

DETERMINANTS OF SUPPLY OF CHILD LABOUR IN MICRO-CASSAVA FARMING HOUSEHOLDS IN SOUTH-SOUTH AGRO-ECOLOGICAL ZONE, NIGERIA: IMPLICATIONS FOR HUMAN CAPITAL DEVELOPMENT

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ABSTRACT

The research investigated factors influencing child labor supply among feminine micro-cassava farming households in Nigeria's South-South agro-ecological zone. Required information was generated with carefully structured and designed questionnaire. Findings revealed that the farmers were young with small landholdings. The study found out that poverty, changes in income, rural-urban migration of adults, wage rate and efficiency influenced the supply of child labour in the study area. The logistic regression model result indicated that coefficients of age, education and number of children employed showed positive signs. This implied that the variables positively influenced supply of child labour. Coefficients of marital status, household size, experience, farm size and age of child portrayed negative signs but were significant determinants of supply. Supply was higher among farmers who were not married. Farmers with a lower household size depicted higher propensity to supply child labour. The study recommended that Government at all levels, non-governmental organizations and cooperate bodies should implement viable and sustainable poverty alleviation programmes that will positively and meaningfully impact on the farmers. Social security services for the farmers should be encouraged and established. Other recommendations were rural infrastructural development, sensitization against child labour employment, intensification of policies that discourage child labour and encouraging qualitative child education.



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I. INTRODUCTION

1.1 Background

Agriculture has been identified as one of the most important producing segments of Nigeria's economy engaging over seventy percent (70%) of the population. This is the only industry in the economy that provides the three necessities (food, shelter and clothing) of man, ensures income generation, food security, economic growth and development. Abojei *et al* (2023), Kaine *et al.*, (2021), Kaine and Ume, (2018) and Agwu *et al* (2012) opined that it is the most critical area of the Nigeria economy that provides employment opportunities to the populace; contribute to the economic growth and poverty eradication. In line with this, Diao *et al.*, (2010) observed this subdivision as the basic vehicle for rural development in Sub-Saharan African countries. Thus, about 70% rely solely on farming. This implies that agriculture is the primary occupation that contributes to the development of most African countries by creating job opportunities and reducing poverty (Food and Agricultural Organization (FAO), 2012, and World Bank, 2008). Unfortunately, this all-important (agricultural) sector of the economy has continued to experience a sharp decline in production and output.

Today, micro-agro farmers dominate agricultural production with males, females and children aggressively involved (Kaine *et al.*, 2024 and Kaine and Ochiaka, 2024). It has been documented that the greater proportion of the Nigerian population consists of women actively involved in agricultural production (Moroyei and Roland, 2024, Fapujuwo 2010 and Federal Government of Nigeria (FGN) (2006). This implies that food production is not gender specific. In the recent time, greater population of Nigeria women has been more engaged in agricultural activities than the men. This signifies that the larger amount of food produced today for both domestic and export consumption is been driven by women. Oladejo *et al.*, (2011) believe that females involvement farming activities in most countries is much less than that of men in quantitative and qualitative terms. FAO (2011), however, reported that women's involvement in agriculture in most countries is significant in various agricultural operations such as food and cash crop production, livestock and fish farming among others. Therefore, women's participation cuts across production, processing and marketing including tending to livestock. Females in local communities remain essential ingredients in ensuring efficiency and resilience of output. (Asamu *et al.*, 2020).

Neoclassical and classical economists identified the traditional factors of production as land, labour and capital. Labour and capital were attached to land and economic power belongs to those who control the use of these resources. Labour is the physical and mental power that controls the other factors of production. Any country's labour force is a factor of the population size of economically active age. Onemolease and Alakpa (2009) considered individuals within the age bracket of 18 – 40 years as economically viable, who are regarded as youths and have active potential for the supplying of the needed farm labour. Evidence has shown a sharp decline in farm labour supply with subsequent shortage in food production, output and supply (Agwu *et al.*, 2012). It is a worst-case scenario when children of school age are prominently engaged in the production process.

Child labour exists when and where children of school age are employed to work on a farm or in a factory. The use of children on a farm is regarded as child labour. It implies the engagement of minors to work on a farm that may interfere with their education or have a negative effect on their health and human capital development (Kaine *et al.*, 2024).

The International Labour Organization (ILO), (2002) approximated the number of children in the world being used as child labourers to be about 186 million. It is stated that about 111.3 million children toil under unfavourable and perilous environments. The age categories of these children were recorded to be within the age bracket of 5 to 14 years. It was also reported that at least 120 million of these children worldwide work as full-time paid job and fall within the observed age bracket (Kaine *et al.*, 2024 and Alao *et al.*, 2013). In this case, children's educational and human capital development becomes endangered.

In Ethiopia, it had been stated that child labour was correlated to low school conscription in local areas. It was also reported that about 27% of children under 15 years, 17% of children within the ages of 5-11 and 55% of children aged 12-14 were engaged in child labor (Bekalu and Mekonnen, 2020). Studies conducted by Rajwanul, *et al.*, (2015) and Shahina, *et al.*, (2004) also indicated that child labour was prevalent in Bangladesh. Child labour remains a serious problem in Sub-Saharan countries today and the world at large. Americans however have demonstrated resilient condemnation of child labour. Cassava (*Manihot esculenta Crantz*) is a starchy root crop widely grown and accepted as one of Nigerian's most important root crops mostly cultivated in South-South agro-ecological zone of Nigeria (Kaine, 2018). It can survive under adverse conditions where other crops fail to thrive. African countries consider it a significant food and industrial crop source. Dzever *et al.*, (2016), had it that highest cassava output comes from Nigeria with about fifty-four million (54 million) production capacity.

The other top world producers of cassava include Democratic Republic of Congo and Angola (Isitor *et al.*, 2017). Ehinmowo and Ojo (2014) opined that Nigeria present production capacity increased with an increasing rate of ten percent (10%) in last half-decade and was projected to double in the year 2020. Cassava offers opportunity for reliable access to nourishment, livelihood, income creation and economic empowerment. The roots can be processed into different forms like gari, cassava flour, *akpu (fufu)*, *tapioca*, *abacha*, *kpo – kpo gari* among others. These are palatable for both human and animal consumption. The leaves are also eaten as vegetable (Kaine, 2018).

The National Population Commission (2006) crystallized a household as a population living and sustained under a roof. Domestic population is the total individuals in a household and its occupants as well as those who feed from the same pot. It could be a homogeneous or heterogeneous household (Kaine *et al.*, 2024, Kaine and Ume (2019) and Kaine and Ume (2017). Household head on the other hand is an individual male or female who provides and bears responsibility for the daily needs of the occupants including financial obligations. This could either be a youth or an adult. Where the female affords the family's need, it is considered a female headed household. This research investigated the factors that influence the supply of child labour between female micro-cassava farming households in the study area with implications for human capital development. It specifically examined the demographic structure of the respondents, identified reasons for using juvenile workforce and the determinants of supply of child labour.

II. MATERIALS AND METHODS

2.1 Study Area and Data Source

The South-South geo-ecological Zone of Nigeria was used for the study. The Zone comprises of six (6) States: Akwa Ibom, Bayelsa, Cross River, Delta, Edo and Rivers States. Three States namely Akwa Ibom, Delta and Edo States were randomly selected and used for the study. The study area is prominent in agriculture and oil production. Crops produced in the area include but are not limited to the following: rubber, oil palm, maize, cassava, yam and *eguisi* melon among others. In addition to crop production, livestock production abounds in the study area.

Studies has also shown that, about 27% of children under 15, 17% of children within the ages of 5-11 and 55% of children aged 12-14) were engaged in child labor in Ethiopia (Bekalu and Mekonnen, 2020). Primary source of data was the major cradle of data for the study. A well-structured and designed questionnaire was developed to collect the primary data. Secondary source of data was also used and was generated from previous work reviews.

The study was conducted using multi-stage random sampling technique. First involved the selection of 3 States from the 6 states in the zone. The second stage was the selection of the agricultural zone. From each of the 3 states, 2 agricultural zones were randomly selected. The third stage was the selection of Local Government Areas. Three Local Government Areas were randomly selected from the agricultural zones. Four communities were randomly selected from the selected local government areas for the study. Five female cassava farmers were then selected from each of the selected communities giving a sample frame of 180 female cassava farmers used for the study. Enumerators and supervisors from the area were used to accomplish the study. Descriptive statistics and the logistic model were used for data analysis.

2.2 Model Specification

Logistic Simulation

The logistic regression model is most suitable when dependent variable is binary in nature especially where it involves children. It permits the interpretation of coefficients with respect to odd ratios and provides a clear view showing the level of involvement of child used in a farm. It determines the likelihood that an activity such as child labour involvement ensues with a given set of descriptive variables like household income, educational attainment, household size among others. The logistic regression model is essential in knowing how variations in these variables affect the chance of child labour.

Equation below is the logistic formular adopted.

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + U_i$$

Y_i represents binary variable assuming value of 1 if the household involves in child labor and 0 if not.

Explanatory factors defined:

X_1 = Head of the family's age (in years),

X_2 = Marriage structure

X_3 = Educational attainment of family head (in years),

X_4 = Number of children,

X_5 = Number of persons in a home

X_6 = Farming experience (years)

X_7 = Land (ha),

X_8 = Children age (years)

U_i = Represents stochastic disturbance term while $\beta_1 - \beta_8$ are estimated parameters.

III. RESULTS AND DISCUSSIONS

3.1 Demographic Structures among Female Micro Cassava Growers

Female micro (small holder) cassava farming household's population was studied. Age categories of the respondents established that they were relatively young. The result indicated that 53% of the farming population aligned to 41-50 age range while 20% of the farmers were above 50 years of age. Findings revealed that 16% were 20-30 years. This suggested that the respondents were young and economically active (Kaine *et al.*, 2024, Akintobi *et al.*, 2021 and Onemolease and Alakpa, 2009). The result of the marital status showed that 57% of the farmers were single while about 43% of them were married. Household size indicated that 57.78% of the population studied maintained zero (0) to four (4) individuals. This implied an infinitesimal household structure. Results obtained by Nmadu and Adebola (2015) and Akintobi *et al.*, (2021) differs from this. The authors observed a large household size.

Educational attainment studied established that literacy level was high among 79%. Seventy-nine percent (79%) had farming experience of over 15 years. It implies that cassava producers studied were highly knowledgeable. Land area cultivated was studied and the result of the variable showed that 96% had between 1-3 hectares of land. This established and classified the farmers as small farming families.

Table 1: Demographic structure among micro cassava farming households

Variables	Statistical Incidence	Percentage
Age (Years)		
20 – 30	29	16.11
31 – 40	20	11.11
41 – 50	95	52.80
50 and above	36	20.00
Marital Status		
Married	78	43.33
Single	102	56.67
Family Unit		
0 – 4	104	57.78
5 – 9	37	20.56
10 – 14	19	10.56
15 and above	20	11.11
Level of Education		
Informal	38	21.11
Formal (Primary to tertiary)	142	78.90
Farming Experience		
1 – 5	21	11.67
6 – 10	17	9.44
11 – 15	61	33.90

Variables	Statistical Incidence	Percentage
16 – 20	48	26.67
20 and above	33	18.33
Land Area (ha.)		
0 – 1	57	31.67
2 – 3	98	54.44
4 – 5	18	10.00
6 and above	07	3.90

Source: Field survey, 2023

3.2 Reasons for Employment of Children

The study examined the motives for using child labour among the female micro cassava farming households. Poverty (26%) was revealed as one of the reasons for using child labour. Shahina, *et al.*, (2004) in Bangladesh observed a correlation between poverty and the probability of family to use child labour. Murad and Abul (2013) reported that poverty propeled families to employ child labour.

A further analysis revealed that the substitution effect also accounted for the employment of child labour on the farm. This was represented by 49% of the farmers as indicated in Table 2. Changes in income were indicated by 40% of the respondents for using child labour. The variable dwindling income was another factor that motivated the respondents to use infant labour. This was signposted by 46% of the farmers. Population (37%) was also established as one of the variables that prompted the use of child labour in the farm.

The study also established that efficiency, rural urban migration and wage rate were the significant variables that motivated the farmers to use children in farming operations in the study area. This was indicated by 69%, 59% and 61% of the farmers respectively. Only 19% revealed that farm size was the reason for employing child labour in the farm.

Table 2: Reasons for employment of children’s workforce

Variables	Frequency	Percentage
Poverty	46	25.60
Substitution effect	89	49.44
Changes in income	72	40.00
Dwindling income	82	46.00
Population (increase)	66	37.00
More efficient (Efficiency)	125	69.44
Rural urban migration of adults	107	59.44
Wage rate	110	61.11
Farm size	34	19.00
Availability of children	57	31.67
Easy to control/ Manage	49	27.22

Multiple response

Source: Field Survey, 2023

3.3 Determinants of Minors between Micro Farming Households

Logistic Model approach was employed to estimate determinants of child labour among micro-cassava farming households in the study area. The result obtained from the analysis was presented in Table 3. The result established that age (0.163) influenced engagement of children at a probability level of 0.323. This meant that age was a significant determinant of supply of child labour on the farm. The result suggested that the older the farmer the higher the involvement of children. A similar result was obtained by Agwu *et al.*, (2014) and Ejiogu and Amanze (2013) in studies carried out among youths in Nigeria. The coefficient: age obtained in this work was however not correlated with that obtained by Ume *et al.*, (2018). The authors reported an inverse relationship between child labour and farmers.

Table 3: Determinants of minors between micro farming households

Parameter	Coefficient	Wald Chi – Square	Prob. Level
Constant	3.150	8.990	0.001
Age	0.163	1.74	0.323
Marital status	0.027	0.14	0.754
Education	0.192	0.16	0.713
No of children	0.109	0.13	0.804
Household size	*-0.289*	0.90	0.127
Experience	-0.332	1.10	0.446
Farm size	-0.694*	8.14	0.129
Age of child	-0.655*	13.37	0.000

Source: Field survey, 2023; *Significant at 5%

Marital status (-0.027) negatively determined supply within 5% significant level at a probability level of 0.754. This implied that there was an inverse relationship between marital status. The research showed that farmers that were not married were more inclined to supply minors in the farm. Coefficient of variable education (0.192) indicated positive relationship. It implied that education was a significant determinant of the supply of child labour. It implied that the higher the level of education attained by the farmer the higher the likelihood of the supply of child labour. It also implied that education is not effectively reducing child labour. This result negates the *priori* expectation of economic reality. The result aligns with Kaine *et al.*, (2024) and Ume *et al.*, (2018). However, it contradicted the obtained by Agwu *et al.*, (2014) and Ejiogu and Amanze (2013). The coefficient of the variable number of children (0.109) determined was positive, indicating a constructive determinant of child labour at a probability level of 0.804. It implied greater child labour supply.

The -0.289 sign revealed an inverse relationship between household size and child labour supply. Alao *et al.*, (2013) and Omeje *et al.*, (2020) had a corresponding outcome but it is in contrast with that observed by Ejiogu and Amanze (2013). Oladokun *et al.*, (2020), established that farmers with smaller household sizes had a higher propensity to supply child labour. Bekalu and

Mekonnen (2020) explored similar research. Result established how families with large household size supply less. This aligns with the result of this study concerning household size.

The coefficient of the variables experience (-0.332), farm Size (-0.694) and age of child (-0.655) had negative signs. This implied that the variables were negative determinants of supply of child labour with 0.446, 0.129 and 0.000 discretely. This established an inverse relationship with child labour.

V. CONCLUSIONS AND RECOMMENDATIONS

The study examined the determinants of child labour among female micro-cassava farming households in South-South agro-ecological zone of Nigeria. It was observed that most respondents were youths, well experienced with small household sizes and land holdings. It was observed that poverty, changes in income, rural urban migration of adults, wage rate and efficiency among others, influenced the supply of child labour.

The logistic regression model result obtained supported the conclusion that the coefficient of age, education and number of children employed on the farm were positively related. This implied that the variables were positively significant determinants of the supply of child labour. The positive coefficient depicted by the variable age maintained the inference that the older the farmer, the higher the labour supply of child. Constructive relationships that existed amid literacy level and the supply of labour supported the conclusion to say: more educated the farmer, greater the propensity to supply.

Coefficient of variable, numeral infants portrayed positive sign indicating as population of minors increases, child labour supply increases. Marital status, household number, experience, land size and age of child portrayed a negative sign but significant determinants of child labour. This indicated inverse relationship between the variables and supply. The study therefore confirmed that the supply of child labour was higher among farmers who were not married. It also established that farmers with lower household size depicted higher propensity to supply child labour.

Consequent upon the outcome of the research, it was suggested that:

- i. Since low-income condition was established to be a variable that influenced supply of child labour in the study area, it was recommended that the Federal, State and Local Government, non-governmental organizations and cooperate organizations should put in place viable and sustainable poverty alleviation programmes that will impact positively and meaningfully on the lives of the farmers.
- ii. To regulate changes in income and wage rate as well as dwindling income, policies that encourage social security services of the farmers should be encouraged. Price reduction should also be considered a critical precautionary measure.
- iii. Since the result asserted that the higher the level of education attained, the higher the supply of child labour, it was also recommended that policies that discourage child labour and encourage qualitative child education should be implemented.
- iv. The result supported the conclusion that older farmers had higher propensity child labour supply, it is imperative that younger ones are encouraged to farm.

Considering the line of study and the findings established, it will contribute towards human capital and accelerate the living standard of the people.

Conflicts of interest:

The authors declare no competing interests.

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