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EFFECTS OF FARM LABOUR SOURCING ON CASSAVA PRODUCTION IN ETHIOPE-EAST LOCAL GOVERNMENT AREA, DELTA STATE NIGERIA

^{*1}Ndubueze-Ogaraku, M. E., ¹Ofuoku, L. O., ¹Henri-Ukoha, A., ²Nwigwe, C. A. and ¹Ihunwo, O. N.

¹Department of Agriculture Economics and Agribusiness Management, Faculty of Agriculture, University of Port Harcourt, Choba, Port Harcourt, Nigeria.

²Agricultural Economics and Extension, Faculty of Agriculture, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

*Corresponding Email: mercy.onu@uniport.edu.ng

ABSTRACT

Sourcing for farm labour, its availability and affordability are critical to efficient farm operations in Nigeria. Therefore, the study analyzed farm labour sourcing and its effects on cassava production in Ethiope East LGA, Delta State, Nigeria. Socio-economic characteristics of the farmers, labour types and strategies adopted in sourcing for farm labour were determined, also effects of farm labor sourcing on cassava production was estimated. Simple random sampling technique was used in the collection of data from 84 cassava producers in four communities. Data were analyzed using descriptive statistics and multiple regression models. The results indicated that majority of the farmers were females, constituting 69% of the sample population with mean age of 54 years. Competitive wages and farm crop sharing were used to attract and retain labor. Self and hired labour accounted for 44% of source of labour. The result of the double log model was adopted as the lead equation because of the highest R- squared of 0.617 which implied that 61.7% of the variation in cassava production was explained by the explanatory variables used in the model. Farm size and quantity of cassava cuttings used were statistically significant at 5% and 1% levels respectively. Challenges identified in labor sourcing among others include; rural-urban migration, poor wages, youth disinterest in farming, limited access to credit loans, high labor costs. It was recommended that farm wage rate should be increased in order to attract farm labour in the area.

Keywords – Farm labour, Sourcing, Cassava production, Delta State, Nigeria

INTRODUCTION

Cassava (*Manihot esculenta* Crantz) is a major crop that contributes significantly to the country's food security and economic growth. According to Food and Agricultural Organization, in 2018 global production of cassava products was estimated as 278 million tones with Nigeria being the world largest producer, accounting for over 21% of the global production (Food and Agriculture Organization Statistics (FAOSTAT), 2019). Cassava is the most widely grown root crop in Nigeria, and it is an important staple food and industrial crop (Otekunrin, and Sawicka, 2019). The crop is cultivated for its starchy roots, which

are used in the production of food products such as garri, fufu, and tapioca, as well as industrial products such as starch, ethanol, and animal feed (International Institute of Tropical Agriculture (IITA), 2021). The success of cassava farming heavily relies on the availability of a skilled and consistent labor throughout various stages, including land preparation, planting, weeding, and harvesting. Insufficient labor can hinder farm productivity, increase production costs, and ultimately affect the income and livelihood of farmers (Adamu, Esheya, & Tanko, 2021). Labor is a critical input in cassava farming, and the efficiency of labor can significantly affect the level of production and productivity. However, one of the

critical challenges faced by cassava farmers in Ethiope East LGA is the sourcing of farm labor required in timely execution of farm operations in the study area. Farm operations in Nigeria is characterized with lots of activities mainly carried out by human physical efforts are becoming scarce in farming communities due to low wages paid to farm labour compared with other sector like housing.

The agricultural sector in Nigeria, including cassava farming, faces numerous challenges that affect farm labour sourcing. One of the key issues is the demographic composition of the farming population. Nigeria has a predominantly youthful population, with a significant proportion of young people engaging in agriculture. However, the attractiveness of non-agricultural sectors and the allure of urban areas for employment opportunities often lead to rural-urban migration, resulting in a decreased labor force in rural agricultural areas and this have a negative influence on crop farmer's productivity (Adamu, et. al., 2021). Furthermore, Ozumba, Ogunjirin, Opadotun, Iorpev, & Kang, (2019) viewed that the low level of mechanization in cassava farming is contributing to low productivity and poor yields, which further limits the farmers' ability to attract and retain laborers making it difficult for farmers to expand the size of farm holding.

The demand for farm labor in cassava farming is high, particularly during planting and harvesting seasons, but the supply of labor is often insufficient, leading to low labor productivity and increased cost of production (Akintobi, Idu & Ajah, 2020). A study by Akintobi (2020) emphasized the crucial role labor sourcing played in shaping the agricultural sector, highlighting the difficulties caused by the scarcity and cost of farm labour in Nigeria. Akintobi (2020), found that the low wage offered by farmers to their laborers is a major constraint to the availability of labor in cassava farming. This makes it difficult for farmers to attract and retain skilled laborers who may choose to work in other sectors that offer better wages and working conditions. As a result, many farmers rely on family labour, which may not be sufficient to meet their labor needs. Also, Onyemauwa, Nwafor, Aroh and Ugbem-Onah, (2023) assessed farm labour choice decisions among smallholder

cassava farmers in Ikom LGA of Cross River State, Nigeria and found that hired labour, family labour, farming experience, farm size and farmer's household size were significant predictors of cassava output. According to Okoye et al, (2016) report on analyses of labour productivity among small-holder cassava farmers for food security and empowerment in Central Madagascar showed that family labour was negative and significantly increase household food insecurity.

Sourcing for farm labor involves the process of identifying, recruiting, and hiring individuals to work on farms to perform various tasks such as planting, harvesting, weeding, and other agricultural activities. The efficient and effective sourcing of farm labor bears exceptional significance on agricultural production, particularly within the context of cassava production. The accessibility, availability, and productivity of labor significantly influence the overall output of cassava production, thereby contributing to untimely execution of farm operations. Several studies such as like Onyemauwa, Nwafor, Aroh and Ugbem-Onah, (2023); Okoye et al, (2016); Akintobi, Idu & Ajah, 2020; Akintobi (2020); Adamu, et. al., (2021) etc investigated farm labour and productivity, farm labour management and productivity and efficiency studies. There is not much empirical studies on farm labour sourcing in Ethiope-East Local Government Area, Delta State, Nigeria. Hence, the study was designed to analyze the effects of farm labour sourcing on cassava production in Ethiope East LGA of Delta, Nigeria State, Nigeria. The specific objectives of the study were to:

- (i) describe the socio-economic characteristics of cassava-based farmers in Ethiope East Local Government Area
- ii) identify the types and sources of labour required by cassava-based farmers in the various cassava farm operations in Ethiope East Local Government Area.,
- iii identify strategies adopted by cassava-based farmers in sourcing farm labour in Ethiope East Local Government Area.
- iv determine the effects of farm labour sourcing on cassava production in Ethiope East Local Government Area and,
- v identify the challenges cassava-based farmers faced in sourcing for farm labour in Ethiope East Local Government Area.

METHODOLOGY

Study Area: The study was carried out in Ethiope-East Local Government Area (LGA) of Delta State, Nigeria. Ethiope-East is a local government area in Delta State with its headquarters in the town of Isiokolo. Towns and villages that make up Ethiope east LGA include Agbon, Egbogho, Oburobi, Ugolo, Urhuoka, Okagbare, and Erho. Estimated and projected population of Ethiope East LGA in 2022 was 2,400 people (National Population Commission of Nigeria (web), National Bureau of Statistics (2023) inhabitants with the majority of the area's dwellers being members of the Urhobo ethnic sub-division. The major language spoken in Ethiope east LGA is the Urhobo language while Christianity is the widely practiced religion in the area. Ethiope East LGA covers a total area of 380 square kilometers (Akpan et al., 2023) and has the Ethiope river flowing through the area. Approximately 100,000 people live in the semi-urban communities that make up the Ethiope East LGA of Delta State in Nigeria, which is situated between latitudes 5°N and 6°S and longitudes 5.5°E and 6.5°W. Ethiope East LGA witnesses two major seasons which are the rainy and the dry seasons. A number of commercial activities take place in Ethiope East LGA and these include farming, fishing and trade. Crops cultivated in Ethiope East LGA majorly Cassava, plantain, and oil palm while the area hosts a number of markets where residents buy and sell varieties of farm produce.

The study employed a simple random sampling technique in the selection of four communities namely Eku, Kokori, Igun, and Samagidi in the study area. Twenty-one (21) cassava-based farmers were randomly selected from each community making it a total sample size of 84 cassava producers.

Method and Techniques of Data Analysis:

Descriptive statistics such as mean, frequencies, and percentages was used to achieve objectives i, ii, iii and v while objective iv was analyzed using multiple regression model.

The model is expressed as:

$$Y = (X_1, X_2, X_3, X_4, \dots, X_{13} + e) \dots \text{equation 1}$$

$$Y = f(X_1, X_2, X_3, X_4, \dots, X_{13} + e) \dots \text{equation 2}$$

Where:

- Y = Quantity of cassava produced in tons /hectares
- X₁ = Gender of farmer (male = 1, 0 = female)
- X₂ = Age of farmer in years
- X₃ = Level of Education (number of years spent on formal education)
- X₄ = Farming experience in years
- X₅ = Farm size of the cassava farm in hectares
- X₆ = Labour Sources (Self =1, Family = 2, Hired = 3)
- X₇ = Labour types (if skilled =1, 0 – Unskilled)
- X₈ = Average wage rate of labour per man-day in Naira
- X₉ = Quantity of farm labour used (man/day)
- X₁₀ = Quantity of stem cuttings used (bundles)
- X₁₁ = Quantity of Manure used in kg
- X₁₂ = Quantity of Fertilizer used in kg
- X₁₃ = Quantity of Herbicide used in liters e = error term

Four functional forms of the multiple linear regression models are used. They are the Linear model, Semi-log model, Double log function and the Exponential model.

RESULTS AND DISCUSSION

Socio-economic characteristics of the cassava producers: Table 1, presents the socio-economic characteristics of respondents on the effects of farm labor sourcing on Cassava production in Ethiope East LGA, Delta State, Nigeria.

The result in Table 1 indicated that female farmers 69.0% dominated the farming population with a mean age of 54 years. This supports the finding by Ndubueze-Ogaraku and Ekine (2015) that 65.3% of farmers engaged in cassava production in floodplains were females. This showed that women folks are key players in cassava farming operations. Also, the result suggests that middle-aged and older individuals indicated more interest in cassava farming compared to younger individuals. This finding aligns with Gbigbi, (2020) report, which stated that women are participating actively in cassava production. In same vein, Gbigbi, (2020) and Egbetokun, Ajjjola & Babalola (2023) found that the middle-aged farmers were more active in cassava farming. In terms of education level, the study showed that majority 33.3% attained tertiary education. The higher prevalence of tertiary education suggests that cassava farming in this

region is not limited to individuals with lower levels of education. Also, majority (48.8%) had farming experience of 20 years. The result further indicated that 57.1% of respondents acquired land for cassava production through family land inheritance pattern. Land ownership can influence decisions related to investment, long-term planning, and access to credit within the farming sector. Majority (41.7%) of respondents had a farm size of ≤ 1 hectare, indicating relatively small farm sizes. This is contrary to the findings of Adamu., Esheya and Tanko, (2021) who reported that majority (51.2%) of the cassava-based farmers had farm size above 2 hectares.

Sources of farm labour required by cassava-based farmers in the study area Table 2 presents the sources and types of farm labour required by cassava-based farmers in Ethiope East LGA Delta State, Nigeria.

Table 2 indicated that 44.0% of the farmers utilized both self and hired labor in doing farm operations. 27.3% of them used a combination of self, family, and hired labor. The result indicates that cassava farmers relied on the collective efforts of self, family members, and hired laborers to meet their farm labor needs. It was also found that 17.9% of the cassava producers carry out farm operations during the period by the farm owner. The implication is that the size of farm holding would be small because a single farmer relying on self as source of labour will be limited by the expanding the farm size. Only 3.6% of the respondents utilized hired laborers exclusively on their farm. 4.8% of the respondents used both family and hired labor. This suggests that they combine the efforts of family members and hired laborers to meet their labor requirements. The finding agrees with the report of Nmadu and Akinola, (2015) who stated that combination of family and hired sources contributed most of the labour supplied for crop production in Nigeria. This was further confirmed by the report of Akpan, Nkanta, & Udoh (2023) who stated that hired labour, family labour and group labour as the major human labour sources for the small-scale farmers in Akwa Ibom State.

The result on Table 3 indicated that 46.4% of the farm labour in the study area were classified as skilled laborers, possessing specific skills and

expertise related to cassava farming. In contrast, 53.6% of the farm laborers were categorized as unskilled labor, indicating a higher proportion of the labour force consisting of unskilled labor compared to skilled labor. This finding suggests that the cassava farming operations in the study area relied on unskilled or less specialized labor for various tasks. The findings of Ighoro, Alfred and Oluwatosin, (2017) which stated that cassava farmers in the Niger Delta often faced difficulties in accessing a sufficient supply of skilled laborers agrees with the report of poor availability of skilled labour supply for farm operations in the region. This challenge could be attributed to the lack of training programs and skill development initiatives for potential laborers in the area. Generally, it could be observed that most of the farm operations utilized unskilled farm labour in carrying out the farm tasks. This scenario where skilled labour is presently utilized in the study area explain clearly the nature of carrying out farm task in most African continents. This supports the report by Rapsomanikis, (2015), who stated that small farmers depend on off-farm unskilled agricultural labour far more than the larger ones.

Strategies adopted by cassava-based farmers sourcing for farm labour: Table 4 presents strategies adopted by cassava-based farmers sourcing for farm labour in Ethiope East LGA, Delta State, Nigeria. Table 4 shows the various strategies employed by cassava farmers to attract and retain farm labor. 75% of the respondents use competitive wages as a strategy to attract and retain farm labor, while 25% do not. This indicates that a significant portion of farmers believes in offering competitive pay to motivate and keep their labor force, as supported by Kirwana, (2023). 58.33% of farmers provide meals or refreshments to their laborers, while 41.67% do not. This suggests that a majority of farmers see the value in providing sustenance to their workers, possibly as an incentive, reflecting the acknowledged value of this strategy in enhancing job satisfaction and retention rates, as mentioned by Kirwana, (2023).

However, a smaller proportion (38.10%) of farmers offered transportation, which may impact the mobility of their labor force, this aligns with the positive influence of providing transportation assistance as stated by Lammers-Helps, (2018).

25% of respondents offer accommodation to their laborers, while 75% do not. This signifies that providing housing is less common among these farmers. 55.95% of farmers offer non-monetary incentives, while 44.05% do not. This indicates that a significant portion of farmers uses non-cash rewards to motivate and retain their labor, as highlighted by Lammers-Helps, (2018) and Kirwana, (2023).

Results of multiple regression analysis : Table 5 shows the results of multiple regression analysis predicting the effects of farm labour sourcing on cassava production for all the four functional forms. The regression model with the highest R^2 which is double-log regression model was chosen as the lead equation, because it had the highest number of variables that were significant and therefore is used for discussion. The coefficient of multiple determinants (R^2), for the double-log regression model was highest that is 0. 617. The estimated R^2 of 0.617 implied that 61.7% of the variability of the exogenous variable in the model was explained by all the explanatory variables included in the model.

Farm size and quantity of cassava stem used were positive and statistically significant at 5% and 1% level respectively which implies that an increase in farm size and cassava stem cuttings will increase quantity of cassava produced in the study area. This is consistent with NdubuezeOgaraku and Ekine, (2014) study that showed that farm size is statistically significant in increasing cassava output and technical efficiency level. Therefore, increasing farm size and the quantity of stem would result to higher cassava yields.

Challenges cassava-based farmers faced by cassava-based farmers: Table 6 presents challenges cassava-based farmers faced by cassava-based farmers in in Ethiope East LGA, Delta State, Nigeria.

The results in Table 6 shows the challenges that cassava farmers encounter when sourcing for farm labour in the area. All the variables listed were observed by farmers as serious problems they encountered while sourcing for farm labour in doing their farm operations. They include limited availability of skilled labour, rural-urban migration, inadequate wages and working conditions, youth preferences for non-farm activities, reliance on

manual labor due to a lack of mechanization, insufficient infrastructure, lack of access to credit, and the high cost of farm labor. The mean ratings obtained for these challenges in this study were found to be higher than the criterion mean of 2.50, indicating that on average, cassava farmers in the study area perceived these challenges as significant issues in sourcing for farm labor. The result supports the findings of Akintobi, (2020) who reported that high cost of labor, lack of capital to engage labor and scarcity of labor are the major challenges experienced by the farmers in North Central Nigeria. In same vein, International Fund for Agricultural Development (2009) observed that one of the negative factors that militate against high productivity in small scale farming in Nigeria is total shortage of cash and limited investment resulting into human labor input deficiencies.

CONCLUSION

The study concludes that cassava farming in the region was mainly carried out by female farmers with mean age of 54 years. Unskilled labour was more utilized in carrying out tasks in the farm than skilled labour. A combination of self, family and hired labour were the common sources of farm labour in the study area. The common strategies for retaining labor were offering competitive wages and farm produces gifts. Farm size and cassava stem quantity were statistically significant and influenced cassava production. The notable challenges faced by cassava farmers when sourcing labor, were limited availability of skilled labor, rural-urban migration, inadequate wages, youth disinterest in farming, limited access to credit loans, lack of mechanization, and high labor costs.

RECOMMENDATIONS

The following recommendations were made:

- i. Farmers should provide fair wages for laborers because fair compensation and better treatment can enhance labor participation and retention.
- ii. Farmers should explore the use of mechanization to reduce reliance on manual labor, thereby increasing efficiency and productivity.
- iii. Given the prevalence of using combinations of self, family, and hired labor, farmers should encourage collaboration between family

members and other labor sources to ensure a consistent and efficient supply of labor.

- iv. Cassava-based farmers should consider forming cooperative societies, which can facilitate easier access to credit loans and other support mechanisms.
- v. Government agencies and Non-Government Organizations (NGOs) should develop initiatives that would promote youth participation in cassava farming by showcasing business opportunities potential benefits in cassava product systems.

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Table 1: Socio-economics characteristics of the respondents in Ethiope East LGA

Characteristics	Details	Frequency	Percentage	Mean
Gender	Male	26	31.0	
	Female	58	69.0	
Age	≤30 years	5	6.00	54 years
	31 to 60 years	51	60.7	
	61 ≥ years	28	33.3	
Marital Status	Single	3	3.6	
	Married	51	60.7	
	Divorced	5	6.0	
	Widowed	25	29.8	
Education level	No formal education	10	11.9	
	Primary education	25	29.8	
	Secondary education	21	25.0	
	Tertiary education	28	33.3	
Years of Experience	≤ 20 years	41	48.8	26 years
	21 to 40 years	31	36.9	
	41 to 60 years	10	11.9	
	61 ≥ years	2	2.4	
Land ownership	Inherited	48	57.1	
	Purchased	8	9.5	
	Rented	28	33.3	
Farm Size	≤ 1 hectare	35	41.7	1.89 hectares
	2	31	36.9	

	3	11	13.1
	4	6	7.1
	5	1	1.2
Occupation	Farming	42	50.0
	Civil Servant	7	8.3
	Teaching	17	20.2
	Trading	16	19.0
	Tailoring	2	2.4
Level of farming	Full time	42	50.0
	Part time	42	50.0
Total		84	100

Source: Field survey, 2023

Table 2: Sources of farm labour required by cassava-based farmers

Variables	Frequency	Percent
Self	15	17.9
Family	3	3.6
Hired	3	3.6
Self and family	4	4.8
Self and hired	37	44
Self, family and hired	22	26.2
Total	84	100

Source: Field survey, 2023

Table 3: Types of farm labour used by cassava-based farmers

Variables	Frequency	Percent
Skilled	39	46.4
Unskilled	45	53.6
Total	84	100.00

Source: Field survey, 2023

Table 4: Strategies adopted by cassava-based farmers sourcing for farm labour

Variables	Frequency			Percentage		
	Yes	No	Total	Yes	No	Total
Competitive wages	63	21	84	75.00	25.00	100.0
Offering meals for labor	49	35	84	58.33	41.67	100.0
Transportation	32	52	84	38.10	61.90	100.0
Accommodation	21	63	84	25.00	75.00	100.0
Share cropping	47	37	84	55.95	44.05	100.0
Good relationship	48	36	84	57.14	42.86	100.0
Contracts Labour	48	36	84	57.14	42.86	100.0
Others	0	84	84	0	100	100.0

Source: Field survey, 2023

Table 5: Results of multiple regression analysis of farm labour sourcing in the study area.

Variables	Linear	Semi-log	Double Log	Exponential
(Constant)	375.27 (0.109)	8246.413 (0.619)	7.373 (3.265)***	7.040 (11.440)***
Gender	-0.56 (-0.471)	-0.035 (-0.288)	0.060 (0.647)	-0.013 (-0.129)
Age	0.062 (0.417)	0.108 (0.677)	0.132 (1.068)	0.075 (0.616)
Education	-0.104 (-0.812)	-0.148 (-1.226)	0.024 (0.233)	0.013 (0.123)
Experience	0.040 (0.252)	-0.068 (-0.423)	-0.157 (-1.259)	-0.073 (-0.557)
Farm size	0.172 (1.182)	0.208 (1.458)	0.257 (2.336)**	0.197 (1.662)
Labour source	-0.64 (-0.610)	-0.086 (-0.819)	-0.147 (-1.819)	-0.127 (-1.495)
Labour type	0.105 (1.020)	0.121 (1.164)	0.061 (0.762)	0.029 (0.353)
Wage rate	-0.13 (-1.170)	-0.162 (-1.430)	-0.162 (-1.860)	-0.157 (-1.726)
Quantity of stem	0.360 (2.401)**	0.351 (2.342)**	0.599 (5.182)***	0.567 (4.642)***
Quantity of manure	0.041 (0.357)	0.052 (0.457)	-0.007 (-0.075)	-0.017 (-0.188)
Quantity of Fertilizer	-0.065 (-0.569)	-0.018 (-0.159)	0.009 (0.110)	-0.078 (-0.838)
Quantity of Herbicide	0.000 (-0.006)	-0.040 (-0.372)	0.008 (0.101)	0.029 (0.333)
Quantity of Labour	0.140 (1.387)	0.163 (1.570)	0.143 (1.784)	0.113 (1.372)
R ²	0.365	0.355	0.617	0.580
F value	3.093	2.963	8.657	7.435

Source (Field Survey, (2023)***Significant at 1% level **Significant at 5% level

Table 6: Challenges cassava-based farmers faced by cassava-based farmers in Ethiope LGA, Delta State, Nigeria (N=84)

S/No	Items	SA	A	DA	SD	Mean	SD
		(4)	(3)	(2)	(1)		
1	Limited availability to skilled labour	40	29	12	3	3.26	0.838
2	Rural-Urban Migration	38	41	5		3.39	0.602
3	Inadequate wages and working conditions	38	38	8		3.36	0.652
4	Youth preferences of nonfarm activities	60	21	3		3.68	0.541
5	Lack of mechanization and reliance on manual labour	71	9	3	1	3.79	0.561
6	Insufficient Infrastructure	41	42	1		3.48	0.526
7	Lack of access to credit	65	15	1	3	3.69	0.676
8	High cost of farm labour	65	18	1		3.76	0.456
	Grand mean					3.55	

Criterion mean = 2.50; =>2.50 is marked challenge < 2.50 not significant challenge Source: Field survey, 2023