Original Research Article

Unlocking Farm Income Potential: Exploring Youthfulness Impact on Farm Income in Vertically Integrated Green Tea Markets in Tanzania

ABSTRACT

Background: Participation in vertically integrated market has a potential of improving farm income, but the influence of youthfulness on farm income remains underexplored.

Aim: This paper explores the youthfulness impact on farm income in vertically integrated green tea markets in Tanzania.

Study design: This study employed a descriptive research

Place and Duration of Study: Southern Highlands Tanzania, between January and June 2023.

Methodology: A cross-sectional survey using a structured close ended questionnaire was conducted in collect to quantitative data from 277 farmers. Data was cleaned in Excel and analysed using SPSS IBM Statistics Version 26 for both descriptive and inferential statistics. The Ordinal Logistic Regression model was used to assess null hypothesis that youthfulness have no significant impact on farm income.

Findings: Results indicate negative association between youthfulness and increased farm incomes, yet the impact lacks statistical significance (*P=0.177*), suggesting that youthfulness has limited influence on farm income (null hypothesis accepted). Likewise, land access, farming technology, market information and education has negative impact on tea farm income, but its education and land access effect only which had statistical significance at the *P=0.05* level. Conversely, vertical integrated market experience (VIME) positively influence farm income but lack statistical significance (*P=0.443*).

Conclusion: This study conclude that, no significant impact of youthfulness. Similarly, land, farming technology, market information access and education negatively affect income level. Besides, but VIME positively influence green tea farm income.

Recommendations: To enhance farm income in vertically integrated green tea markets, it is recommended that policy and practice should prioritize addressing factors such as market dynamics, resource management, pricing policies, and cost management, which may potentially offset the otherwise positive influence of youthfulness, land access, farming technology, market information access, and education on green tea income. Future research may explore youthfulness impacts on various subsectors alongside contextual factors, like market dynamics, resource and cost management.

Key words: Youthfulness; Farm Income; Vertically Integrated Green Tea Markets; Tanzania

1. INTRODUCTION

Agriculture is a critical sector which contributes to enhance food security, income and livelihood to about 80 percent of the rural poor in the world who mainly live by relying on crop farming [1]. Tea is amongst the cash crops which plays a vital role in the financial well-being and sustenance of small-scale farmers. It is a labour-intensive sector that provides jobs and income to underprivileged rural communities around the world, including women and their families [2]. Many low-income countries rely heavily on tea exports as a source of cash to finance their food imports and international trade. Connectedly, about 60 percent of the world's tea is produced by small-scale farmers and farming households, who are crucial to achieving the Sustainable Development Goals (SDGs) and Agenda 2030 [2].

In the past ten years, there has been a 2.5 percent rise in tea consumption per person worldwide, with noteworthy growth occurring in nations that primarily cultivate tea, predominantly found in emerging and developing regions like Africa, East Asia, Latin America, Africa, and Caribbean [3,4]. In Tanzania, tea is a significant cash crop that employs approximately fifty thousand individuals in tea farms and processing facilities and indirectly affects about two million people. Furthermore, thirty two thousand smallholder farmers are a part of the tea production environment. In addition, the tea sector provides Tanzania's government with an additional forty-five million US dollars annually [5, 4].

Notwithstanding, the economic significance of tea to smallholder farmers and countries' economies globally, the sector is faced with a multitude of challenges, including low productivity, climate change shocks, and cost pressures experienced by participants throughout the supply chain [1]. In Tanzania in particular, smallholder tea farmers face several challenges, including limited access to credits, inputs, and relatively low farm size. These in turn leads to relatively lower production, productivity, income and tea farmer's livelihood [6].

To address some of the challenges, smallholder tea farmers are engaged in the tea value through different arrangements, including through various forms of vertical integration for instance through cooperatives and contract farming. It is argued that, vertical integration facilitates consolidation of the production and marketing processes, thus making it beneficial to farmers and buyers/investors [7, 8]. Contract farming is common form of vertical integration used by smallholder farmers in agriculture in various subsectors across the world. Through this form of vertical integration, famers have a potential to reap several benefits, including improved access to inputs and good agricultural practices contributes to improved productivity and income to famers [9,10].

In Tanzania, smallholder tea farmers are also engaged in vertically integrated market whereby they are able to enjoy various benefits related to this arrangement. Some of these benefits, including improved access to inputs such as fertilizers, herbicides and assured market [11]. It is estimated that overall generally over 70 percent of smallholder farmers in Tanzania are engaged in contract, in particular over 50% of green tea smallholder farmers in Tanzania are engaged in contract farming [12, 13, 14].

Notwithstanding this sizeable proportion of smallholder green leaf tea farmers engaged in vertically integrated market, their overall performance, including production and income levels has remained relatively low. The limited performance of green tea farmers despite the vertical integrated market in Tanzania may be attributed to persistent challenges, including limited farm size, whereby majority of the farmers holds less than 5 acres, limited technology access, and labour shortage [5, 4, 6]. These attributes contributes to a limited performance of farmers in terms of productivity and farm income. For instance, the level of green leaf tea production per acre of smallholder tea farmers in Tanzania is about 50 percent lower than that produces by tea farms managed by the tea processing estates [13, 14].

Delving into limited availability of labour may be associated aging participation of smallholder tea farmers in tea subsector in Tanzania. Various studies show that due to the perception of agriculture as being less prestigious and lucrative, youth involvement in it is generally low [15, 16]. This observation

resonates with the statistics and in Africa and United States of America, which show that, the average age of farmers is 60 years [17]. Limited engagement of youth in agriculture in Africa and beyond is attribute to various reasons, including technology access issues, older farming practices, pests and diseases, climate change shocks, limited access to finance, land access, training and produce market [18, 19].

The labour shortage due to limited participation of youth is likely to have significant implications on farm income due to reduced productivity associated with physical limitations in the tea value chain of which some of activities like plucking is labour intensive to be done efficiently by older farmers. Relatedly, low youths' involvement in the tea subsector might obstruct transfer of farming expertise and skills, thus delaying the uptake of more efficient agricultural practices, therefore, contributing to a limited performance of tea farmers. Moreover, increased labour costs due to shortage of energetic youth engaged in the tea subsector is likely to prompt for the adoption of labour-saving technologies like mechanised tea plucking machine, which in turn can impact the tea farm income and overall financial well-being of farmers. The limited involvement of youth in agriculture may hinder the transfer of agricultural knowledge and skills, impeding the adoption of more profitable farming practices.

Even though the reviewed literature shows that participation of youth in agriculture lags behind that of adults, studies that examine the youthfulness impact on farm income in the vertically integrated green leaf tea market remains scanty. Consequently, this creates a gap in understanding how being young influences earnings of the tea smallholder farmers in the context of farmers participating in the vertically integrated market. While other scholars might have skipped this concept, the importance of youth cannot be understated because they form over 22.5 percent of the current global population (8 billion people), and by 20550 global population will be about 9.5 billion people, whereby youth will contribute about 67 percent of this growth [20]. Moreover, globally, youth unemployment rates are approximately three times that of adults. In Africa, which has a substantial youth population, around 67% of young people are unemployed [18].

Delving in Tanzania, in 2022, Tanzania had a youth unemployment rate of 12.6 percent, significantly surpassing the East African average for youth unemployment, which stood at approximately 4.7 percent [21]. Focusing on the significance of this population demographic, oversight of this group is significant because it may result in incomplete or insufficient information for policymakers and stakeholders interested in promoting youth engagement in agriculture.

In this regard, considering the significance of this population demographic across the World and in Tanzania in general, this study recognises that age could be a significant factor in the agricultural industry, concentrating on how being youthful effects earnings in the context of vertically integrated green tea markets and taking into account the significance of vertical integration in increasing farmers' performance. Youthfulness may provide fresh insights, vigour, and farming techniques that can affect farm income. Making decisions about the involvement of young people in agriculture requires awareness of this influence, the same of which is scanty.

This study intends to fill this gap by specifically examining youthfulness impact on farm income in vertically integrated green tea markets in Tanzania. Specifically, the study seeks to test the null hypothesis that, youthfulness does not impact on farm income in vertically integrated green tea markets in Tanzania. The findings from this study may have broader implications beyond the tea sector. Understanding how youthfulness affects farm income, specifically in the vertically integrated market can provide insights that are applicable to other agricultural sectors and perhaps even non-agricultural sectors. For instance, the innovative and tech-savvy nature of youth might be leveraged for the adoption of modern agricultural practices and technologies.

2. LITERATURE REVIEW

2.1 Theoretical Literature Review

This study is hinged on the Age-Wealth Profile Theory, developed by Richard Easterlin in the 1970s. It contends that age and wealth are systematically related over the course of life, assuming a life cycle

in which people save during their working years and withdraw from savings to maintain consumption in retirement. It has limits and may not adequately depict the complexity of wealth generation and distribution in modern society, even though it offers useful insights into how wealth varies with age [22]. By using this theory key variables of the study, specifically age focusing on youthfulness, alongside others variables, including education, land access, market information, and vertical integrated market experience are related to establish the cause and effect of these predictors with farm income in the vertically integrated green tea markets in Tanzania.

2.2 Empirical Literature Review

Vertical integration entails the consolidation of both production and marketing processes, resulting in advantages for both farmers and buyers or investors [7,23]. To the farmers, vertical integration is associated with several benefits, including access to inputs, extension services, technology transfer, reduced transaction cost, and reliable market which in turn leads to improved income [24]. In agriculture, vertical integration can be classified into four primary categories: contract farming, non-contractual coordination, farmer cooperatives, and ownership integration [8]. This study will heavily lean on contract farming as a common form of vertical integration in the tea subsector in Tanzania to explain the relationship between youthfulness impact and on green tea income.

A study in China by [25] found that farmers who are in vertical integration have higher agricultural and total income than non-participants. Relatedly, a study by [26] in Mexico on what differentiate cooperative and non-cooperative smallholder farmers posits found that vertical integration specifically through cooperative have statistical significant influence on farmers' off-farm income. Similarly, a study by [27] in Kosovo revealed that farmers engaged in vertically integrated market, specifically cooperative had higher income than non-members. Another study in Russia by [28] in on the relationship between vertical integration and food security revealed that, vertical integration have for the meat and milk value chain results into higher performance of these subsectors. This finding suggest that, vertical integration is likely to influence the farm income from farmers engaged in such arrangement.

Different scholars indicate that agriculture to be critical for youth in eking their lives. For instance, a research in India by [29] revealed that agriculture, specifically nursery raising and poultry farming to be critical and attractive to most of the youth because of their income generation potential. Similarly, a study undertaken by [30] in low and middle income countries found that youth engagement in agriculture alongside exposure to training programmes in agriculture are likely to influence their income. In the context of this study, this finding entails that, youthfulness is likely to influence farm income. Likewise, a study in Nigeria by [31] demonstrate that youth farmers who participate in agriculture program outperform those who do not in farm in productivity and well-being. Another study in Nigeria by [32] show that production and revenue are positively influenced by intensive youth participation in agriculture. These studies in Nigeria entails that youthfulness have a positive outcome on farm productivity and income.

Relatedly, a study undertaken in Kenya [33] found that younger and more well-trained farmers, in particular, employ multiple business ownership as a strategy for lateral expansion, which imply that youthful and educated farmers are likely to have higher farm income and overall better livelihood. Likewise, a study in Tanzania by [34] show that youth engaged in French beans contract farming had relatively higher income from beans (34%) and overall household income (37.5%) compared to non-participants. Moreover, other socio-economic factors influencing farm income include education, land access, market information, and vertical integrated market experience. Specifically, studies by [35] in Nigeria, [36] in Ethiopia, and [37] indicate that education, land access to land, market information, and farming technology, significantly influence farm income. Likewise, vertical integrated market experience positively, significantly influences farm income [38,35]

Despite youth participation in agriculture and more specifically in vertical integrated markets, including green market in Tanzania, farm income has remained relatively very low [18]. For example, in Tanzania, smallholder tea farmers produce around 50% less green leaf tea per acre than do tea

plantations run by tea processing estates [13, 14]. Besides, there is a scanty literature that examines the impact of youthfulness impact of green youthfulness impact on farm income. This study intends to fill this gap by focusing on the vertically integrated green tea markets in Tanzania.

3. METHODOLOGY

3.1 Research Design

This study was descriptive as such formed basis to approximate the probability that farmers green tea income would fall into a specific group based on the effect of particular factors. This method served as the foundation for evaluating the null hypothesis because it revealed trends and patterns for the research population's income levels.

A cross-sectional survey was used to collect primary quantitative data from 277 smallholder tea farmers engaged in green tea vertically integrated market in three districts located in the Southern-Highlands Tanzania, namely Rungwe and Busokelo in Mbeya region and Njombe District Council (DC), in Njombe region. Southern Highlands Tanzania was chosen because it the most tea growing area located with more than 70% of smallholder tea farmers in Tanzania [13, 14]. Specifically, farmers engaged in vertical integration were purposively and randomly selected from 37 villages scattered in 20 wards based on their status of engagement in the green tea vertical integrated market.

3.2 Variables Measurement

Farm income from vertically interpreted green tea market is the outcome variable in this study. The green tea income was measured in Tanzania shillings estimated from the smallholder tea farmers for the 2022 tea production season. The green tea income was grouped into four categories which were classified from very low income through income (see the details in Table 1). These incomes exhibits an ordered pattern as such, Ordinal Logistic Regression was used as an estimation model.

Table 1: Measurement of Outcome Variable (Income Categories)

SN	Yearly Income Groupings (TZS)	Rank	Description of Level of Income
1	0-360,000	1	Very low income
2	360,001-1,080,000	2	Low income
3	1,080,001-1,440,000	3	High income
4	1,440,001-1,800,000	4	Very high income

Youthfulness (age) alongside other social-economic variables are measured as shown in Table 2.

Table 2: Measurement of Predictor Variables

SN	Acronym	Predictor Description	Type of Variable	Variable Measurement	Expected Sign
1.	YF	Youthfulness: As age increase the less youthfulness it becomes	Continuous	Respondents' age	-ve
2.	EL	Education Level	Nominal	1=Educated; 0=Not educates/otherwise	+ve
3.	VIME	Vertically Integrated Market Experience	Continuous	Scores measured using a five point Likert Scale from 1=Strongly Disagree to 5 Strongly Agree	+ve
4.	FATEA	Farming Technology Access	Continuous	Scores measured using a five point Likert Scale from 1=Strongly Disagree to 5 Strongly Agree	+ve
5.	MIA	Market Information Access	Continuous	Composite scores of inputs market search (IMS) and output market search (OMS) costs both measured using a five point Likert Scale from 1=Strongly Disagree to 5 Strongly Agree	+ve

3.3 Estimation Model

Utilizing the outcome and predictor variables delineated in the preceding section, we employed the Ordinary Logistic Regression model, which is elaborated below, to predict farm income based on respondent's youthfulness status and various socio-economic factors, education level, vertically integrated market experience, farming technology access, and market information access (see the model specification below)

$$\ln p(\mathrm{FIL}_x = \mathrm{n}) = \mathrm{P}(\mathrm{FIL}_x \leq \mathrm{n}) - \mathrm{P}(\mathrm{FILx} \leq \mathrm{n}-1) \quad \text{(i)}$$

Whereby:

FIL_x= Youth income level for the X^{th} farmer

$\ln \mathrm{FIL}_x = \mathrm{n}$ = Probability of falling in category "n".

n = Income level in ascending order (1=Very low; 2= Low income; 3=High income; 4=Very high).

$\ln \mathrm{FIL}_x \leq \mathrm{n}$ = Cumulative probability of being in or below category "n."

$\ln \mathrm{FIL}_x \leq \mathrm{n}-1$= Combined likelihood of being within or beneath the immediately lower category "n"

When FIL_x intercept and estimation error terms are introduced, equation (i) can be reformulated as equation (ii)

$$\ln p(\mathrm{FIL}_x = \mathrm{n}) = \beta 0 + \beta 1 \mathrm{Zx} + \varepsilon \quad \text{(ii)}$$

Whereby:

FIL_x= Farm income from vertically interpreted green tea market

Famer green tea income level for the X^{th} farmer

β_0=Intercept signifies the value of FIL_x if all predictor variables hold a value of zero

Z_x=Coefficients represent the variation in FIL_x resulting from a one-unit alteration in a particular predictor variable, with all other factors held constant

ϵ = error term

The ordinal Equation (ii) can be transformed structurally into equation (iii) by incorporating specific predictor variables as outlined in Table 2, as follows:

$$\ln p(FIL_x = n) = \beta0 + \beta1YFx + \beta2ELx + \beta3VIMEx + \beta4FATEA + \beta5MIAx + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(iii)}$$

Where
YF=Youthfulness (age) for X^{th} farmer
EL= Education Level for X^{th} farmer
VIME = Vertically integrated market experience for X^{th} farmer
FATEA= Farming Technology Access for X^{th} farmer
MIA = Market Information Access for X^{th} farmer

3.4 Data Analysis Methods

Excel was used to clean up the acquired data before it was loaded into SPSS IBM Statistics Version 26 for analysis. By using frequency and proportions, descriptive analysis of the predictor and outcome variables was performed. Ordinal Logistic Regression Model was used for the inferential statistical analysis to calculate the possibility that a green tea farmer will fall into either income category in light of the model's predictors. The same method was employed to examine the null hypothesis, which stated that youthfulness does not impact on farm income in vertically integrated green tea markets in Tanzania. The decision criteria used to determine whether or not to accept the null hypotheses were at a 5% precision level, which entails 95% confidence level. Prior to beginning the Ordinal Logistic Regression analysis, the test of parallel lines, which is an essential assumption for this model, was assessed and passed.

4. RESULTS AND DISCUSSION

4.1 Descriptive Results

The research results indicate that a greater percentage of study participants were male (63%), as compared to females (37%). The minimum age of respondents was 24 years while 78 was the maximum age. Relatedly, the average respondent's age was 47 years, which is slightly lower than African average age of farmers engaged in agriculture, which is 60 years [17]. Moreover, 90 percent of respondents had completed primary school compared to those who did not complete primary school (10%). On the other hand, majority of the respondents reported higher income followed by those with low income as indicated in Table 3.

Table 3: Respondents Distribution by Tea Income Categories (n=277)

Description	Frequency	Percent
Very low income	3	1.1
Low income	107	38.6
High income	166	59.9
Very high income	1	0.4
Total	**277**	**100**

4.2 Results from Inferential Statistics

4.2.1 Model Assumptions

Critical assumptions pertinent to the model in use were completed and verified before moving further with the model parameters estimation. Because the p-value was insignificant at the 5% precision level (*P=1.000*), it was precisely assumed that the test of parallel lines, a crucial ordinal logistic assumption, had been passed. The model correctly predicted the data at *P=0.000*, and the goodness of fit was also met because the p-values for Pearson and deviance were insignificant at the 5 percent level of significance (*P=1.000*). See the critical statistical test results on Table 4.

Table 4: Model Assumptions Results

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Model Fitting Information				
Intercept Only	410.562			
Final	384.640	25.922	6	0.000
Goodness-of-Fit				
Model	**Chi-Square**	**df**	**Sig.**	
Pearson	714.786	807	0.991	
Deviance	383.254	807	1.000	
Test of Parallel Lines[a]				
Model	**-2 Log Likelihood**	**Chi-Square**	**df**	**Sig.**
Null Hypothesis	384.640			
General	369.658	14.982	12	0.242

a.The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

Connectedly, Table 5 provides the findings of parameter estimates that illustrate the likelihood of a case falling below or above the specified category of farm income for farmers involved in the vertically integrated green tea markets in line with structural equation (iii). "Very High Income" is the reference income level.

Table 5: Ordinal Regression Logistic Parameter Estimates Results (n=277)

Description		Estimate (B)	Std. Error	Wald	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Threshold1	Very low income = 1	-6.922	1.148	36.364	0.000	-9.172	-4.672
	Low income = 2	-2.672	0.976	7.490	0.006	-4.585	-0.758
	High income = 3	3.658	1.354	7.303	0.007	1.005	6.311
Location	Age	0.016	0.012	1.821	0.177	-0.007	0.040
	VIME	0.135	0.172	0.614	0.433	-0.202	0.471
	LNA	-0.482	0.234	4.253	0.039	-0.940	-0.024
	FATEA	-0.142	0.228	0.384	0.535	-0.589	0.306
	MIA	-0.065	0.037	3.025	0.082	-0.137	0.008
	Not educated=0	1.126	0.515	4.783	0.029	0.117	2.135
	Educated=1	0[a]					

Link function: Logit 1. Income reference group (Very high income)

a. This parameter is set to zero because it is redundant.
**Statistically significant at p<0.05; **Statistically significant at p<0.1*

The inferential statistics results alongside the discussion are provided in subsequent subsections

4.2.2 Youthfulness Impact on Farm Income Level in Vertically Integrated Green Tea Markets

In contrast to what was expected in theory which was positive association between age and farm income, the study findings show negative association between youthfulness and higher farm incomes levels in vertically integrated markets. However, the impact does not reach the acceptable statistical significance level of 5 percent precision level because the precision level *P=0.177.* The positive

association between age and farm income levels aligns with other scholars like [29; 30; 31; 32; 34] who posit that as age increases, the level of income of farmers engaged in vertically integrated markets also increase. This entails that the younger the person become, the lower the likelihood of ~~having of~~ falling into higher farm income level. Therefore, in the context of this study the null hypothesis is accepted that youthfulness do not impact on farm income in vertically integrated green tea markets in Tanzania.

This finding entails that being young is not a critical factor that influence odds ratio of farmer having higher farm income from the vertically integrated market, at the 5 percent precision level, besides, if more conservative confidence interval like 80 percent are considered, the association becomes statistically significant at 20 percent. Connectedly, the negative association further suggests that, changes in farm income levels may be attributed to other contextual factors like market and economic factors, including like farm management, grasp of good agricultural practices and level of its application, land ownership, gender roles for instance on making farm and off-farm investment an fund use decisions, and government policies. Specific examples of policy issues that might adversely affect farm income levels in the vertically integrated green tea markets might include those related with green leaf tea pricing mechanisms, land tenure, finance and credit, transport and overall infrastructure policies, access to market information and overall market access, quality and standards certification, environment and sustainability, research and extension services, and might have more significant effect on farm income in vertically integrated green tea markets. Although youthfulness may play a vital role in farmers' capacity to adapt to these policies and grab opportunities, the overall effect of these policies on farm income is often significant and can affect farmers across different age groups.

4.2.3 Impact of Other Social-Economic Factors on Farm Income Levels

4.2.3.1 Vertical integrated market experience (VIME)

The study results show that this variable positively influence farm income level in line with theoretical expectations. This finding resonates with others studies like that of Jaretzky etal. (2023) and [35] which show that as farmers experience on this arrangement increases so does the income levels. This imply that, as farmers' attain more experience on VIME the likelihood of earning higher farm income in the veristically integrated green tea market increases. However, in this study the effect lack statistical significance (*P=0.443*), meaning that this effect might be by chance, or the same might be influenced by other contextual factors as discussed on the relationship between youthfulness and farm income levels.

4.2.3.1 Land access, farming technology, market information and education

The study results show that, these variables (land access, farming technology, market information and education) have negative impact on tea farm income contrary to the theoretical expectations. This observation might signify that as one of the variables increases while others are kept constant the odds ratio of falling into higher income levels decreases. This finding is in contrast with other previous studies like that of [36], [37], and [35] which show a positive association between these variables to farm income levels in the vertically integrated markets.

Further analysis show that, out of these four variables, two variables (education and land access effect) had statistical significance at the *P=0.05* level. This finding entails that an increase in the level of education or land access while keeping other factors constant, negatively significantly influence the likelihood of farmers falling into higher farm income levels in the vertically integrated green tea markets. In terms of education, this would mean that farmers' prospects of obtaining greater agricultural income levels in the vertically integrated market decline as their level of education rises. This could be as a result of the possibility that a higher education will open up options for careers or business models that are less successful in this particular setting. Relatedly, on land access, more land might lead to a different set of farming practices or challenges that affect income negatively in the vertically integrated green leaf tea market in Tanzania.

Besides, access to farming technology and market knowledge do not approach statistical significance at the 5 percent level of precision. This may signify that, their effect may be unintentional or rather influenced by other contextual factors as discussed in the association between youthfulness impact on farm income levels. This means that while there may be some association between these factors and farm income, it might not be a direct cause-and-effect relationship. Other factors not considered in the analysis like soil quality and fertility, weather and climate, presence or absence of infrastructure like irrigation equipment, passable roads, access to financial resources to finance various tea farming operations, socio-cultural factors and other market dynamics could be driving the observed patterns.

5: CONCLUSION AND RECOMMENDATIONS

This study aimed at exploring the impact of youthfulness on farm income in the vertically integrated green tea markets in Tanzania. Specifically it intendent to testing the null hypothesis that youthfulness does not impact on farm income. This study concludes that there is no statistically significant impact of youthfulness (*P=0.177)*. This entails that the null hypothesis is supported at this precision level, meaning that being a younger smallholder tea farmer does not increase the likelihood of falling in higher income levels, in the vertically integrated green leaf tea market in Tanzania. However, youthfulness can be influential factor to income if a more conservative confidence interval such as 80 percent is considered. Connectedly, the select assessed socio-economic factors, specifically land access, farming technology, access to market information, and education negatively affect income levels among tea farmers. These results suggest that higher income levels in the vertically integrated green leaf tea market may be influenced by factors like market dynamics, resource management, pricing policies, and cost management, which are all beyond youthfulness and the socio-economic factors assessed in this study. In contrast, Vertical Integrated Market Experience (VIME), positively affect farm income levels in the vertically integrated green tea markets in Tanzania.

This study recommended that, in order to enhance farm income in the vertically integrated green tea markets, both policy and practice should prioritise addressing several key factors that will improve youthfulness alongside other socio-economic variables, specifically, access to land, farming technology, market information and education to favourably influence farm income levels. Precisely, attention should be directed towards understanding and navigating the complexities of market dynamics, government policies, effectively managing available resources, and optimizing cost management strategies associated with youthfulness amongst other socio-economic variables. These measures are essential as they may potentially counterbalance the positive influence of youthfulness, land access, farming technology, market information access, and education on green tea income.

The study's limitations include a narrow geographic focus on the Southern Highlands of Tanzania, a single-subsector focus, reliance on a quantitative approach with closed-ended questionnaires. Consequently, some contextual factors, for example, those explaining the non-statistical significance of the selected variables, might not have been well-captured. Instead, the researcher drew inferences based on the study results. In this regard, future studies may consider integrating these aspects to provide a comprehensive understanding of the topic. Furthermore, future research should consider expanding the scope to investigate the impact of youthfulness across various subsectors while taking into account contextual factors, such as market dynamics, resource availability, different relevant government policies and cost management practices. This wider examination will provide a more comprehensive understanding of the multidimensional dynamics influencing income within the agricultural.

CONSENT

Participation among smallholder tea farmers was entirely voluntary for all study participants. Verbal consent was diligently obtained, and respondents were afforded the option to withdraw from the survey at any point of their choosing.

ETHICAL APPROVAL

The research clearance lettter was obtained from the Open University of Tanzania and the acceptance letters for undertaking this study in the respective study area were obtained from the three district councils (Rungwe, Busokelo, and Njombe District Council).

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CONFLICTS OF INTEREST

The authors declare that there are no potential conflicts of interest related to the publication of this work.

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