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Characterization of Smallholder Farming in Kori Chiefdom, Southern Region of Sierra Leone

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Abstract

The study assessed the characteristics of smallholder farming in Kori Chiefdom, Moyamba District, Southern Sierra Leone. The study employed a descriptive survey research design. An interview schedule was used to obtain primary data from 154 smallholder farmers who were involved in agricultural projects in the chiefdom. The quantitative nature of the data was analysed with the help of the SPSS statistical software package. Descriptive statistics such as frequencies and percentages as well as inferential statistics involving regressing analysis were used to determine relationships between farming income and other income variables. Major findings from the demographic characteristics of the smallholder farmers show that more than half of the respondents are within the youthful population (< 20 years=7.8%, 21-30 years=41%, and 31-40 years=19.48%) totaling 62.33% with male respondents accounting for 57.14%. While a significant percentage (44.16%) had no formal education, 32.46% also had only primary education. The study further shows that only 11.69% earned more than NLe 500 per month from the project. The stepwise regression also shows a relationship that farming and monthly incomes are R2=0.278; p=0.05 which implies that monthly income accounts for 27.78% of the respondents. The findings therefore suggest that literacy drive must be promoted among the respondents for the easy adoption of improved agricultural practices. Moreover, agri-business techniques must be promoted for farmers to handsomely earn from their farming activities.

Keywords: ricultural project, Kori chiefdom, Smallholder farmer, Moyamba district

1. Introduction

There is little control over food in a society where contemporary food systems are disheveled with international financial markets (Béné & Abdulai, 2024). This is because food is a commodity that is traded and hence subject to the caprices of the market, hence food security is significantly impacted by this notion (Naegele, 2020). According to Dube (2021), there is a growing shift in South Africa for example toward a green economy. Over the past few decades, South Africa's food and agriculture systems have been more concentrated, with merchants gaining market dominance and higher negotiating power (Boys & Fraser, 2021) and farms growing in size both smaller and larger (Mpandeli et al., 2014). Additionally, the high cost of transportation and inputs like herbicides and fertilizers provide various obstacles for the financial sector when it comes to product delivery (Malo et al., 2023).

This system leaves smallholder farmers, who frequently have access to less than two hectares of land and have limited access to markets, inputs, and infrastructure, among its most vulnerable members (Adelaja et al., 2020). The movement of funds that are regulated by banks, insurance companies, retailers, millers, and traders creates an ever-expanding and complex environment in which smallholder farmers must operate (Issahaku et al., 2020).

Research indicates that since the early 1980s, Zimbabwe has considered the need for efficient smallholder farmers, despite obstacles brought on by weaker government policies, land contracting issues, and marketing difficulties (Nyathi, 2024). According to Feuerbacher and Luckmann, (2023), small-scale farming has a lower environmental impact than mechanised agriculture since it employs a significantly larger workforce and uses fewer external inputs.

Furthermore, smallholder farms are an important part of Sierra Leone's agricultural landscape, and agriculture is the foundation of the country's economy (Kainyande, 2024). Based on the production and productivity elements, Sierra Leone has encountered numerous economic challenges in the agriculture industry after the end of the war. Smallholder farmers contribute more productively to agricultural food production, ensuring sustainable livelihoods for their families, communities, and the global community (Syed et al., 2024). In Kori, Moyamba District, smallholder farmers and agricultural projects are important, although many of them encounter difficulties that ultimately fail.

Numerous obstacles exist for people to start or take part in the growth of smallholder farms and agricultural initiatives (Kamara et al., 2023). Some locals and visitors are eager to improve the lives of the underprivileged, while some want to take advantage of the circumstances for their gain. Appropriate external financial and human resources are necessary for the survival and success of rural agricultural projects and smallholder farms, even though impoverished communities are being forced by changing global and local circumstances to take proactive steps to improve the quality of their lives (Chen et al., 2022). Most people in Sierra Leone agree that community-based development projects would start from the bottom up and would require funding from outside development organisations or the government for research and development to produce smaller machinery that is appropriate for the local environment, show off its benefits through training initiatives, and lower import tariffs for machinery and spare parts (Morse & McNamara, 2023). However, they should not repeat the past mistakes of government-run or subsidised mechanisation promotion. This study will therefore determine these gaps for smallholder farmers to discern the gains and challenges with smallholder farming in the chiefdom. The main objective of the study was to assess the gains and challenges of agricultural projects and smallholder farms in Kori Chiefdom, Moyamba District, Southern, Sierra Leone. The specific study objectives were to: i. investigate the productivity level of smallholder farmers in agricultural projects, and ii. to determine the relationship between farming income and other income variables.

2. Materials and Methods

A descriptive research survey was used for this study. This design is appropriate for capturing detailed and accurate descriptions of the current status of agricultural field work and its effects on the smallholder farmers' socio-economic well-being. It allows for the collection and analysis of both quantitative and qualitative data, providing a comprehensive understanding of the topic.

2.1 The Study Area

Kori Chiefdom is located in Moyamba District and its Chiefdom headquarters town is Taiama, in the Southern Region of Sierra Leone. The chiefdom can be found on the main Masiaka-Bo Highway just after Moyamba junction from the Capital City, Freetown. Geographically, Kori Chiefdom is bordered by Gbonkelekeh Chiefdom in the North, Dasse in the South, Kamajei Chiefdom in the East, and Fakunya in the West in the Moyamba District making it a significant hub and strategically located in the district.

The Chiefdom experiences a tropical monsoon climate, characterized by a distinct wet season from May to November and a dry season from December to April. It receives substantial annual rainfall, averaging about 2,800 mm, which supports lush vegetation and fertile agricultural land. The natural environment features a mix of secondary forests, savannah grasslands, and cultivated fields. This diverse ecosystem supports various species of flora and fauna, contributing to the chiefdom's agricultural productivity. It has an area of 666.9 km2 and a 51.13 km2 population density (Stats-SL, 2021). Kori Chiefdom has an estimated population of approximately 33,895 people (2021 Mid-term census). The population is a blend of several ethnic groups, with the Mende tribe being the predominant group. The demographic structure is youthful, with a high proportion of the population under the age of 35. Population density is higher in the Njala community than in the other parts of the chiefdom. The economy of Kori Chiefdom is predominantly agrarian, with agriculture being the main livelihood for many residents. Kori Chiefdom is widely dependent on Bo City as a major commercial center in the Southern Region.

2.2 Study Population

The targeted population for this study comprised only the smallholder farmers in Kori Chiefdom. This set of community dwellers is relevant for this study as a single instrument was used for data collection.

2.3 Sample Size and Sampling Technique

The total sample population size in Kori Chiefdom was 33,895 (Stats SL, 2021) and that of the smallholder farmers was 25,754 (Stats SL, 2015). For convenience, 154 smallholder farmers were proportionately selected from across all the sections in the chiefdom for this study. Purposive and random sampling approaches were used. First, smallholder farmers in the Kori chiefdom were purposively selected. The choice of chiefdom was based on the challenges of smallholder farmers involved in agricultural projects. Second, sub-study areas in Kori Chiefdom were selected purposively based on the smallholder farmers' involvement in agricultural projects. The purposive selection was

conducted with consultations with selected key informants in the study area. Third, a random sampling procedure was employed to select a representative sample of smallholder farmers involved in agricultural projects from the selected study areas in Kori Chiefdom. This random sampling was used after specifying the number of smallholder farmers (154) selected from a register obtained from each sub-study area in Kori Chiefdom.

A stratified random sampling technique was further employed to ensure a representative sample of smallholder farmers involved in agricultural projects. The population was divided into strata based on the different sections where respondents were located, and random and proportionate samples were drawn from each stratum. This method ensures that smallholder farmers involved in agricultural projects within the chiefdom are randomly selected and fairly represented in the sample.

2.4 Sources of Data

The primary sources of data were from the smallholder farmers. A review of related literature was also done to generate secondary data.

2.5 Research Instrument

One main research instrument used was an interview schedule to solicit data from the targeted respondents. This comprised both closed and open-ended questions designed to collect quantitative data on various socio-economic indicators such as income, market access, resource allocation, and the overall livelihood improvements of smallholder farmers and their households.

2.6 Data Collection Procedure

The instrument was self-administered by the researcher upon getting permission from the supervisor to collect data using both primary data collection (conducting interviews) and secondary data collection procedures (by documents).

2.7 Data Analysis

Quantitative data from the interview schedule was analyzed using SPSS statistical software Descriptive statistics (frequencies and means) were used to summarize the data. Inferential statistics (regression analysis) was employed to determine relationships and the impact of smallholder farmers' involvement in agricultural projects and their socio-economic well-being.

3. Results and Discussion

3.1 Personal characteristics of Smallholder farmers

Table 1 shows that 44.16% of the smallholder farmers mostly had non-formal education, followed by those with primary education (32.47%), while those with tertiary education were the least (5.19%). These findings indicate a high proportion of illiteracy amongst the smallholder inland valley swamp farmers. Gul and Yar, (2024) also opined illiteracy was a key hindrance to institutional support towards agriculture, while (Yameogo et al., 2024) revealed that education had a positive relationship with agricultural efficiency and production. Most of the respondents had household sizes of 4-6 members (38.96%), followed by those with 7-9 (27.92%), whilst those with 1-3 members (15.58%) were the lowest. Most (67.53%) of the respondents had at least 10 years of farming experience, whereas those with less than one year of experience had the lowest of 2.60%. Most of the farmers involved in the project owned the land they cultivated (90.26%), cultivated 8-10 acres (90.26%), practiced mixed farming (81.17%), and received extension service (92.86%) from various projects (Table 1). Findings indicated that the sampled population is fairly knowledgeable as they have spent over ten years in farming and involvement in agricultural projects. However, future interventions and planning in agriculture should continue to feature more youth and encourage farmers to increase the acreage of land allotted to crop production. In a farming household, all members of the household assist each other with farming activities and other household chores. This is more the reason why marriage is paramount among the farming communities because most farmers depend on family labour as a primary source of labour.

3.2 Productivity Level of Smallholder Farmers in Agricultural Projects

The results of the perception of smallholder farmers on productivity in agricultural projects are presented in Table 2. The monthly household income of most of the respondents (47.4%) in the studied communities ranged from NLe 101-200 compared to three persons (1.95%) who received at most NLe 50. Most of the smallholder farmers do not have other sources of income (79.87%), selling farm produce on a quarterly basis (85.06%), selling less than 500 kg farm produce (82.47%), experience market demand as price influencing factors (90.26%), not experienced any changes in one’s income level over the past five years (71.43%), and dissatisfaction with the income respondents receive from farming (84.42%).

Table 1. Demographic characteristics of respondents in the study area

Characteristic	Category	Frequency	Percent
Age	≥ 51 years	28	18.18
	41-50 years	30	19.48
	31-40 years	43	27.92
	21-30 years	41	26.62
	≤ 20 years	12	7.79
Gender	Female	66	42.86
	Male	88	57.14
Education	Tertiary	8	5.19
	Secondary	28	18.18
	Primary	50	32.47
	No formal education	68	44.16
Household size	10 and above	27	17.53
	7-9	43	27.92
	4-6	60	38.96
	1-3	24	15.58
Occupation	Agricultural farming	100	100.00
Farming experience	≥ 10 years	104	67.53
	6-10 years	20	12.99
	1-5 years	26	16.88
	≤ 1 year	4	2.60
Land ownership	Rent	15	9.74
	Own	139	90.26
Farm size	≥ 15 acres	6	3.90
	10-15 acres	9	5.84
	8-10 acres	139	90.26
Farming system	Mixed	125	81.17
	Commercial	2	1.30
	Subsistence	27	17.53
Extension service	No	11	7.14
	Yes	143	92.86

Table 2. Perception of smallholder farmers on productivity in agricultural projects

Characteristic	Category	Frequency	Percent
Monthly income	> Le 500	18	11.69
	Le 201-Le 500	16	10.39
	Le 101-Le 200	73	47.4
	Le 51-Le 100	44	28.57
	≤ Le 50	3	1.95
Other income sources	No	123	79.87
	Yes	31	20.13
Frequency of farm produce sale	Annually	11	7.14
	Quarterly	131	85.06
	Monthly	11	7.14
	Weekly	1	0.65
Quantity of farm produce sale	≥2000 kg	3	1.95
	1000-2000 kg	9	5.84
	500-1000 kg	15	9.74
	≤ 500 kg	127	82.47
Main market	Local market	154	100
Income change	No	110	71.43
	Yes	44	28.57
Price influencing factors	Season	5	3.25
	Market demand	139	90.26

	Quantity	0	0
	Quality	10	6.49
Income from farming	Very dissatisfied	4	2.6
	Dissatisfied	130	84.42
	Neutral	5	3.25
	Satisfied	11	7.14
	Very satisfied	4	2.6

However, all of them utilize the local market as the main market to sell their agricultural products (Table 2). Findings on household income indicate that household income from farming alone is insufficient to meet the increasing needs of smallholder farmers in the study area. This suggests that farming should be complemented with other sources of income such as petty trading and other jobs to serve as stabilizers and buffers of the household economic livelihood of smallholder farmers. Thus, any exposure of the agriculture-dependent smallholder vulnerable groups to risks, minor changes in climate, and political instability can adversely affect household food security status and pose imbalances in their livelihoods.

3.3 Determining relationships between farming income and other income variables

The stepwise regression showing a relationship between income from farming and monthly income accounted for 27.78% of total variability (R^2=0.278; p=0.05) (Figure 1). The remaining percent variability is possibly attributed to environmental error. The result implies that as the monthly income of smallholder farmers increases their dissatisfaction with income from farming decreases. Findings suggest that the higher the monthly income the better smallholder farmers are satisfied.

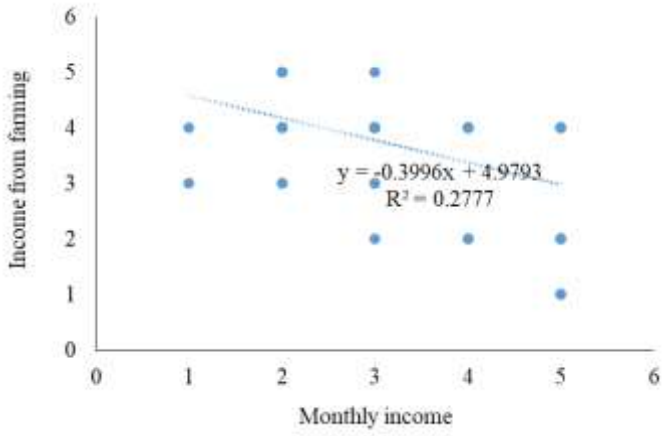

Figure 1. Scattered plots showing a relationship between income from farming and monthly income

The stepwise regression shows a relationship between income from farming and other income sources accounted for 0.44% of the total variability (R^2=0.0044; p=0.05) (Figure 2). The remaining percent variability is possibly attributed to environmental error. The result implies that other sources of income for smallholder farmers have little influence on their dissatisfaction with income from farming. Since most of the smallholders assessed do not embark on generating money from other sources, it is suggested that their satisfaction could be improved by embarking on other income generating activities to support their farming activities and families.

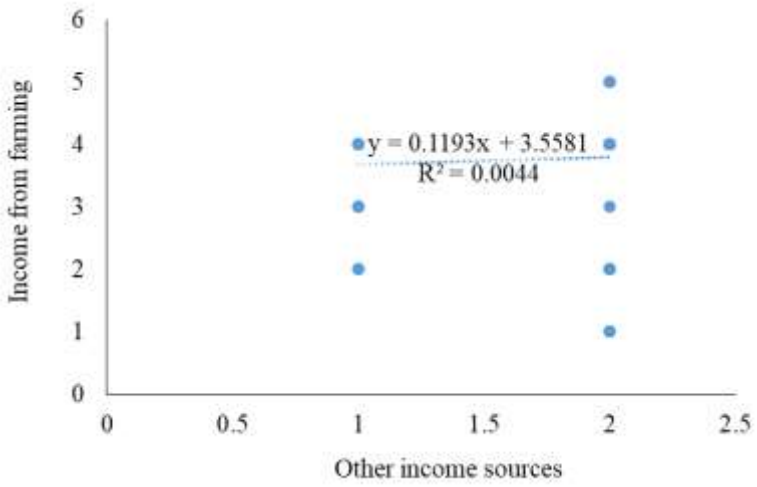

Figure 2. Scattered plots showing a relationship between income from farming and other income

The stepwise regression showing a relationship between income from farming and the frequency of farm produce sold accounted for 6.33% of the total variability (R^2=0.0633; p=0.05) (Figure 3). The remaining percent variability is possibly attributed to environmental error. The result implies that as the frequency of farm produce sales by smallholder farmers increases from weekly to annually their dissatisfaction with income from farming increases. Findings suggest that the shorter the frequency of farm produce sales, that is, selling weekly or quarterly, or monthly, rather than annually, the lesser the dissatisfaction.

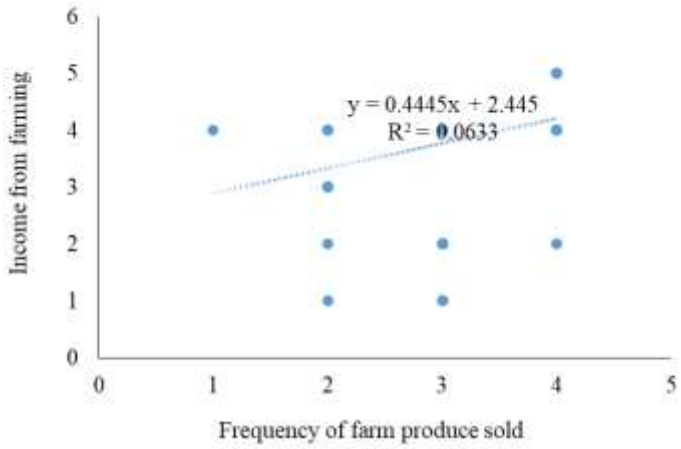

Figure 3. Scattered plots showing a relationship between income from farming and frequency of farm produce sold

The stepwise regression showing a relationship between income from farming and quantity of farm produce sold accounted for 2.88% of total variability (R^2=0.0288; p=0.05) (Figure 4). The remaining percent variability is possibly attributed to environmental error. The result implies that as the quantity of farm produce sold decreases the level of dissatisfaction by smallholder farmers regarding income from farming increases. Findings suggest that increasing farm produce sales contributes to reducing dissatisfaction with income from farming by smallholder farmers.

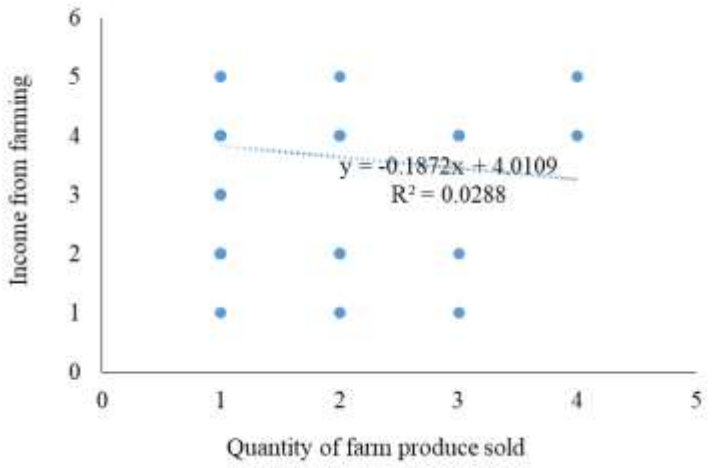

Figure 4. Scattered plots showing a relationship between income from farming and quantity of farm produce sold

The stepwise regression showing a relationship between income from farming and income change accounted for 22.61% of total variability (R^2=0.2261; p=0.05) (Figure 5). The remaining percent variability is possibly attributed to environmental error. The result implies that increasing income influences the satisfaction level of smallholder farmers' income from farming. This suggests that satisfaction could be improved through increasing income levels and improving the livelihoods of smallholder farmers.

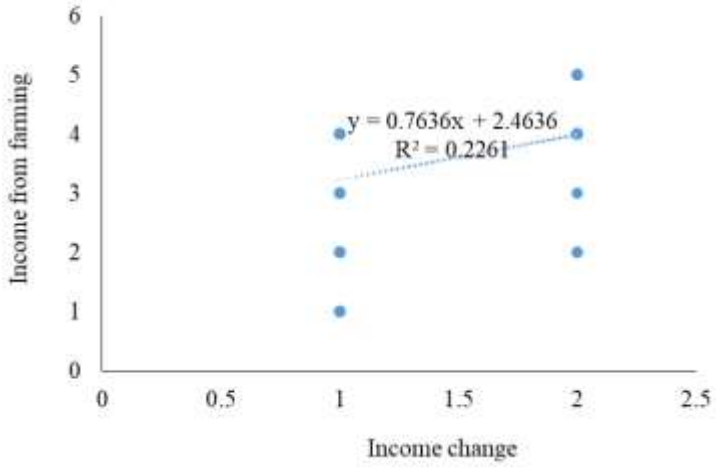

Figure 5. Scattered plots showing a relationship between income from farming and income change

The stepwise regression showing a relationship between income from farming and price influencing factors accounted for 6.03% of total variability (R^2=0.0603; p=0.05) (Figure 6). The remaining percent variability is possibly attributed to environmental error. The result implies that the price influencing factors play a key role in determining the level of satisfaction of income from farming activities of smallholder farmers involved in projects in the studied communities. The influence of season, market demand, and quality play roles to varying degrees.

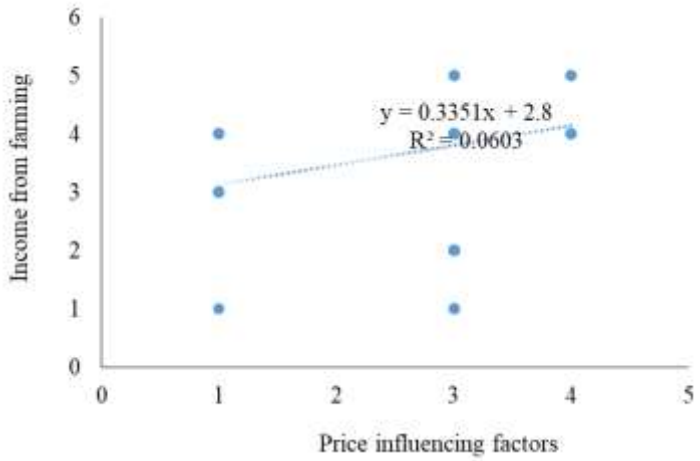

Figure 6. Scattered plots show a relationship between income from farming and price influencing factors.

4. Conclusion and Recommendations

Young farmers made up the vast majority of the respondents in their engagement with their associated gains and challenges in agricultural projects in the study area. The majority of the respondents are illiterate whilst the male farmers also dominate. Large household sizes are peculiar with the respondents and the majority operate less acreage of farm land even though they have increased access to extension services. The majority of the respondents receive very low earnings on a monthly basis. The productivity level of smallholder farmers in agricultural projects is influenced by the income earning power and support from other sources. Various mitigating strategies by different stakeholders' interventions should be exploited for consideration in developing interventions targeted at empowering farmers and other relevant stakeholders with the capacity to withstand challenges encountered in their farming activities. Based on the forgone key findings, the study recommends awareness raising and funding for farmers in agricultural practices targeted at improving productivity, and livelihoods thereby subsequently increasing the income levels of smallholder farmers.

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