Agr. Foo. Nat. Res. J. Volume 3, Issue 2, Page 198 - 202

e-ISSN: 1597-7153 | p-ISSN: 3043-5420

Agriculture, Food and Natural Resources Journal

The Official Journal of the Faculty of Agriculture, Nnamdi Azikiwe University, Awka, Nigeria

Journal homepage: https://journals.unizik.edu.ng/afnrj

Original Article

Effects of labour migration on cassava farming households: A case study of Ekiti local government area of Kwara State, Nigeria

OPEN ACCESS

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DOI: https://www.doi.org/10.5281/zenodo.14031199

Editor: *Dr Onyekachi Chukwu, Nnamdi Azikiwe University, NIGERIA*

Received: *May 15, 2024*
Accepted: *August 20, 2024*
Available online: *September 30, 2024*

Peer-review: *Externally peer-reviewed*

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Conflict of Interest: The authors have no conflicts of interest to declare

Financial Disclosure: *The authors declared that this study has received no financial support*

ABSTRACT

Labour migration in rural communities in Nigeria significantly impacts agricultural productivity and food security, particularly for cassava, a staple crop. This study examines the effects of labour migration on cassava productivity among farmers in Ekiti Local Government, Kwara State, Nigeria. A multi-stage sampling procedure was used to obtain 100 cassava farmers. Data collection employed structured questionnaires, with descriptive statistics and logistic regression analysis used to determine socioeconomic characteristics and predict labour migration. Descriptive statistics reveal an average household head age of 46.34 years (SD = 10.795), household size of 5 members (SD = 1.268), education level of 2.22 (SD = 1.834), and farming experience of 20.50 years (SD = 9.125). Average annual income is ₦2,323,597.01 (SD =₦1,043,094). These demographics indicate an aging farming population, limited education, and moderate economic stability. Logit regression analysis yields a strong model fit ($\chi 2$ = 80.250, $p < 0.001$) and accurately classifies 74.0% of cases. Extension services ($\beta = 4.167$, $p < 0.05$), remittances ($\beta = 0.000$, $p < 0.05$), and credit access ($\beta = -4.876$, $p < 0.05$) significantly predict labour migration. Demographic factors do not exhibit statistical significance. The study concludes that labour migration adversely affects cassava productivity among farmers in the study area. Therefore, policy interventions are recommended to enhance farmers' quality of life, productivity, and income to mitigate labour migration's adverse effects. This includes improving access to credit, extension services, and market information, providing basic amenities, and empowering farmers through income-increasing programs.

K E Y W O R D S : *Agricultural Productivity, Cassava Farming, Food Security, Logistic Regression*

INTRODUCTION

Cassava is one of the most important crops in Nigeria. It is the most widely cultivated crop in the southern part of the country and is grown by most households (FAO, 2005). As the world's largest producer of cassava, Nigeria relies heavily on this crop to meet the nutritional needs of its population. Notably, cassava production plays a critical role in ensuring food security, particularly in rural areas where the crop is a primary source of carbohydrates. This significance is amplified by Nigeria's position as a leading producer of cassava, with the crop contributing substantially to the country's economic development (Olanrele *et al.*, 2020). However, the labour-intensive nature of cassava production renders it susceptible to labour migration, which can compromise food security. Labour migration, particularly rural-urban migration, has been identified as a significant driver of labour shortages in Nigeria's agricultural sector. According to Sapkota (2018), labour migration is used by

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households as a livelihood diversification strategy to fight poverty and improve living standards.

Rural-urban migration has led to reduced rural farmer populations and agricultural land use, exacerbating labour shortages and decreasing productivity (World Bank, 2016). This phenomenon has far-reaching implications for cassava production, including increased production costs and decreased yields (Alleluyanatha *et al*, 2021). The consequences of labour migration on cassava farming households are particularly pronounced in regions heavily reliant on cassava production. Migration as it were, according to Alarima (2018), was initially positively perceived to have released surplus rural labour to the urban industrial sector for well-paying jobs and making remittances to their relatives in the rural areas and such remittances are used for improvement of their well-being.

This study is based upon Lee's (1966) seminal push-pull theory of migration, which posits that migration is influenced by four primary factors: push variables, pull variables, intervening impediments, and personal characteristics (Lee, 1966). In the context of Nigeria's cassava farming sector, research has identified poverty, low income, and environmental degradation as significant push factors driving migration (Young, 2013). Conversely, pull factors encompass better economic opportunities and infrastructure in urban areas. Notably, migrant remittances play a crucial role in supplementing household income and investing in productive activities, as observed by De La Garza (2010). Furthermore, remittances contribute to household income stability and national cash inflows.

Research has extensively explored the relationship between labor migration and cassava productivity in Nigeria. Studies have shown that labor productivity significantly impacts food security among cassava farmers. For instance, Okoye *et al*., (2015) found a direct link between labor productivity and food security in Central Madagascar, where 25% of cassava farmers faced food insecurity. In Nigeria, Alleluyanathan *et al.*, (2021) identified key factors influencing youth migration, including household size, sex of household head, electricity availability, and toilet type. Moreover, employment status, household size, and migrant age determined remittances sent to households. Adepoju and Olarinde (2018) noted that gender, marital status, and credit access positively impacted poverty status among cassava farmers in Southwestern Nigeria, while household size, farming experience, and migration had negative effects. Regarding labor productivity, Egbetokun *et al.*, (2023) used probit regression to identify significant factors: age, marital status, household size, formal education years, farm income, and farmers' group membership. These studies highlight the complex interplay between labor migration, productivity, and poverty status among cassava farmers in Nigeria.

In Ekiti Local Government, for instance, cassava farming households face significant challenges due to labour migration. The exodus of young individuals seeking better economic opportunities has resulted in reduced workforce, decreased yields, lower income, and compromised food security. This situation is further complicated by a lack of empirical evidence on the impact of labour migration on cassava farming households. The aim of this study is to determine the relationship between socioeconomic characteristics of cassava farmers and labour migration, with a focus on its effects on household food security. By exploring this complex relationship, this research aims to contribute to the development of evidence-based strategies that address the challenges posed by labour migration to Nigeria's agricultural sector.

MATERIALS AND METHODS

Study Area

This study was conducted in Ekiti Local Government Area (LGA), Kwara State, Nigeria, characterized by its agrarian economy and fertile landscapes. Ekiti LGA, established in 1991, covers 480 km² with a population of 54,850 (2006 census) and 10 wards. It shares borders with Ekiti State, has a predominantly Yoruba-speaking population. The Local Government Area is located on latitude $8^{o}\ 4^{1}\ 59^{11}$N and longitude $5^{o}\ 13^{1}\ 59^{11}$ E. A tropical savanna, with wet weathers and experiences a bimodal seasonal pattern. Major crops cultivated in the area includes cassava, yams and kolanut. (Kwara State Ministry of Agriculture, 2023).

Data Collection and Sampling Procedure

Primary data was gathered through structured questionnaires, encompassing socioeconomic and demographic information, as well as production data (labour inputs, farm size, cassava output, etc.). A multi-stage sampling technique was employed to select respondents.

The multi-stage sampling procedure consists of four stages. Stage 1 consist of purposive selection of Ekiti Local Government Area (LGA) due to its high concentration of cassava farmers. While Stage 2 involved the random selection of five wards from the ten wards in Ekiti LGA. Also Stage 3 involved the random selection of two villages from each selected ward. And lastly in stage

4, ten cassava farmers were randomly selected from each village, yielding a total sample size of 100.

Data Analysis

This study employed descriptive statistic and logit regression analysis. Descriptive statistics was used to describe the socioeconomics characteristics of cassava farming households in the study area. Logit regression analysis is a statistical technique suited for examining relationships between categorical outcome variables and predictor variables (Wooldridge, 2010; Greene, 2012). Specifically, logit regression was utilized to investigate factors influencing farm labour migration in cassava production within the study area.

The logit regression model is mathematically expressed as:

$$P(Y = 1) = 1/\left(1 + e^{\wedge(-z)}\right) \quad (1)$$

Where:, P(Y=1) = probability of labour migration, e = base of the natural logarithm

$$z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n \quad (2)$$

Where:, β_0 = intercept term, $\beta_1, \beta_2, \ldots, \beta_n$ = coefficients of predictor variables, $X_1, X_2, \ldots, X_n$ = predictor variables.

The explicit form of the model is expressed as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \ldots\ldots\ldots\ldots\ldots + \beta_9 X_9 + \mu \quad (3)$$

Where; Y = Labour Migration (Migrated=1, otherwise = 0), X_1 = Age (years), X_2 = Level of education (nominal 1,2,3,4), X_3 = Land ownership (owned=1, otherwise=0), X_4 = Farming experience (years), X_5 = Household size (number), X_6 = Remittance from migration (₦), X_7= Access to credit (Yes =1, otherwise = 0), X_8 = Extension contact (Number of visit), X_9 = Income per annum (₦), β_0 = Constant parameter, $\beta_1 - \beta_9$ = Coefficients of the variables, X_1-X_9 = Independent variables, μ = Error term

This model allows for the estimation of the probability of labour migration based on various predictor variables, facilitating the identification of significant factors influencing farm labour migration in cassava production.

RESULTS AND DISCUSSIONS

Socioeconomic Characteristics of Cassava Farming Households

Table 1 presents the descriptive statistics for the socioeconomic characteristics of cassava farming households in relation to labour migration factors in the study area. The average age of household heads is 46.34 years (SD = 10.795), ranging from 20 to 66 years. This suggests that most household heads are in their prime working age, potentially influencing labour migration decisions. Household size averages 5 members (SD = 1.268), ranging from 2 to 8 members. This indicates that cassava farming households are relatively large, which may impact labour availability and migration pressure. The average education level is 2.22 (SD = 1.834), which indicates that most of the cassava farmers had secondary education. This low education level may limit alternative employment opportunities, increasing the likelihood of labour migration. Farming experience averages 20.50 years (SD = 9.125), ranging from 2 to 50 years. This suggests that experienced farmers may be more likely to migrate for better opportunities or to escape agricultural challenges. The average annual income is approximately ₦2.323 million (SD = 952,023.236), ranging from ₦500,000 to ₦5 million. Higher income households may have more resources to invest in farming or alternative ventures, potentially reducing migration pressure. The average farm size is 2.31 hectares (SD = 1.0269), ranging from 1 to 5 hectares. Smaller farm sizes may lead to limited agricultural income, increasing the likelihood of labour migration. The average annual remittance received is ₦73,000 (SD = 71,527.349), ranging from 20,000 to 400,000. Remittances can significantly contribute to household income, potentially influencing labour migration decisions.

Determinants of Labour Migration in Cassava Production

The logistic regression model presented in Table 2, reveals significant predictors of labour migration among cassava farmers. Notably, access to extension services emerges as a crucial factor, with farmers receiving frequent extension visits exhibiting a higher likelihood of labour migration, thus encouraging farmers to migrate for better opportunities ($\beta = 4.167$, $p < 0.05$). It also suggests a strong positive relationship between extension services and labour migration, with a 4.2% increase in migration likelihood for every unit increase in extension services.

Table 1: Socioeconomic Characteristics of Respondents in Relation to Labour Migration Factors

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Age	100	20	66	46.34	10.795
House size	100	2	8	5.22	1.268
Education level	100	0	4	2.22	1.834
Experience	100	2	50	20.50	9.125
Income	100	500000	5000000	2390597.01	1043094.000
Farm size	100	1.0	5.0	2.310	1.0269
Total LC	100	230000	1200000	342270.00	110142.250
Cassava output	100	2.0	24	8.888	4.1580
Land ownership	100	0	1	.98	.141
Remittance	100	20000	400000	73000.00	71527.349
labour/man-day	100	15.00	150.00	63.5350	30.71525

Field survey, 2024

The positive impact of extension visits suggests that informed decision-making, facilitated by access to expert guidance, enables farmers to seek better opportunities. Remittances also play a substantial role, with financial support from family members motivating farmers to seek better prospects ($\beta = 0.000$, $p < 0.05$). This indicates a significant positive correlation between remittances and labour migration. This aligns with research that highlights the role of financial support from relatives in motivating migration. This is in consonant with Kapri and Ghimire (2020), work, which reported that remittance had a positive impact on agricultural productivity in Nepal. Conversely, access to credit exhibits a negative relationship with labour migration ($\beta = -4.876$, $p < 0.05$). This suggests that every unit increase in credit access reduces migration likelihood by 4.9%. It also implies that alternative financial options can mitigate the need for labour migration. This agrees with the findings of Adepoju and Olarinde (2018).

Interestingly, demographic factors such as age, household size, education level, experience, income, and land ownership do not significantly impact labour migration decisions in cassava farming. This diverges from existing research suggesting the importance of these factors in migration decisions (e.g., Adaku, 2013; Okoye *et al.*, 2015; Okwuokenye and Abdurrahman, 2022). Instead, our findings underscore the primacy of extension services, remittances, and credit access in shaping labour migration patterns.

Notably, demographic factors (age, education, experience, income, and land ownership) do not significantly influence labour migration decisions. While the omnibus test of model coefficients showed a chi-squire value of 80.250 at 9(df) and p<0.001 which was statistically significant at 1% indicating that the predictors (independent variables) collectively have a significant impact on the outcome variable (labour migration). Also, the test results concerning the step and block confirms that the model is a good fit for the data and the predicators are significantly related to outcome variable and also the addition of the predictors significantly improved the model's ability to predict labour migration.

Table 2: Factors Influencing Labour Migration on Cassava Farming

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
Age	-0.010	0.080	0.017	1	0.897	0.990
House size	0.185	0.493	0.142	1	0.707	1.204
Education level	-0.223	0.411	0.295	1	0.587	0.800
Experience	0.053	0.123	0.186	1	0.666	1.055
Extension visits	4.167***	1.850	5.075	1	0.024	64.545
Income	0.000	0.000	1.717	1	0.190	1.000
landownership	17.198	27690.70	0.000	1	1.000	29457396.13
Remittance	0.000***	0.000	14.875	1	<0.001	1.000
Credit access	-4.876***	2.328	4.387	1	0.036	0.008
Constant	-19.731	27690.70	0.000	1	0.999	0.000
Chi-square (df) 9	80.250***					
Step(chi-square)	80.250***					
Block (chi-square)	80.250***					

Note: *** Significant 1%
Field Survey, 2024

CONCLUSIONS AND RECOMMENDATIONS

The study found that cassava farming households in Nigeria are characterized by aging farmers with limited education, substantial farming experience, and moderate economic stability. Labour migration, driven by factors like extension visits, remittances, and credit access, negatively impacts on cassava productivity. This migration thereby compromising the livelihoods of farming households and underscores the need for targeted interventions. Thus, enhancing farmers' quality of life, productivity, and income is crucial. To address these challenges, policymakers should consider:

- Implementing programs to improve farmers' access to credit, extension services, and market information.
- Providing basic amenities to improve farmers' living standards and encouraging youth participation in agriculture through training and capacity-building initiatives.

Acknowledgment

The authors would like to express their sincere gratitude to all individuals who contributed to this research.

Authors' Contributions

IAB conceptualized the study, collected, and sorted the data, and methodology while HUM & ZTS supervised the collection, data coding and analyzed the data, interpreted the results, wrote the original draft, reviewed, and edited the manuscript.

Ethical Statement

Not applicable.

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