain nodes and do not play a decisive role in determining farmers' participation in contract farming.

CHAPTER EIGHT

CONCLUSION AND RECOMMENDATIONS

8.1 Chapter Overview

This chapter provides a summary of conclusions and recommendations from the study on transaction cost determinants of farmers' participation in contract farming in Tanzania, case of the tea subsector. The chapter is divided into two subsections, with the first focusing on the conclusions drawn from the study objectives, and the second offering recommendations based on the findings.

8.2 Conclusion

From the study findings it can be concluded that, there is significant difference in transaction costs across different nodes of the tea value chain in Tanzania. Downward transaction costs are found higher than upward transaction costs. The difference is statistically significant at 5 percent precision level. Likewise, downward transaction costs negatively affect farmers' participation in contract farming at a 5 percent precision level, while upward transaction costs have a positive effect at the same precision level (5%). In contrast, farmer quality intervening variables does not significantly influence transaction costs or farmers' participation in contract farming at the 5 percent precision level. The subsequent subsections provide a summary of specific findings for each of the four study objectives.

8.2.1 Clusters of Transaction Costs Across Tea Value Chain Nodes

The study findings reveal significant variations in transaction costs across different nodes of the tea value chain in Tanzania. Smallholder tea farmers perceive higher downward transaction costs (DTC) compared to upward transaction costs (UTC). Furthermore, farmers perceive higher upward negotiation transaction costs (UNTC) and upward enforcement transaction costs (UETC) compared to upward transaction costs (USTC). These findings support the alternative hypothesis, indicating significant variations in transaction costs across different nodes within the tea value chain in Tanzania in relation to farmers' participation in contract farming. This suggests that contract farming arrangements exhibit distinct transactional dynamics in the upward and downward nodes of the value chain. The disparities in transaction costs are likely to contribute to variations in efficiency, profitability, and overall performance within the tea value chain in Tanzania.

8.2.2 Effect of Downward Transaction Cost on Farmer’s PCF

The research findings support the alternative hypothesis, indicating that downward transaction costs have a significant negative effect on farmers' engagement in contract farming in the tea subsector in Tanzania. This implies that higher transaction costs in the downward stream of the tea value chain act as barriers to farmers' engagement in contract farming. However, diving into specific downward transaction costs constructs, the findings showed that DNTC and DETC costs negatively affected farmers' participation in contract farming, with DNTC being statistically significant while DETC was not statistically significant at 5 percent precision level. Besides, DSTC had a positive impact, although DETC not statistically significant at P=0.05.

Moreover, examining specific indicators within these cost categories revealed varying effects. Factors such as cost to know contract opportunities and terms (DSTC3), (visiting frequency to the investor to qualify for entering in a farming contract) (DSTC 4), contract negotiation frustration (DNTC2) and the time required to understand contract terms (DNTC3), delays in receiving the agreed services (DETC1) and fear of legal reprisal for non-compliance with production techniques(DETC4) were found to discourage participation because of their negative relationship with farmer participation in contract farming.

Besides, contract length (DSTC1), time used to know the contract terms (DSTC2), rigid contract terms (DNTC1) and complex legal documents (DNTC4) had a positive influence. Reputation loss due to non-compliance (DETC2) and increased contract monitoring (DETC3) also positively influenced participation. These findings highlight the importance of addressing specific transaction cost elements to enhance farmers' willingness to engage in contract farming.

8.2.3 Effect of Upward Transaction Cost on Farmer's PCF

The key findings support the alternative hypothesis, indicating a positive significant effect of upward transaction costs on farmers' participation in contract farming in the tea subsector in Tanzania. This entails that farmers perceive the potential benefits of contract farming to outweigh the associated to transaction costs, leading to their willingness to participate in contract farming.

Nevertheless, delving into specific upward transaction costs constructs, the findings showed that USTC negatively affect farmer's participation in contract farming, but not statistically significant at P=0.05. The negative relationship between USTC and

participation highlights the barriers created by higher search costs in the upward value chain node. On the other hand, UNTC and UETC costs positively affected farmers' participation in contract farming, with UNTC being statistically significant while DUETC was not statistically significant at 5 percent precision level. Besides, DSTC had a positive impact, although DETC not statistically significant at P=0.05.

Relatedly, certain factors within USTC, UNTC, and UETC positively impact participation, such as efforts to determine harvesting and payment dates, price renegotiation mechanisms, and penalties for side-selling.

Besides, visits to the buyer or investor to determine the net amount payable (USTC2), time spent waiting for payment status from the buyer (USTC4), frustration with re-negotiation price (UNTC2), frustration in agreeing on the net amount to be paid on the acceptable quality supplied (UNTC4), delays in payments (UETC1) and green-leaf tea inspection time (UETC3) negatively affect farmer’s participation in contract farming. However, efforts to determine net harvesting and collection dates (USTC1), costs associated with obtaining information on the net amount payable (USTC3), price renegotiation in case of market price changes (UNTC1), time spent understanding the revised price setting mechanism, (UNTC3), loss due to quality-based product rejection (UETC2), and side-selling penalty (UETC4) positively affect farmers’ participation in contract farming.

8.2.4 Effect of Farmer Quality Intervening Variable on Farmer’s PCF

The findings support the null hypothesis, indicating that farmer quality intervening variables do not have a significant influence on transaction cost determinants and farmers' participation in contract farming in the tea subsector in Tanzania. Factors such

as knowledge of tea value chain aspects and contract farming experience do not play a decisive role in determining participation or affecting transaction costs across different nodes of the tea value chain.

Furthermore, the analysis of disaggregated variables indicates that farmer quality has limited influence on the relationship between transaction costs and famer's participation in contract farming. Most of the transaction cost indicators, 23 out of 24 indicators maintain their sign of effect and significance, highlighting their consistent impact on participation outcomes. These findings further emphasize the importance of managing transaction costs and considering their impact on farmers' decision-making in contract farming.

8.3 Recommendations

To effectively reduce transaction costs and enhance farmers' participation in contract farming, a comprehensive approach is needed. This involves capacity-building initiatives to the farmers participation in contract farming with a lens of reducing transaction costs, simplification of contract terms, establishment of robust contract enforcement mechanisms, and targeted interventions. The specific recommendations derived from this study, pertaining to transaction cost theory, practice, and policy, are summarized in the following subsections.

8.3.1 Transaction Cost Theoretical Recommendations

In order to facilitate a comprehensive understanding of the complex relationship between transaction costs and farmers' participation in contract farming, it is essential to adopt a nuanced and two-dimensional classification of transaction costs, precisely downward and upward transaction costs. Unlike previous studies that generalized

transaction costs into broad categories, specifically information search, negotiation, and contract enforcement costs, in line with Coase (1937), a more refined approach of classifying transaction cost into downward and upward transaction costs is recommended. This entails a thorough analysis of transaction costs within the context of the value chain, specifically focusing on both downward and upward transaction costs in relation to a cash crop value chain such as tea. This involves a detailed examination of transaction costs within the specific context of the value chain, considering both downward and upward transactions costs in line with a typical cash crop value chain like tea.

By looking into the unique dynamics of downward and upward transaction costs while implementing contract farming, a more accurate depiction of the transaction cost determinants that shape farmers' participation in contract farming can be achieved. Downward transactions costs encompass costs associated with various activities related with contract farming in downward node of the value chain, which mainly include activities related to production and overall farm and crop management. On the other hand, upward transactions involve activities initiated by the farmers, such as searching for contract opportunities, understanding contract terms, and engaging in negotiations.

By focusing on the distinct transaction cost elements within the downward and upward continuum of a traditional cash crop like tea, a deeper understanding of the critical factors that influence farmers' decision to participate in contract farming can be obtained. This refined approach enables the identification of specific transaction costs that serve as barriers or incentives for farmers to engage in contract farming

arrangements. It recognizes the inherent complexities and nuances within the value chain and sheds light on the transaction cost dynamics that impact farmers' participation.

Adopting this two-dimensional classification of transaction costs provides a more comprehensive framework for studying and managing transaction cost challenges in contract farming. It highlights the need to address specific transaction cost elements within both downward and upward nodes of the value chain to effectively reduce transaction costs and facilitate increased farmers' participation in contract farming.

8.3.2 Contract Farming Practical Recommendation

Based on the study findings, the following recommendations are proposed to reduce specific transaction costs across the tea value chain. Reduction of transaction cost will contribute to enhancing farmers' participation in contract farming practices.

8.3.2.1 Enhance Transaction Costs Awareness Across Value Chain Nodes

Contract farming stakeholders like tea processors, government and development partners/programmes should consider adopting a nuanced and two-dimensional classification of transaction costs, specifically focusing on downward and upward transaction costs. This will enhance their understanding of the transaction cost dynamics and critical factors influencing farmers' participation in contract farming.

Moreover, recognising the unique challenges and opportunities within the downward and upward nodes of the value chain, tailored interventions and strategies should be designed to address specific transaction cost elements in each context, such as those related to production and farm management in the downward node, and contract terms

related to crops harvesting, aggregation and sales in the upward node. Specific identified transaction cost that negatively affect farmers' participation in downward node are time used to understand contract terms, services deliver waiting time, cost to know contract opportunities and terms visiting frequency to the investor to qualify for contract farming, contract terms clarity, while in the upward value chain node, include price re-negotiation frustration, green-leaf quality determination and payment delays.

It is also recommended to undertake specific interventions, training, and coaching on specific transaction dynamics across the value chain nodes. These will contribute to farmers' enhanced capacity on, information search, negotiation, contract farming enforcement and management skills, as such contribute to the improved likelihood of farmers' participation in contract farming. Moreover, stakeholders involved in contract farming process like tea processors or investors are encouraged to streamline the contract farming process through improved information sharing process, simplified contracts, negotiation processes, and abiding to the agreed contract terms.

8.3.2.2 Support Infrastructure Development to Reduce Transaction Cost

To reduce the identified transaction costs such as those related to information and contracts clarity, and time , infrastructure development investments in aspects, such as enhancing information and communication technologies like information sharing platforms are likely to minimise the costs associated with searching for contract opportunities and accessing markets, ultimately facilitating farmers' participation in contract farming.

8.3.2.3 Strengthen Contract Monitoring Mechanisms

Stakeholders involved in contract farming should implement effective contract monitoring mechanisms to ensure compliance with agreed-upon terms and prevent non-compliance. This will enhance trust between farmers and buyers or investors, as such contributing to likelihood of farmers' participation in contract farming.

8.3.3 Policy Recommendation

Policy interventions should prioritise the reduction of transaction costs in contract farming within the tea subsector by adapting the devised two-dimensional classification of transaction costs, specifically focusing on downward and upward transaction costs. The policy interventions should prioritise on reduction of downward transaction costs, as per the study results it significantly negatively influence farmers' participation in contract farming. Moreover, the identified transaction cost determinants in the upward node that negatively affects farmers' participation in contract farming may be dealt with to maximize the likelihood of farmers' participation in contract farming.

Similarly, simplifying contract terms, giving clear and accessible information on contract opportunities, and putting support systems in place for farmers are all ways to lower transaction costs in contract farming. Moreover, to build a supportive policy environment that encourages contract farming and resolves transaction costs along the value chain, cooperation between government agencies (such as TBT and TRIT) and stakeholders is essential. Furthermore, putting in place regulatory frameworks to manage transaction costs, implementing capacity-building programmes, and fostering partnerships between farmers and tea processors/investors.

8.3.4 Recommendations for Further Studies

This study investigated the transaction cost determinants of farmers' participation in contract farming within the tea subsector in Tanzania. Future research could further explore transaction cost determinants among various actors involved in contract farming, including investors/processors in the tea subsector, as well as in other conventional cash crops such as coffee, cashew nuts, cotton, sugarcane, and tobacco.

Moreover, further research could focus on investigating the factors underlying the variations in transaction costs across different nodes of the value chain. This would contribute to a deeper theoretical and practical understanding of transaction costs and their impact on farmers' participation in contract farming.

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APPENDIX 1: DATA COLLECTION TOOL

QUESTIONNAIRE

INRODUCTION AND CONSET

Greetings! My name is_____ on behalf of Finias Filbert Dogeje, who is a Doctor of Philosophy student from the Open University of Tanzania (OUT). Finias now invites you to participate freely in the *"Transaction Cost Determinants of Famers' Participation in Contract Farming in Tanzania" study.* The respondents targeted by this study are tea farmers, both involved and those not involved in tea production. You have been selected as a respondent because you fall in one of these categories, and we believe you have valuable information necessary for successfully completing this study.

Moreover, although your participation is crucial; still, you are free not to participate, and you may even withdraw your participation at any time without any negative consequence. Although some personal information has been captured, the same will not be divulged. Instead will be used to generalise the results related to this PhD research. The survey will take about 60 minutes, and your participation in this study is voluntary. Are you willing to continue with the interview? Yes/No. Should you have any questions, concerns or require any clarification, please do not hesitate to contact the Researcher (Finias Filbert Dogeje) through the following contacts: Mobile: +255 712 799 486; Email: finias.dogeje@gmail.com

Date:	_____	Village:	_____
Region:	_____	Interviewee ID Name:	_____
District:	_____	Interviewer Name:	_____
Ward:	_____	GPS Coordinates:	_____

MODULE A: FARMERS PROFILE (*To be filled for all respondents*)			
Instructions: Kindly complete the following information related to your profile			
SN	**Statement**	**Response**	
A1	Respondent's sex	Male	Female
		1	0
A2	How old are you? (*age at last birthday*) (*probe for the number of years possessed by a respondent*)		
A3	What is your education level?	Completed primary school	Did not complete primary school
		1	0
A4	How many people live in your household? (*probe to get the actual number of HH members*)		
A5	How many acres did you plant tea till the last production season (2022)		
A6	How much tea in Kilograms (Kgs) did you produce in the last production season (2022)?		
A7	How much in Tanzania Shillings did you earn in the last production season (2022)?		
A8	Were you engaged in tea production through contract farming in the last production season (2022)	Produced under contract farming	Didn't Produce under contract farming
		1	0

Instruction on Module B, C and D: With all the constructs and sub constructs below, please select the appropriate corresponding number in the columns, which BEST matches your perception/understanding of aspects related to tea production downward and upward transaction costs related to farmers' engagement in contract farming. The selection scale is as follows:

{(1 = Strong disagree; 2= Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree)}

SN	**Statement**	**Response**				
		Strongly disagree	**Disagree**	**Somewhat Agree**	**Agree**	**Strongly agree**
MODULE B: FARMER QUALITY						
FQ1	What is your perception with the below statement regarding contract farming experience	1	2	3	4	5

SN	Statement	Response				
		Strongly disagree	Disagree	Somewhat Agree	Agree	Strongly agree
	"I have enough experience to engage in contract farming"					
FQ2	What is your perception with the below statement regarding tea value chain knowledge" "I have enough knowledgeable about various aspects of the tea value chain"	1	2	3	4	5
FQ3	What is your perception with the below statement regarding land access "I easily access land for tea production"	1	2	3	4	5
FQ4	What is your perception with the below statement regarding farming equipment access "I can easily access farming equipment necessary to engaged in tea production"	1	2	3	4	5
MODULE C: DOWNWARD TRANSACTION COSTS						
Downward Contract Information Search Costs						
DSTC1	The contract is too long to be read in short time	1	2	3	4	5
DSTC2	I spend more than a week to understand the contract terms	1	2	3	4	5
DSTC3	It takes own costly efforts to know the available contract farming opportunities and their terms	1	2	3	4	5
DSTC4	I frequently visit the investor to qualify for entering in a farming contract	1	2	3	4	5
Downward Contract Negotiation Costs						
DNTC1	I am required to sign the farming contract terms the way they are drafted by the investor	1	2	3	4	5
DNTC2	Long discussions with the investor are held before entering the farming contract are frustrating	1	2	3	4	5
DNTC3	I have to spent much time to learn and consult to understand the contract terms before signing it	1	2	3	4	5
DNTC4	I am given a legal document with terms and conditions I could not comprehend well	1	2	3	4	5
Downward Contract Enforcement Costs						
DETC1	Too much time is used to wait to receive the required agreed services	1	2	3	4	5
DETC2	My reputation will significantly tarnish if I don't comply with the contract	1	2	3	4	5
DETC3	Extra personal time is used to in regular contract monitoring by the investor	1	2	3	4	5
DETC4	Stringent legal reprisal taken in case of not complying with crop management scares me	1	2	3	4	5
MODULE D: UPWARD TRANSACTION COSTS						
Upward Contract Information Search Costs						

SN	Statement	Response				
		Strongly disagree	Disagree	Somewhat Agree	Agree	Strongly agree
USTC1	The own costly efforts to know net harvesting and collection date is frustrating	1	2	3	4	5
USTC2	I have to frequently visit the investor to know net amount payable to me after deducting prepaid-costs	1	2	3	4	5
USTC3	It takes own costly efforts to know net amount payable to me after deducting investor's prepaid-costs	1	2	3	4	5
USTC4	I have to stay for at least 4 hours at the investors premises when following up for payments status	1	2	3	4	5
Upward Contract Negotiation Costs						
UNTC1	I am required to agree to the revised price suggested by the investor irrespective of magnitude of market price changes	1	2	3	4	5
UNTC2	Long discussions with investors before agreeing on the revised prices based on the market status are frustrating	1	2	3	4	5
UNTC3	I have to spent much time to learn and consult to understand the revised price setting mechanism before I agree	1	2	3	4	5
UNTC4	The time used to compute the net amount received from the quantity sold against the pre-financing service received is frustrating	1	2	3	4	5
Upward Contract Enforcement Costs						
UETC1	I am supposed to wait for about 60 days before I am paid	1	2	3	4	5
UETC2	I am likely to lose 100% of the revenue for production quantities rejected based on quality	1	2	3	4	5
UETC3	I have to wait for too long about 6 hours before produce quality is confirmed	1	2	3	4	5
UETC4	Stringent legal reprisal taken in case side-selling scares me	1	2	3	4	5

=THANK YOU=

APPENDIX 2: SELECTED DATA SETS

Table 3.A1: Convergent and Discriminant Validity Test Results

Rotated Component Matrix[a]

	Component						
Construct	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Details	**DSTC**	**DNTC**	**DETC**	**USTC**	**UNTC**	**UETC**	**FQ**
1: Downward Search Transaction Cost							
DSTC1	0.834						
DSTC2	0.861						
DSTC3	0.865						
DSTC4	0.877						
2: Downward Negotiation Transaction Cost							
DNTC1		0.834					
DNTC2		0.853					
DNTC3		0.872					
DNTC4		0.838					
3: Downward Enforcement Transaction Cost							
DETC1			0.746				
DETC2			0.838				
DETC3			0.838				
DETC4			0.816				
4: Upward Search Transaction Cost							
USTC1				0.753			
USTC2				0.826			
USTC3				0.751			
USTC4				0.798			
5: Upward Negotiation Transaction Cost							
UNTC1					0.873		
UNTC2					0.917		
UNTC3					0.895		
UNTC4					0.914		
6: Upward Enforcement Transaction Cost							
UETC1						0.848	
UETC2						0.887	
UETC3						0.906	
UETC4						0.849	
7: Farmer Quality							
							0.884
							0.882
							0.849
							0.823

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Source: Research Data, 2023

Table 4.A1: Respondents Age by Districts and Sex

Sex	Age Category	Description	District			Total (n=363)
			Rungwe (n=124)	Busokelo (n=131)	Njombe DC (n=138)	
Female	Youth	Count	11	17	6	34
		% within age Category	32.4%	50.0%	17.6%	100.0%
		% within district	26.2%	29.8%	8.7%	20.2%
	Adults	Count	31	40	63	134
		% within age Category	23.1%	29.9%	47.0%	100.0%
		% within district	73.8%	70.2%	91.3%	79.8%
	Sub total	Count	42	57	69	168
		% within age Category	25.0%	33.9%	41.1%	100.0%
		% within district	100.0%	100.0%	100.0%	100.0%
Male	Youth	Count	7	9	6	22
		% within age Category	31.8%	40.9%	27.3%	100.0%
		% within district	8.5%	12.2%	8.7%	9.8%
	Adults	Count	75	65	63	203
		% within age Category	36.9%	32.0%	31.0%	100.0%
		% within district	91.5%	87.8%	91.3%	90.20%
	Sub total	Count	82	74	69	225
		% within age Category	36.4%	32.9%	30.7%	100.0%
		% within district	100.0%	100.0%	100.0%	100.0%
Total	Youth	Count	18	26	12	56
		% within age Category	32.1%	46.4%	21.4%	100.0%
		% within district	14.5%	19.8%	8.7%	14.2%
	Adults	Count	106	105	126	337
		% within age Category	31.5%	31.2%	37.4%	100.0%
		% within district	85.5%	80.2%	91.3%	85.8%
	Total	Count	124	131	138	393
		% within age Category	31.6%	33.3%	35.1%	100.0%
		% within district	100.0%	100.0%	100.0%	100.0%
Minimum age			24	20	27	20
Maximum age			87	78	72	80
Average age (mean)			47	45	49	47

Source: Research Data, 2023

Table 4.A2: Respondents Education Level by Districts and Sex (n=393)

Sex	Description	Description	District			Total
			Rungwe (n=124)	Busokelo (n=131)	Njombe DC (n=138)	(n=363)
			Education level			
Female	Not completed	Count	2	6	8	16
	primary	% within Education	12.5%	37.5%	50.0%	100.0%
	school	% within District	4.8%	10.5%	11.6%	9.5%
	Completed	Count	40	51	61	152
	primary	% within Education	26.3%	33.6%	40.1%	100.0%
	school	% within District	95.2%	89.5%	88.4%	90.5%
	Sub total	Count	42	57	69	168
		% within Education	25.0%	33.9%	41.1%	100.0%
		% within District	100.0%	100.0%	100.00%	100.0%
Male	Not completed	Count	7	12	5	24
	primary	% within Education	29.2%	50.0%	20.8%	100.0%
	school	% within District	8.5%	16.2%	7.2%	10.70%
	Completed	Count	75	62	64	201
	primary	% within Education	37.3%	30.8%	31.8%	100.0%
	school	% within District	91.5%	83.8%	92.8%	89.3%
	Sub total	Count	82	74	69	225
		% within Education	36.4%	32.9%	30.7%	100.0%
		% within District	100.0%	100.00%	100.0%	100.0%
Total	Not completed	Count	9	18	13	40
	primary	% within Education	22.5%	45.0%	32.5%	100.0%
	school	% within District	7.3%	13.7%	9.4%	10.2%
	Completed	Count	115	113	125	353
	primary	% within Education	32.6%	32.0%	35.4%	100.0%
	school	% within District	92.7%	86.3%	90.6%	89.8%
	Total	Count	124	131	138	393
		% within Education	31.6%	33.3%	35.1%	100.0%
		% within District	100.0%	100.0%	100.0%	100.0%

Source: Research Data, 2023

Table 4.A3: Contract Farming Participation by Sex and District

Sex	PCF status	Description	District			Total (n=363)
			Rungwe (n=124)	Busokelo (n=131)	Njombe DC (n=138)	
Female	Not PCF	Count	10	19	37	66
		% within PCF status	15.2%	28.8%	56.1%	100.0%
		% within District	23.8%	33.3%	53.6%	39.3%
	PCF	Count	32	38	32	102
		% within PCF status	31.4%	37.3%	31.4%	100.0%
		% within District	76.2%	66.7%	46.40%	60.7%
	Sub total	Count	42	57	69	168
		% within PCF status	25.0%	33.9%	41.1%	100.0%
		% within District	100.0%	100.00%	100.0%	100.0%
Male	Not PCF	Count	9	11	30	50
		% within PCF status	18.0%	22.0%	60.0%	100.0%
		% within District	11.0%	14.9%	43.5%	22.2%
	PCF	Count	73	63	39	175
		% within PCF status	41.7%	36.0%	22.3%	100.0%
		% within District	89.0%	85.1%	56.5%	77.8%
	Sub total	Count	82	74	69	225
		% within PCF status	36.4%	32.9%	30.7%	100.0%
		% within District	100.0%	100.0%	100.0%	100.0%
Total	Not PCF	Count	19	30	67	116
		% within PCF status	16.4%	25.9%	57.8%	100.0%
		% within District	15.3%	22.9%	48.6%	29.5%
	PCF	Count	105	101	71	277
		% within PCF status	37.9%	36.5%	25.6%	100.0%
		% within District	84.7%	77.1%	51.4%	70.5%
	Total	Count	124	131	138	393
		% within PCF status	31.6%	33.3%	35.1%	100.0%
		% within District	100.0%	100.0%	100.0%	100.0%

Source: Research Data, 2023

Table 5.A1: Respondent's Agreement Level on DNTC Indicators by Sex

DNTC transaction cost perception by sex				
Description	**Average**			**Overall Cost Classification**
	Men (n=225)	**Women (n=168)**	**Overall (n=393)**	
DNTC1	3.77	3.83	3.80	Low
DNTC2	3.90	4.07	3.97	Low
DNTC3	3.96	4.18	4.06	High
DNTC4	4.10	4.18	4.13	High
DNTC weighted average	3.93	4.07	3.99	

Source: Research Data, 2023

Table 5.A2: Respondent's Agreement Level on DNTC Indicators by District

DNTC transaction cost perception by district					
Description	**Average**				**Overall Cost Classification**
	Rungwe (n=124)	**Busokelo (n=131)**	**Njombe DC (n=138)**	**Overall (n=393)**	
DNTC1	3.80	3.65	3.88	3.80	Low
DNTC2	3.97	3.82	4.15	3.97	Low
DNTC3	4.06	3.92	4.25	4.06	High
DNTC4	4.13	4.02	4.3	4.13	High
DNTC weighted average	3.99	3.85	4.15	3.99	

Source: Research Data, 2023

Table 5.A3: Respondent's Agreement Level on DETC Indicators by Sex

DETC transaction cost perception by sex				
Description	**Average**			**Overall Cost Classification**
	Men (n=225)	**Women (n=168)**	**Overall (n=393)**	
DETC1	4.29	4.45	4.36	High
DETC2	4.05	4.36	4.18	High
DETC3	4.01	4.12	4.06	Low
DETC4	3.86	4.03	3.93	Low
DETC weighted average	**4.05**	**4.24**	**4.13**	

Source: Research Data, 2023

Table 5.A4: Respondent's Agreement Level on DETC Indicators by District

DETC transaction cost perception by district					
Description	**Average**				**Overall Cost Classification**
	Rungwe (n=124)	**Busokelo (n=131)**	**Njombe DC (n=138)**	**Overall (n=393)**	
DETC1	4.36	4.1	4.66	4.36	High
DETC2	4.18	3.96	4.47	4.18	High
DETC3	4.06	3.89	4.3	4.06	Low
DETC4	3.93	3.76	4.25	3.93	Low
DETC weighted average	**4.13**	**3.93**	**4.42**	**4.13**	

Source: Research Data, 2023

Table 5.A5: Respondent's Agreement Level on USTC Indicators by Sex

Perception by sex				
Description	**Average**			**Overall Cost Classification**
	Men (n=225)	**Women (n=168)**	**Overall (n=393)**	
USTC1	1.97	1.99	1.98	Low
USTC2	2.19	2.17	2.18	Low
USTC3	2.61	2.6	2.61	High
USTC4	2.17	2.14	2.16	Low
USTC weighted average	**2.24**	**2.23**	**2.23**	

Source: Research Data, 2023

Table 5.A6: Respondent's Agreement Level on USTC Indicators by District

Perception by district					
Description	**Average**				**Overall Cost Classification**
	Rungwe (n=124)	**Busokelo (n=131)**	**Njombe DC (n=138)**	**Overall (n=393)**	
USTC1	1.98	2.02	1.89	1.98	Low
USTC2	2.18	2.11	2.22	2.18	Low
USTC3	2.61	2.60	2.63	2.61	High
USTC4	2.16	2.07	2.19	2.16	Low
USTC weighted average	**2.23**	**2.20**	**2.23**	**2.23**	

Source: Research Data, 2023

Table 5.A7: Respondent's Agreement Level on UNTC Indicators by Sex

UNTC transaction cost perception by sex				
Description	**Average**			**Cost**
	Men (n=225)	**Women (n=168)**	**Overall (n=393)**	**Classification**
UNTC1	2.34	2.17	2.27	Low
UNTC2	2.88	2.73	2.81	High
UNTC3	2.53	2.35	2.45	Low
UNTC4	2.79	2.69	2.75	High
UNTC weighted average	**2.34**	**2.17**	**2.27**	

Source: Research Data, 2023

Table 5.A8: Respondent's Agreement Level on UNTC Indicators by District

UNTC transaction cost perception by district					
Description	**Average**				**Overall Cost**
	Rungwe (n=124)	**Busokelo (n=131)**	**Njombe DC (n=138)**	**Overall (n=393)**	**Classification**
UNTC1	2.27	2.24	2.31	2.27	Low
UNTC2	2.81	2.79	2.85	2.81	High
UNTC3	2.45	2.44	2.55	2.45	Low
UNTC4	2.75	2.73	2.77	2.75	High
UNTC weighted average	**2.57**	**2.55**	**2.62**	**2.57**	

Source: Research Data, 2023

Table 5.A9: Respondent's Agreement Level on UETC Indicators by Sex

UETC transaction cost perception by sex				
Description	**Average**			**Cost Classification**
	Men (n=225)	**Women (n=168)**	**Overall (n=393)**	
UETC1	3.37	3.63	3.48	High
UETC2	3.01	3.18	3.09	Low
UETC3	3.02	3.21	3.1	Low
UETC4	3.27	3.49	3.36	High
UETC weighted average	**3.17**	**3.38**	**3.26**	

Source: Research Data, 2023

Table 5.A10: Respondent's Agreement Level on UETC Indicators by District

UETC transaction cost perception by district					
Description	**Average**				**Overall Cost Classification**
	Rungwe (n=124)	**Busokelo (n=131)**	**Njombe DC (n=138)**	**Overall (n=393)**	
UETC1	3.48	3.27	3.46	3.48	High
UETC2	3.09	2.95	2.98	3.09	Low
UETC3	3.10	2.93	3.06	3.10	Low
UETC4	3.36	3.1	3.45	3.36	High
UETC weighted average	**3.26**	**3.06**	**3.24**	**3.26**	

Source: Research Data, 2023

Table 5.A11: Respondent's Agreement Level on FQ Indicators by Sex

FQ perception by sex				
Description	**Mean Score**			**Overall FQ Classification**
	Men (n=225)	**Women (n=168)**	**Overall (n=393)**	
FQ1	3.63	3.07	3.66	Low
FQ2	3.90	3.89	3.9	High
FQ3	3.84	4.02	3.92	High
FQ4	3.88	3.96	3.92	High
FQ weighted average	3.81	3.89	3.85	

Source: Research Data, 2023

Table 5.A12: Respondent's Agreement Level on FQ Indicators by District

FQ perception by district					
Description	**Mean Score**				**Overall FQ Classification**
	Rungwe (n=124)	**Busokelo (n=131)**	**Njombe DC (n=138)**	**Overall (n=393)**	
FQ1	3.69	3.36	3.91	3.66	Low
FQ2	3.94	3.55	4.19	3.90	High
FQ3	3.74	3.61	4.37	3.92	High
FQ4	3.78	3.64	4.30	3.92	High
FQ weighted average	3.79	3.54	4.19	3.85	

Source: Research Data, 2023

Table 6.A1: Logistic Regressions Results for Disaggregated TC Indicators

Model Variable (a)	Item	B	S.E.	Wald	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Downward	DSTC1	0.796	0.302	6.942	0.008	2.217	1.226	4.008
Search	DSTC2	0.201	0.301	0.447	0.504	1.223	0.678	2.207
Transaction	DSTC3	-0.104	0.285	0.134	0.715	0.901	0.516	1.575
Cost (DSTC)	DSTC4	-0.382	0.309	1.526	0.217	0.682	0.372	1.251
Downward	DNTC1	0.874	0.302	8.343	0.004	2.396	1.324	4.334
Negotiation	DNTC2	-0.572	0.34	2.827	0.093	0.564	0.29	1.099
Transaction	DNTC3	-1.027	0.345	8.879	0.003	0.358	0.182	0.704
Cost (DNTC)	DNTC4	0.121	0.327	0.137	0.711	1.129	0.594	2.143
Downward	DETC1	-0.618	0.301	4.208	0.040	0.539	0.299	0.973
Enforcement	DETC2	0.099	0.302	0.109	0.742	1.105	0.612	1.995
Transaction	DETC3	0.473	0.333	2.022	0.155	1.605	0.836	3.082
Cost (DETC)	DETC4	-0.46	0.27	2.908	0.088	0.631	0.372	1.071
Upward	USTC1	0.452	0.244	3.423	0.064	1.571	0.974	2.536
Search	USTC2	-0.316	0.27	1.372	0.241	0.729	0.43	1.237
Transaction	USTC3	0.084	0.225	0.139	0.709	1.088	0.699	1.691
Cost (USTC)	USTC4	-0.265	0.265	0.999	0.318	0.767	0.456	1.29
Upward	UNTC1	0.84	0.288	8.491	0.004	2.316	1.316	4.074
Negotiation	UNTC2	-0.031	0.352	0.008	0.931	0.97	0.487	1.932
Transaction	UNTC3	0.137	0.281	0.239	0.625	1.147	0.661	1.991
Cost (UNTC)	UNTC4	-0.094	0.353	0.071	0.79	0.91	0.456	1.817
Upward	UETC1	-0.082	0.252	0.105	0.746	0.922	0.562	1.511
Negotiation	UETC2	0.566	0.274	4.274	0.039	1.76	1.03	3.009
Transaction	UETC3	-0.356	0.301	1.4	0.237	0.701	0.389	1.263
Cost (UETC)	UETC4	0.167	0.255	0.43	0.512	1.182	0.718	1.946
Constant	3.087	1.561	3.913	0.048	21.912			

(a) Variable(s) entered on step 1: DSTC1, DSTC2, DSTC3, DSTC4, DNTC1, DNTC2, DNTC3, DNTC4, DETC1, DETC2, DETC3, DETC4, USTC1, USTC2, USTC3, USTC4, UNTC1, UNTC2, UNTC3, UNTC4, UETC1, UETC2, UETC3, UETC4

(b) Dependent variable: Farmers' PCF; Sig=0.000; Nagelkerke R Square= 0.287; Correct Classification=78.%; Significant at P = 0.000.

Table 6.A2: Logistic Regressions Results for Disaggregated TC and Farmer Quality Indicators

Model Variable (a)	Item	B	S.E.	Wald	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Farmer Quality	CFE	0.545	0.211	6.657	0.01	1.725	1.14	2.611
	TVCK	0.258	0.24	1.154	0.283	1.294	0.808	2.072
	LNA	-0.378	0.289	1.72	0.19	0.685	0.389	1.206
	FEA	-0.14	0.266	0.278	0.598	0.869	0.516	1.464
Downward Search Transaction Cost (DSTC)	DSTC1	0.594	0.347	2.924	0.087	1.811	0.917	3.576
	DSTC2	0.171	0.34	0.253	0.615	1.187	0.609	2.311
	DSTC3	-0.224	0.329	0.465	0.495	0.799	0.419	1.522
	DSTC4	-0.169	0.339	0.247	0.619	0.845	0.434	1.642
Downward Negotiation Transaction Cost (DNTC)	DNTC1	0.893	0.342	6.841	0.009	2.443	1.251	4.771
	DNTC2	-0.727	0.387	3.532	0.06	0.483	0.226	1.032
	DNTC3	-1.15	0.403	8.13	0.004	0.317	0.144	0.698
	DNTC4	0.185	0.37	0.251	0.617	1.204	0.583	2.486
Downward Enforcement Transaction Cost (DETC)	DETC1	-0.946	0.354	7.156	0.007	0.388	0.194	0.776
	DETC2	0.116	0.342	0.114	0.735	1.123	0.574	2.197
	DETC3	0.476	0.365	1.705	0.192	1.61	0.788	3.29
	DETC4	-0.478	0.306	2.446	0.118	0.62	0.341	1.129
Upward Search Transaction Cost (USTC)	USTC1	0.357	0.278	1.644	0.2	1.429	0.828	2.464
	USTC2	-0.326	0.309	1.117	0.291	0.722	0.394	1.322
	USTC3	0.105	0.264	0.159	0.69	1.111	0.662	1.865
	USTC4	-0.228	0.298	0.586	0.444	0.796	0.444	1.427
Upward Negotiation Transaction Cost (UNTC)	UNTC1	0.945	0.328	8.299	0.004	2.572	1.352	4.89
	UNTC2	-0.226	0.408	0.307	0.58	0.798	0.359	1.774
	UNTC3	0.344	0.329	1.097	0.295	1.411	0.741	2.689
	UNTC4	-0.089	0.401	0.049	0.825	0.915	0.417	2.009
Upward Enforcement Transaction Cost (UETC)	UETC1	0.217	0.291	0.556	0.456	1.242	0.702	2.197
	UETC2	0.523	0.309	2.865	0.091	1.687	0.921	3.092
	UETC3	-0.302	0.336	0.811	0.368	0.739	0.383	1.427
	UETC4	0.139	0.294	0.224	0.636	1.149	0.646	2.046
	Constant	2.827	1.664	2.887	0.089	16.903		

(a) Variable(s) entered on step 1: FQ1, FQ2, FQ3, FQ4, DSTC1, DSTC2, DSTC3, DSTC4, DNTC1, DNTC2, DNTC3, DNTC4, DETC1, DETC2, DETC3, DETC4, USTC1, USTC2, USTC3, USTC4, UNTC1, UNTC2, UNTC3, UNTC4, UETC1, UETC2, UETC3, UETC4.

(b) Dependent variable: Farmers' PCF; Sig=0.000; Nagelkerke R Square= 0.341; Correct Classification=79.8%; *Significant at P = 0.05; **Significant at P = 0.1

Source: Research Data, 2023

APPENDIX 3: OUT RESEARCH CLEARANCE LETTERS

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

THE OPEN UNIVERSITY OF TANZANIA

Ref. No OUT/ PG202000309 23rd May, 2023

District Executive Director,
Njombe District Council,
P.O Box 547,
NJOMBE.

Dear Director,

RE: RESEARCH CLEARANCE FOR MR. FINIAS DOGEJE, REG NO: PG202000309

2. The Open University of Tanzania was established by an Act of Parliament No. 17 of 1992, which became operational on the 1stMarch 1993 by public notice No.55 in the official Gazette. The Act was however replaced by the Open University of Tanzania Charter of 2005, which became operational on 1stJanuary 2007.In line with the Charter, the Open University of Tanzania mission is to generate and apply knowledge through research.

3. To facilitate and to simplify research process therefore, the act empowers the Vice Chancellor of the Open University of Tanzania to issue research clearance, on behalf of the Government of Tanzania and Tanzania Commission for Science and Technology, to both its staff and students who are doing research in Tanzania. With this brief background, the purpose of this letter is to introduce to you Mr. Finias Dogeje, Reg. No:

PG202000309) pursuing **PhD.** We here by grant this clearance to conduct a research titled **"Transaction Cost Determinants of Farmers Participation in Contract Farming in Tanzania: Case of Tea Subsector".** He will collect his data at your area from 24th May to 30th November 2023.

4. In case you need any further information, kindly do not hesitate to contact the Deputy Vice Chancellor (Academic) of the Open University of Tanzania, P.O.Box 23409, Dar es Salaam. Tel: 022-2-2668820.We lastly thank you in advance for your assumed cooperation and facilitation of this research academic activity.

Yours sincerely,

THE OPEN UNIVERSITY OF TANZANIA

Prof. Magreth S.Bushesha

For: VICE CHANCELLOR

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

THE OPEN UNIVERSITY OF TANZANIA

Ref. No OUT/ PG202000309 **23rd May, 2023**

District Executive Director,
Rungwe District Council,
P.O Box 148,
MBEYA.

Dear Director,

RE: RESEARCH CLEARANCE FOR MR. FINIAS DOGEJE, REG NO: PG202000309

2. The Open University of Tanzania was established by an Act of Parliament No. 17 of 1992, which became operational on the 1st March 1993 by public notice No.55 in the official Gazette. The Act was however replaced by the Open University of Tanzania Charter of 2005, which became operational on 1st January 2007.In line with the Charter, the Open University of Tanzania mission is to generate and apply knowledge through research.

3. To facilitate and to simplify research process therefore, the act empowers the Vice Chancellor of the Open University of Tanzania to issue research clearance, on behalf of the Government of Tanzania and Tanzania Commission for Science and Technology, to both its staff and students who are doing research in Tanzania. With this brief background, the purpose of this letter is to introduce to you **Mr. Finias Dogeje, Reg. No:**

PG202000309) pursuing **PhD.** We here by grant this clearance to conduct a research titled **"Transaction Cost Determinants of Farmers Participation in Contract Farming in Tanzania: Case of Tea Subsector".** He will collect his data at your area from 24th May to 30th November 2023.

4. In case you need any further information, kindly do not hesitate to contact the Deputy Vice Chancellor (Academic) of the Open University of Tanzania, P.O.Box 23409, Dar es Salaam. Tel: 022-2-2668820.We lastly thank you in advance for your assumed cooperation and facilitation of this research academic activity.

Yours sincerely,

THE OPEN UNIVERSITY OF TANZANIA

Prof. Magreth S.Bushesha

For: VICE CHANCELLOR

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

THE OPEN UNIVERSITY OF TANZANIA

Ref. No OUT/ PG202000309 23rd May, 2023

District Executive Director,
Busokelo District Council,
P.O Box 2,
MBEYA.

Dear Director,

RE: RESEARCH CLEARANCE FOR MR. FINIAS DOGEJE, REG NO: PG202000309

2. The Open University of Tanzania was established by an Act of Parliament No. 17 of 1992, which became operational on the 1st March 1993 by public notice No.55 in the official Gazette. The Act was however replaced by the Open University of Tanzania Charter of 2005, which became operational on 1st January 2007.In line with the Charter, the Open University of Tanzania mission is to generate and apply knowledge through research.

3. To facilitate and to simplify research process therefore, the act empowers the Vice Chancellor of the Open University of Tanzania to issue research clearance, on behalf of the Government of Tanzania and Tanzania Commission for Science and Technology, to both its staff and students who are doing research in Tanzania. With this brief background, the purpose of this letter is to introduce to you Mr. Finias Dogeje, Reg. No:

PG202000309) pursuing **PhD.** We here by grant this clearance to conduct a research titled **"Transaction Cost Determinants of Farmers Participation in Contract Farming in Tanzania: Case of Tea Subsector".** He will collect his data at your area from 24th May to 30th November 2023.

4. In case you need any further information, kindly do not hesitate to contact the Deputy Vice Chancellor (Academic) of the Open University of Tanzania, P.O.Box 23409, Dar es Salaam. Tel: 022-2-2668820.We lastly thank you in advance for your assumed cooperation and facilitation of this research academic activity.

Yours sincerely,

THE OPEN UNIVERSITY OF TANZANIA

Prof. Magreth S.Bushesha

For: VICE CHANCELLOR

APPENDIX 4: STUDY DISTRICTS RESEARCH ACCEPTANCE LETTERS

JAMHURI YA MUUNGANO WA TANZANIA
OFISI YA RAIS
TAWALA ZA MIKOA NA SERIKALI ZA MITAA
HALMASHAURI YA WILAYA YA NJOMBE

Unapojibu tafadhali taja:-

Kumb. Na. NDC/E.10/82/220 30/05/2023

Watendaji Kata Wote,
Halmashauri ya Wilaya ya Njombe.

Yah: **RUHUSA YA KUFANYA UTAFITI BW. FINIAS DOGEJE MWANAFUNZI WA CHUO KIKUU HURIA TANZANIA**

Rejea mada tajwa hapo juu.

2. Ofisi ya Mkurugenzi Mtendaji Halmashauri ya Wilaya ya Njombe imepokea barua yenye Kumb. Na. AB.301/326/01J/224 ya tarehe 29 Mei, 2023 kutoka kwa Katibu Tawala Mkoa wa Njombe. Barua hiyo inamtambulisha Bw. Finias Dogeje mwanafunzi wa Shahada ya Uzamili (PhD) Chuo Kikuu Huria cha Tanzania aliyeomba kufanya utafiti kwa kukusanya taarifa ya uzalishaji toka kwa wakulima wa chai wanaofanya kilimo cha Mkataba na ambao hawafanyi kilimo cha mkataba.

3. Kwa barua hii mnaombwa kumpokea na kumpa ushirikiano mwanafunzi huyu ili aweze kufanya utafiti kwenye maeneo yenu na atafanya kuanzia tarehe 30/05/2023 hadi 30/11/2023. Taarifa inayokusanywa ni kwa ajili ya maturnizi ya taaluma tu.

4. Nashukuru kwa ushirikiano wenu.

Augustino M. Nyenza
KAIMU MKURUGENZI MTENDAJI
HALMASHAURI YA WILAYA
NJOMBE

nzi Mtendaji
Halmashauri ya Wilaya
NJOMBE

Nakala

- Bw. Finias Dogeje Mwanafunzi mtafiti.

Barabara ya Njombe - Makambako (Kata ya Mtwango Kijiji cha Lunguya), SLP 547 Njombe. Simu: +255 26 2782111 (Mkurugenzi), +255 26 2782027 (Maulizo). Nukushi +255 26 2782857 Barua pepe: info@njombedc.go.tz; Tovuti: www.njombedc.go.tz

JAMHURI YA MUUNGANO WA TANZANIA
OFISI YA RAIS
TAWALA ZA MIKOA NA SERIKALI ZA MITAA
HALMASHAURI YA WILAYA YA RUNGWE

Unapojibu tafadhali taja:

Kumb. Na. RDC/S.5/6/200 Tarehe: 01/06/2023

Afisa Kilimo, Mifugo na Uvuvi (W),
S.L.P. 148,
TUKUYU.

Yah: KIBALI CHA KUFANYA UTAFITI

Tafadhali husika na kichwa cha habari hapo juu.

2. Ofisi ya Mkurugenzi Mtendaji Wilaya inapenda kumtambulisha kwako **Mr. Finias Dogeje** ambaye amekuja kufanya utafiti kutoka Chuo Kikuu Huria cha Tanzania. Anayetarajia kufanya utafiti kuhusiana na **"Transaction Cost Determinants of Farmers Participation in Contract Farminh in Tanzania: Case of Tea Subsector"**.

3. Hivyo, unatakiwa umpokee na kumpatie ushirikiano atakaohitaji.

Nakutakia kazi njema.

D. Mwaigaga
KNY: MKURUGENZI MTENDAJI (W)
RUNGWE.

DISTRICT EXECUTIVE DIRECTOR
RUNGWE/TUKUYU

THE UNITED REPUBLIC OF TANZANIA
PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
BUSOKELO DISTRICT COUNCIL

In reply, please quote:

Ref. No. BDC/A.1/30/49

26/6/2023

The Open University of Tanzania
P. O. Box 23409
Dar Es Salam.

RE: ACCEPTANCE OF MR. FINIAS DOGEJE REG. NO: PG202000309 FOR RESEARCH

The caption above refers.

I am pleased to inform you that, the named student has been accepted for Research attachment post at our Council. Student should report on time to District Human Resource Officer for his/her Research as per your request.

Thank you for choosing our Council as a place for Research activity for your students.

With cooperative regards,

KNY. MKURUGENZI MTENDAJI
HALMASHAURI YA WILAYA YA BUSOKELO
S.L.P 2, TUKUYU

Fredick kweka
For; DISTRICT EXECUTIVE DIRECTOR
BUSOKELO DISTRICT COUNCIL

Copy:
1. **Finias Dogeje** - Report to District Human Resource Officer.

APPENDIX 5: ARTICLES PUBLISHED IN PEER REVIEWED JOURNALS