

The Migration-Poverty Trap: Assessing Farm Output and Household Welfare in Rural Nigeria

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Abstract

This study evaluates the impact of rural migration on the poverty status of farming households in Akure South, Nigeria. Using a multi-stage sampling technique to survey 120 respondents, the research employed descriptive and inferential statistics to analyze migration dynamics. Findings indicate that migration is primarily driven by education and skill acquisition, influenced by social expectations, land reforms, and poor institutional access. Notably, the study reveals a paradoxical decline in agricultural productivity and income following member migration. This reduction is driven by a 68.3 percent increase in labor costs and a significant decrease in cultivated land. Statistical analysis confirms that migration negatively affects farm output and total income, leading to the rejection of the null hypothesis. The research highlights a labor drain effect where human capital flight inadvertently exacerbates rural economic vulnerability. These results imply that without strategic interventions such as mechanization and improved infrastructure, migration will continue to undermine smallholder productivity. Consequently, policy frameworks must balance labor mobility with rural developmental support to mitigate poverty effectively.

Keywords: Poverty Alleviation, Agricultural Productivity, Rural-Urban Migration, Labor Drain Effect, Smallholder Farming

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INTRODUCTION

Migration is fundamentally defined as the movement of people from their places of origin to new locations for temporary or permanent settlement (Triandafyllidou, 2022). This phenomenon occurs across various scales, ranging from local communities and states to international borders between nations. Recent data from the United Nations Department for Economic and Social Affairs highlights a significant surge in global migration, reaching approximately 258 million individuals (Mavroudi & Nagel, 2019; Massey, 2023). This trend is largely driven by the pursuit of better livelihoods, education, and security in an increasingly interconnected world. At different points in time, entire groups have shifted their abodes to escape decline and seek prosperity. Consequently, understanding

the factors that engender such movements is crucial for addressing contemporary demographic challenges (Beckert et al., 2021).

The movement of people from rural to urban areas has become a common and persistent occurrence within the Nigerian context (Abubakar & Doan, 2019). While urban centers offer the allure of employment, better healthcare, and advanced education, the transition often poses severe problems for both origin and destination areas (Mmom & Etuonovbe, 2019). Migrants are typically preoccupied with the anticipated benefits of moving, often overlooking the potential hardships they might encounter (Umar & Shuaibu, 2021). Unfortunately, the negative impacts of this process frequently fall upon the non-migrants who remain in the rural communities (Uduji et al., 2019). These individuals must navigate the social and economic voids left by those who have departed. Thus, migration is not merely an individual choice but a collective rural challenge (Carling & Collins, 2019).

In many rural regions, the most immediate consequence of rural-urban migration is a rapid deterioration of the local economy (Qi et al., 2022). This decline often leads to chronic poverty and a significant threat to household food security. The primary cause of this economic instability is the excessive drain of productive youth from the rural populace. As the younger generation departs, the labor force is left comprised mainly of children and the elderly (Zamarro, 2020). This demographic imbalance severely limits the capacity for physically demanding agricultural activities. Without a robust workforce, the cycle of rural production is disrupted, deepening the state of deprivation.

The United Nations World Migration Report emphasizes that people move to escape insecurity, conflict, and human rights violations (Savary et al., 2020). However, economic opportunities and the search for better educational standards remain the dominant drivers for most voluntary migrants (Erdal & Oeppen, 2019). Mobility is inherently linked to human existence and has become a reality touching all spheres of modern life (Boddington, 2023). As the world becomes more interconnected, the scale of human displacement and relocation continues to expand (Mao et al., 2020). The World Bank estimates that the number of migrants globally has now reached approximately 266 million people (Bahar, 2020). This massive movement of human capital significantly influences global developmental agendas and national policies.

Migration poses a significant worry in achieving the 2030 Agenda for Sustainable Development Goals, particularly regarding global poverty and hunger (Holliday et al., 2019). Agriculture is a key component of these goals, yet it is often the sector most harmed by the loss of rural labor (Workie et al., 2020). In countries of origin like Nigeria, migration is closely associated with a desperate search for better livelihoods and economic survival. High-income countries currently host about 64 percent of the global migrant population, attracting talent from developing regions (Adepoju, 2022). Between 2000 and 2017, the most substantial increase in migrant numbers originated from Africa, including Nigeria. This trend underscores the urgent need to evaluate how labor mobility affects local agricultural sustainability (Aniche, 2020).

The Food and Agricultural Organization acknowledges that migration can contribute to development through the mechanism of remittances (Subramaniam et al., 2022). Ideally, these financial inflows should support farming households and enhance their overall economic status. However, a critical problem arises when there is no remaining workforce available to be hired for farm operations (Nye, 2021). In such cases, migration is regarded

as a negative factor that cripples agricultural productivity despite the presence of cash transfers (Atanguegnima et al., 2024). When a country cannot ensure food security, it remains trapped in a state of systemic poverty. Nigeria exemplifies this struggle, as agriculture contributes only about 24.44 percent to the nominal Gross Domestic Product (Akanle & Shittu, 2022).

Nigeria currently ranks 103rd out of 119 countries on the Global Hunger Index, reflecting a severe state of national undernutrition (Pal et al., 2021). This low ranking is a direct consequence of inadequate agricultural output and the exclusion of vulnerable social groups from economic growth. The United Nations Development Program emphasizes that poverty is the end result of several national factors, including poor governance (Kitole & Sesabo, 2024). Within the framework of this study, household poverty is defined as the inability to provide for basic needs like shelter and education. National statistics indicate that approximately 82.9 million Nigerians live below the poverty line (Fentaw et al., 2022). These figures highlight the precarious situation of rural households facing the loss of their primary laborers.

In Ondo State, specifically within Akure South, the influx of migrants toward urban centers has reached significant levels (Alabi, 2023). Reports from the State Bureau of Statistics indicate that various push factors, such as famine and unemployment, force people to leave (Awasthi, 2021). At the same time, pull factors like higher income and better healthcare in Akure town continue to attract rural residents (Alabi, 2023). Farmers in areas such as Aponmu have increasingly migrated to work as laborers in construction or bitumen factories (Kim, 2025). This shift involves both men and women, who often seek domestic or service work in the informal sector. Many of these migrants struggle to find stable employment, yet their absence continues to hollow out the rural labor market.

Previous studies have explored poverty and rural livelihood diversification across various regions of Nigeria, including Edo, Niger, and Ekiti States (Opute et al., 2025). Scholars like Awotide and Ogunyinka have provided valuable analyses of maize and cocoyam farmers' poverty status (Wossen et al., 2023). However, there remains a notable dearth of information specifically concerning the effects of migration on farming households in Akure South (Olutumise et al., 2024). Issues such as the direct impact of labor loss on annual farm income and total output have not been sufficiently addressed (Giller et al., 2021). Furthermore, the specific institutional and social factors influencing migration in this locality require more empirical investigation (Kaczan & Orgill-Meyer, 2020). This gap in the literature necessitates a more focused research approach to provide accurate results.

The broad objective of this study is to determine the effect of rural migration on the poverty status of farm households in Akure South. Specifically, the research aims to describe socioeconomic characteristics and assess the impact of migration on agricultural output and income. To achieve high accuracy, this study utilizes the poverty index analysis model and simple regression analysis. The investigation also examines the factors influencing migration to provide a comprehensive understanding of the rural-urban dynamic. Two null hypotheses are tested to determine if migration significantly affects farm income and output in the study area. Ultimately, this research hopes to offer policy insights that balance labor mobility with the need for rural economic stability.

METHODS

This research was carried out in the Akure South Local Government Area (LGA), which serves as the administrative capital of Ondo State in Southwestern Nigeria. Geographically, the area is situated at coordinates 9° 40' 55.1964" N and 8° 40' 30.9972" E, positioning it approximately 311 kilometers north of Lagos and 900 kilometers southwest of Abuja. The LGA covers a total landmass of 332 square kilometers and supports an estimated population of over 665,000 residents. The region comprises 14 distinct communities, including Aponmu, Isikan, Oda, and Oke-Aro, many of which maintain a predominantly rural character within Nigeria's tropical rainforest zone.

The climatic and ecological conditions of Akure South are conducive to diverse agricultural activities, which remain the primary source of livelihood for the local population. Farming systems in the area are characterized by the production of essential food crops such as yam, cassava, cocoyam, and maize. In addition to crop cultivation, many households engage in livestock farming, specifically poultry, goat rearing, and aquaculture, to sustain their economic needs. This agrarian foundation makes the area a significant site for studying the socio-economic dynamics of rural-urban migration and its subsequent impact on farming households.

Sampling Technique

The selection of respondents for this research followed a rigorous multi-stage sampling procedure to ensure representative data collection. In the initial stage, three specific communities within the Akure South Local Government Area, namely Oke Aro, Akure, and Isikan, were purposively selected based on the high concentration of farming activities in these locations. The second stage involved the random selection of four villages from each of the three previously identified communities, resulting in a total of twelve villages included in the study. In the final stage, ten farming households were randomly chosen from each of the twelve villages to participate in the survey. This systematic process culminated in a total sample size of 120 farming households, providing a robust basis for the subsequent empirical analysis.

Data Collection

The empirical evidence for this study was derived from primary data obtained through the administration of structured questionnaires to the selected farming households. This research instrument was specifically designed to capture comprehensive information regarding the socioeconomic profiles of the respondents alongside relevant migration variables. Each questionnaire was administered through face-to-face interactions to ensure that the respondents clearly understood the objectives of the study and provided accurate responses. To maintain the integrity of the findings, the data collection process emphasized the completeness and consistency of the information gathered from the field. This systematic approach allowed for the acquisition of quantifiable data necessary to conduct a rigorous statistical analysis of the impacts of migration on rural welfare.

Data Analysis

The analytical framework for this study integrated both descriptive and inferential statistics to process the data gathered from the field survey. Descriptive tools, including frequency distributions, mean scores, and

percentages, were utilized to characterize the socioeconomic profiles of the respondents and evaluate the prevailing migration trends. To determine the specific impacts of migration on farm income and agricultural output, the study employed simple regression analysis. Furthermore, the poverty status of rural farming households was quantified using the poverty index analysis model, while the underlying drivers influencing migration decisions were identified through factor analysis. This multi-faceted statistical approach ensured that each research objective was addressed with the appropriate analytical rigor to provide reliable and accurate results.

Model Specification

Model for Simple Regression Analysis

The impact of various factors on the poverty status of farming households was estimated using a regression model specified as equation (1):

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \dots + \beta_nX_{14} + \epsilon \quad (1)$$

In this framework, the dependent variable Y represents the headcount ratio index, which serves as a metric for measuring the severity of poverty among the surveyed households. The explanatory variables included in the model encompass a range of demographic and economic factors, such as the age and gender of the household head, where gender is treated as a dummy variable. Furthermore, the analysis accounts for household size, the educational level of the head measured in years, and the total annual income of the family. To capture the technical and logistical aspects of farming, variables such as years of farming experience, the scale of fish farm operations, access to extension services, and the physical distance from the farm to the market were also incorporated. This comprehensive specification allows for a detailed assessment of how individual household characteristics and institutional access collectively influence rural welfare levels.

Factor Analysis Model

The drivers of migration in this study were identified using a factor analysis model expressed in equation (2):

$$Y = \beta_{i0} + \beta_{i1}F_1 + \beta_{i2}F_2 + \dots + \beta_{in}F_n + \epsilon_i \quad (2)$$

Where the coefficients β_{i1} through β_{i2} represent the factor loadings of the variables on their respective factors. Adhering to Kaiser's rule of thumb, a minimum factor loading of 0.4 was utilized as the threshold to separate and identify variables that contribute significantly to the migration attributes. Furthermore, the poverty status of the respondents was determined through the poverty index analysis model, which calculates the headcount ratio and poverty gap based on the total population, the number of individuals living at or below the poverty line, and the specific income levels of poor households. To complement these analyses, a mean score analysis was applied to data collected via a four points Likert scale ranging from a very great extent to a very low extent. The decision rule for this scale was established at a mean cut-off point of 2.5, where any item with a score below this threshold was rejected and those achieving 2.5 or higher were accepted as significant. This integrated analytical approach ensures that the qualitative perceptions of the farmers are accurately quantified and validated against established economic indices.

RESULTS AND DISCUSSION

The socioeconomic profile of the rural farming households was systematically analyzed, with the comprehensive findings detailed in Table 1. This dataset offers critical insights into the demographic distribution and economic standing of the respondents within the study area. By presenting these characteristics through a structured tabular format, the study provides a clear baseline for understanding the underlying human capital factors that influence regional agricultural dynamics. Furthermore, this descriptive summary serves as the foundation for the subsequent inferential analyses regarding migration patterns and household welfare. Consequently, the information displayed in Table 1 facilitates a more nuanced interpretation of the challenges faced by smallholder farmers in the context of rural labor mobility.

Table 1. Percentage Distribution of Socio-economic Characteristics of the Respondents in the Study Area

Socio-economic variables	Category	Frequency (n = 120)	Percentage (%)	Mean (X)
Gender	Male	56	46.7	
	Female	64	53.3	
Age (Years)	≤ 30	20	16.7	55
	31-40	39	32.5	
	41-50	26	21.7	
	Above 50	35	29.1	
Years Spent in Formal education	Primary Education (1– 6)	50	41.7	16
	Secondary education (7 – 13)	47	39.1	
	Tertiary Education (above 13)	23	19.2	
Marital status	Single	81	6.7	
	Married	8	67.5	
	Widow	31	25.8	
Household size	≤ 5	53	44.2	6
	6-10	55	45.8	
	Above 10	12	10.0	
Farm size (ha)	≤ 0.5	26	21.7	1.5
	0.6 – 1.0	19	15.8	
	1.1 – 1.5	16	13.3	
	1.6 – 2.0	28	23.4	
	Above 2.0	31	25.8	
Farming Experience	≤ 5	29	24.2	29
	6 - 10	56	46.7	
	Above 10	35	29.1	
Annual Farm Income	≤ 100,000	21	17.5	₹294,272. 50
	₹100,001- ₹150,000	48	40.0	
	₹150,001- ₹200,000	24	20.0	
	₹250,001- ₹300,000	19	15.8	
	Above ₹300,000	8	6.7	

Socio-economic variables	Category	Frequency (n = 120)	Percentage (%)	Mean (X)
Annual total Income	≤ ₦100,000	25	20.8	₦415,566.67
	₦100,001 - ₦200,000	32	26.7	
	₦200,001 - ₦400,000	24	20.0	
	₦400,001 - ₦600,000	23	19.2	
	Above ₦600,000	16	13.3	
Membership of cooperative society	Yes	50	41.7	
	No	70	58.3	

Based on the socio-economic data presented in [Table 1](#), the demographic profile of the respondents indicates a significant gender shift, with female-headed households accounting for 53.3% of the total sample. This dominance suggests that women are increasingly taking on management roles in rural areas, likely due to the out-migration of males who move to urban centers as the primary breadwinners. The age distribution reveals a mature farming population with an average age of 55 years, though a substantial portion of the workforce remains in the productive bracket of 31 to 40 years. Furthermore, the respondents possess a notable level of human capital, characterized by an average of 16 years of formal education and extensive technical resilience gained through an average of 29 years of active farming experience.

Regarding the economic and institutional characteristics shown in [Table 1](#), the study area is primarily composed of smallholder farmers operating on an average land size of 1.5 hectares. The household structure, with an average of six members, serves as a vital source of domestic labor for these agricultural activities. Financially, there is a clear disparity between the total annual income of 415,566.67 Naira and the specific farm income of 294,272.50 Naira, indicating that rural households rely heavily on diverse income streams or remittances to bridge the economic gap. However, the low participation in cooperative societies, involving only 41.7% of the farmers, remains a critical challenge. This lack of institutional engagement suggests limited access to collective credit and shared resources, which could further exacerbate the vulnerability of these farming households in the face of migration-induced labor shortages.

Gender

The analysis of socio-economic characteristics reveals that 53.3% of the surveyed farming households are headed by females, while males account for 46.7%. This female-headed household dominance suggests a significant gender shift in rural management, likely driven by the fact that males, traditionally viewed as the primary breadwinners, are more prone to migrating in search of better economic opportunities to support their families. This finding contrasts with the study by Obayelu et al. (2014) in Odogbolu, which reported male dominance in agriculture, a discrepancy that can be attributed to their study's lack of focus on migration-induced labor shifts. However, the results align with the observations of Komatsu et al. (2019) in Kenya, who identified a higher prevalence of women remaining as household heads following male out-migration. Ultimately, the data indicates that male migration in the study area is primarily a strategic response to secure external employment and improve the overall living conditions of the household.

Age

The age distribution of respondents detailed in Table 1 indicates that 32.5% of farming household heads fall within the 30 to 40-year bracket, followed by 29.1% who are older than 50, and 16.7% who are 30 years old or younger. With an overall average age of 55 years, the demographic trend suggests a transition toward an older farming population. This maturity in age has significant implications for agricultural productivity, as physical capabilities typically decline over time, potentially reducing labor efficiency in demanding farm operations. Consequently, older farmers may feel compelled to relocate closer to their families to secure essential social, material, and physical assistance. Furthermore, such movements are often strategic family decisions, where older members migrate to provide support for adult children who are balancing the dual pressures of employment and childcare (Ngan & Chan, 2022).

Educational Level

The educational profile of rural households, as presented in the study, shows that 41.7% of respondents completed primary education, 39.1% attained secondary schooling, and 19.2% possessed tertiary qualifications. These diverse educational backgrounds play a critical role in shaping household strategies for poverty alleviation and managing economic hardships. Specifically, the level of formal schooling often influences the decision to migrate, as individuals seek better job opportunities and improved living standards outside their immediate communities. This finding is consistent with the perspective of Ainscow (2020); Fischer et al. (2021), who argued that education enhances a farmer's capacity to understand and apply modern technologies. Whether engaged in agricultural or non-farm economic activities, better-educated individuals are better equipped to diversify their income streams, which ultimately improves the overall quality of life within rural households.

Marital Status

The survey findings indicate that a significant majority of the respondents are married, accounting for 67.5% of the total, followed by 28.8% who are widows, while a small minority of 6.7% are single. This high proportion of married and widowed individuals suggests that family responsibilities and the pressure to provide for dependents are primary drivers of migration in the region. These results align with the observations of Ghimire et al. (2021), who emphasized that marriage typically leads to larger family sizes and higher consumption demands. As household expenditures rise and domestic savings dwindle, the breadwinner often feels compelled to migrate to secure higher income streams. Consequently, migration serves as a strategic economic response to ensure that the material needs of the family are met, reinforcing the migrant's role as the central provider in a challenging economic environment.

Household Size

The study reveals that the average rural household in the study area consists of six members, with the largest proportion of respondents (45.8%) maintaining a family size of between six and ten individuals. This moderate household size serves as a dual-edged factor in rural livelihoods; while it provides a vital source of domestic labor that can enhance farm productivity and alleviate poverty, it also increases the economic burden on households with limited resources. The data suggests a positive correlation between family size and the propensity

for migration, as larger households often face higher consumption pressures. This observation is consistent with the findings of Hao & Tang (2023) in Edo State, which highlighted that households with more members demonstrate a greater tendency for migration as a strategy to diversify income and reduce local economic constraints.

Farm Size

The findings presented in Table 1 indicate that 25.8% of the respondents manage farm sizes exceeding 2 hectares, while 21.7% operate on plots of 0.5 hectares or less. With an overall mean farm size of 1.5 hectares, it is evident that the agricultural landscape in the study area is dominated by small-scale producers. This result is consistent with the observations of Marcacci et al. (2020) who noted that over 90% of food production in Nigeria is generated by smallholder farms typically under 5 hectares. While these small plots are foundational to local food security, the limited access to larger landholdings often restricts the potential for commercialized farming. Consequently, the inability to expand agricultural operations serves as a significant push factor, compelling farmers to migrate in search of better economic opportunities and improved living standards that cannot be sustained by small-scale cultivation alone.

Farming Experience

As shown in Table 1, 46.7% of the rural households possessed at least 10 years of farming experience, while the overall average reached a significant 29 years. This high level of experience suggests that the farmers in the study area have acquired extensive practical knowledge and technical resilience through decades of agricultural practice. Such expertise places these households in a stronger position to manage their farming operations effectively, thereby enhancing their capacity to maintain a stable standard of living. These results are corroborated by Giller et al. (2021), who observed that seasoned farmers are better equipped to identify and resolve specific production challenges. Consequently, this deep-rooted agricultural proficiency can serve as a stabilizing factor, potentially reducing the necessity for rural migration by improving the viability and success of local farming ventures.

Membership of Cooperative Society

As shown in Table 1, the data on institutional participation reveals that 41.7% of the respondents are members of cooperative societies, while a larger segment of 58.3% remains unaffiliated with such organizations. Participation in cooperatives or similar associations is a critical factor in rural development, as it allows farmers to pool their resources, share risks, and adopt more innovative agricultural practices. By fostering an environment of collective innovation, these societies enable farming households to enhance the efficiency of their economic activities, which serves as a vital pathway for poverty alleviation. Consequently, the strength gained through social capital and cooperative membership can diminish the perceived necessity of migrating to urban centers, as improved local livelihoods provide a viable alternative to seeking opportunities elsewhere.

Effects of Rural Migration on Farmers' Farm Income

The analysis regarding the financial implications of labor mobility is detailed in [Table 2](#), which illustrates The Effects of Rural Migration on Farmers' Farm Income. This table provides a quantitative overview of how migration patterns influence household revenue and agricultural productivity within the study area.

Table 2. OLS Regression Result on Effects of Rural Migration on Farmers' Farm Income

Variable	Coefficients (β)	Std. Error	t-values
Migration	44.993	15.309	2.939***
Constant	150690.909	54054.862	2.788***
F-ratio	9.097		
R ²	0.680		
Adjusted R ²	0.568		

*** = Significant at 1% level of probability

Based on the econometric analysis presented in [Table 2](#), the model yielded an R^2 value of 0.680 and an F -ratio of 9.097, indicating that 68% of the variation in farmers' income is accounted for by migration-related variables. The results from the estimated marginal effects suggest that increased migration in the study area significantly correlates with a decline in total farm income. This downward trend in revenue tends to exacerbate the poverty status of farming households, as a higher number of migrants often reduces the probability of a household escaping economic hardship. This phenomenon highlights the critical labor vacuum created when productive members move away, leaving agricultural activities underserved. Furthermore, the findings suggest that the remittances sent back by migrants are frequently insufficient to compensate for the lost labor or to adequately sustain the remaining family members, thereby placing additional strain on rural food security.

The patterns of movement and the driving factors behind these shifts are documented in [Table 3](#), which details The Migration History and Reasons for Migration in the Study Area. This table provides a categorical overview of the historical trends and the specific socio-economic motivations that prompt individuals to leave their rural households. These data points establish the necessary context for understanding the behavioral dynamics of migration within the surveyed population.

Table 3. Migration History and Reasons for Migration in the Study Area

Migration History	Frequency (n = 120)	Percentage (%)
Household migrated to an urban area in the past 5 years	98	81.7
Main reason for their migration:		
In search of white collar job	22	18.3
Education/skill acquisition	23	19.2
Better living conditions/menial jobs	61	50.8
Leisure	14	11.7

As illustrated in [Table 3](#), the motivations behind migration within rural farming households are diverse, though primarily driven by economic necessity. Over half of the respondents (50.8%) strongly agreed that household members relocated in pursuit of improved living conditions and menial job opportunities, reflecting a critical need for immediate income. Additionally, 19.2% of migrations were motivated by education and skill acquisition, while 18.3% sought white-collar employment, highlighting a desire for long-term professional advancement. In contrast, only a small proportion (11.7%) moved for leisure-related reasons. These findings suggest that migration is largely a survival and advancement strategy, where individuals move to bridge the economic gaps found within their local rural communities.

A comparison of financial outcomes is presented in [Table 4](#), which details "Households Farm Income before and after their Migration." This table highlights the shifts in agricultural revenue following the departure of household members, providing an empirical basis for assessing the economic consequences of migration on rural productivity.

Table 4. Presents Households Farm Income before and after their Migration

Annual farm income	Frequency (n = 120)	Percentage (%)	Mean
Before the migration of household member(s):			
≤ ₦100,000	33	27.5	
₦100001 – ₦200,000	17	14.2	
₦200,001 – ₦300,000	37	30.8	637,637.50
₦300,001 – ₦400,000	18	15	
Above, ₦400,000	15	12.5	
After the migration of household member(s):			
≤ ₦100,000	30	25	
₦100001 – ₦200,000	7	5.8	
₦200,001 – ₦300,000	33	27.5	512, 858.33
₦300,001 – ₦400,000	37	30.8	
Above, ₦400,000	19	15.8	

[Table 4](#) highlights a notable decrease in financial performance following the departure of household members. The mean annual farm income fell from ₦637,637.50 before migration to ₦512,858.33 afterward, confirming that the loss of productive labor directly diminishes agricultural revenue. This trend illustrates that migration acts as an economic disruptor, as the remaining household members are often unable to sustain previous levels of farm productivity.

The specific factors contributing to the decline in agricultural revenue are detailed in [Table 5](#) about Reasons for Farm Income decrease after Migration. This table identifies the primary obstacles faced by households following the loss of labor, providing clarity on why productivity levels often fail to recover.

Table 5. Reasons for Farm Income decrease after Migration

Reasons	Frequency (n = 120)	Percentage (%)
Decrease after migration		
Increased cost of labour due to lack of farm labourers	82	68.3
Decreased agricultural production due to reduction in cultivated farm land	82	68.3
Loss of access to land or resources as some portion of the land were sold to assist in the travel	72	60

The findings in [Table 5](#) identify the specific drivers behind the observed decline in agricultural revenue following migration. The most prominent factors include a sharp increase in labor costs due to the scarcity of farmworkers (68.3%) and a simultaneous reduction in total agricultural output caused by a decrease in cultivated land area (68.3%). Furthermore, 60% of households reported a loss of access to land or essential resources, often because portions of their holdings were sold to finance the migration process itself. These results suggest that migration creates a significant economic trade-off; while it seeks better opportunities elsewhere, the immediate depletion of labor and capital assets severely undermines the productivity and financial stability of the remaining farm enterprise.

Effects of Rural Migration on Farmers' Output in the Study Area

The regression analysis in [Table 6](#) examines the effects of rural migration on farmers' output, providing a statistical assessment of how labor mobility influences agricultural yields. This model serves to quantify the relationship between migration variables and total farm production within the study area.

Table 6. OLS Regression Result on Effects of Rural Migration on Farmers' Output

Variable	Coefficients (β)	Std. Error	t-values
Migration	-18.033	1.412	12.771***
Constant	922.273	225.393	4.092***
F-ratio	9.097		
R ²	0.621		
Adjusted R ²	0.568		

*** = Significant at 1% level of probability

The regression results in [Table 6](#) show an R^2 of 0.621, meaning migration accounts for 62% of the variance in farm output. An F -ratio of 9.097 (significant at 1%) confirms the model's strong statistical fit. However, the migration variable carries a significant negative coefficient at the 1% level, indicating that increased migration substantially reduces agricultural yields. This highlights a clear inverse relationship where the loss of household labor directly diminishes total farm productivity.

Poverty Status of Rural Household Farmers

The poverty status of rural farming households is evaluated in [Table 7](#). These results provide a quantitative assessment of economic vulnerability, establishing a baseline for understanding how migration and fluctuating farm incomes influence the prevalence of poverty within the study area.

Table 7. Poverty Status of Rural Household Farmers

Poverty Status	Frequency (n = 120)	Percentage (%)
Poor (spending below the poverty line)	66	55
None poor (spending above the poverty line)	54	45

Based on an annual expenditure mean of \$93.44, the poverty line was established at \$62.29. [Table 7](#) reveals that 55% of the farming households are categorized as poor. This high poverty rate aligns with studies by Giller et al. (2021), linking the trend to reduced farm output and rising living costs. Notably, while remittances from migrants have increased, these funds are primarily used for immediate consumption rather than productive investment, leaving households trapped in a cycle of poverty.

Effects of Rural Migration on Poverty Status of the Rural Farm Households

[Table 8](#) presents the effects of rural migration on poverty status of rural farm households." This table provides a statistical breakdown of how migration specifically correlates with changes in the poverty levels of the surveyed families.

Table 8. Results on Effects of Rural Migration on Poverty Status of the Rural Farm Households

Consumption pattern	Mean	Decision
Quantity of food eaten per day (eat to satisfaction)	2.47	Rejected
Quality of food eaten per day (more of fruits, vegetables and protein)	2.95	Accepted
Number of times eaten per day	2.31	Rejected
Income earned		
Increased income due to remittances	2.62	Accepted
Decreased income due to migration	2.82	Accepted
Farmed area		
Decreased production due to lack of farm labour	2.88	Accepted
Increased cost of production	2.81	Accepted
Decreased output	2.98	Accepted
Reduced farm area	1.97	Rejected

The results in [Table 8](#) highlight a dual impact of migration on household welfare. While it improves the quality of daily nutrition (Mean = 2.95) through better access to proteins and vegetables, it simultaneously weakens the farm's economic foundation. Specifically, migration leads to decreased output (2.98), lower production due to labor shortages (2.88), and higher operational costs (2.81). This suggests that while remittances improve immediate food consumption, the loss of labor creates a "production gap" that threatens long-term household stability.

Factors Influencing Rural Migration in the Study Area

Table 9 presents the results of The Principal Component Factor Analysis (PCFA) used to identify the drivers of rural migration. Adhering to the 0.40 loading threshold Kitole & Sesabo (2024), the analysis groups significant variables into key thematic factors. This method effectively isolates the primary socio-economic pressures that influence migration decisions within the study area.

Table 9. Varimax Rotated Component Matrix on Factors Influencing Rural Migration in the Study Area

Factors	Social Factors	Institutional Factors	Economic Factors
Absence of social welfare programs in rural areas	-0.256	0.216	-0.542
Absence of community development initiatives	0.284	0.161	-0.010
Limited access to quality education in rural areas	-0.552	0.068	0.040
Family expectations	0.857	0.050	0.145
Social pressure	0.610	-0.216	0.216
Inadequate health care services in rural areas	-0.577	0.549	-0.061
Income disparities	-0.275	-0.115	0.791
Alternative sources of income	0.058	0.536	0.379
Market access	0.216	0.760	-0.178
Limited access to modern farming technologies	-0.136	0.473	-0.204
Access to credit and financial services	-0.301	0.750	-0.056
Desire to participate in global markets	0.715	0.126	0.039
Accumulation of agricultural debts	-0.275	0.019	0.099
Lack of diversification	0.777	0.060	0.219
Land reforms	0.853	-0.107	-0.040
Conflict and security	-0.580	0.310	-0.041
Lack of government's interventions in rural areas	0.331	-0.076	0.612
Government policies related to agricultural subsidies	0.150	0.311	0.067
Lack of transportation networks in rural areas	0.079	0.176	0.706
Government's inability to provide irrigation services in rural areas	-0.416	0.406	-0.151

The Principal Component Factor Analysis in Table 9 categorizes the drivers of migration into three primary dimensions: Social, Institutional, and Economic. Social constraints are predominantly driven by high family expectations (0.857), land reforms (0.853), and a lack of livelihood diversification (0.777). Institutional factors are characterized by significant gaps in market access (0.760) and credit services (0.750), alongside inadequate rural healthcare and irrigation infrastructure. Lastly, economic factors are defined by sharp income disparities (0.791) and a lack of reliable transportation networks (0.706). Collectively, these results suggest that migration is a structural response to systemic institutional failures and social pressures that limit the viability of rural farming.

Test of Hypotheses

The hypothesis testing confirms the significant impact of migration on agricultural performance. Using an *F*-test at a 5% probability level, the calculated value ($F_{\text{cal}} = 9.097$) was found to be greater than the tabulated value ($F_{\text{tab}} = 1.96$) for both H_{01} and H_{02} . Consequently, the null hypotheses were rejected, leading to the conclusion that rural migration significantly affects both farmers' income and farm output in the study area. This statistical evidence underscores that the outflow of labor is a critical determinant of the economic and productive stability of rural households.

CONCLUSION

This research establishes that rural migration acts as a structural disruptor to agricultural stability, where the loss of physical labor significantly outweighs the compensatory benefits of remittances, thereby deepening the "production-poverty trap." By proving a statistically significant inverse relationship between labor outflow and farm output, this work advances the field by shifting the view of migration from a simple poverty-alleviation tool to a risk factor for food security in labor-intensive systems. These findings justify a policy shift toward rural economic diversification and the implementation of "guaranteed access" to affordable production credit to facilitate the adoption of labor-saving technologies. Such institutional interventions are essential to bridge the productivity gap and provide a sustainable alternative to migration-driven survival strategies. Consequently, these results offer a foundation for future longitudinal studies to track the generational impacts of migration on land use, with current experiments already exploring how digital extension services can support the remaining elderly farming population.

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 BBB: Writing - Review & Editing, and Methodology;
 OCN: Validation, Data Curation, and Supervision;
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