Analysis of Rural Children's Participation in Cassava Processing in Ivo Local Government Area of Ebonyi State

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ABSTRACT
Research has shown that children in rural area engaged in many agricultural activities, with the aim to increasing the income and improving the well-being of their respective parents and households. This study, therefore, examined determinants of rural children's participation in cassava processing in Ivo local government area, Ebonyi state. Multi-stage sampling technique was used to select 150 respondents while structured questionnaire and mobile phone - a recording gadget were used to collect data from the respondents. Descriptive and inferential statistics such as frequency count, percentage, mean and probit were used to summarized and make some inferences, respectively, from the collected primary data. Findings of the study showed that some (28.7%) of the respondents said that poor remuneration was a major constraint to their participation in the processing while many (58.7%) indicated that income generation was the main reason for their participation. The results of the probit regression maximum likelihood estimate (MLE) showed that age, dependency ratio, parents' marital status, gap in financial need, daily wage, type of technology and the number of friends kept by respondents, among others, were all significant at $P<0.1$ significant level and positively influenced the participation of children in the processing of cassava. It was recommended that training programme related to crop processing be provided to farm children who practice cassava processing in the study area.

Keywords: Cassava, Participation, Processing, Probit, Rural children

INTRODUCTION

Economies in Africa are mainly agrarian. About 70% of the continent's workforce engages directly or indirectly in agriculture and lives in rural area. This high percentage also depends on agriculture for subsistence (Echebiri and Mbanasor , 2003) .In Nigeria, cassava is a major staple food crop. Its production and processing occupy an important place in the food schema of Nigerians (Nwilene, *et al* 2001). The production and processing of cassava are yet to be adequately meachanised in the country. As such, manual labour is indispensable for achieving an optimal output (Olayemi, 2004). Sources of manual labour for production and processing of cassava or for other agricultural operations in most rural settings are family, hired, communal and exchange among others. Optimal combination of labour from any of or all these sources with other factors of production would give expected production target.

Adegeye and Ditto (1985) and Adisa (2005) separately stated that children and adults as well as female and male provide manual labour for cassava production and processing and other agricultural operations in Nigeria. Children's participation in the workforce has attracted the attention of many stakeholders and scholars. Their participation seems to be greatest in agricultural sector (Grier, 2004). The use of children for work is a universal phenomenon, which ranges from socialisation to child labour and abuse. Globally, children work in various

contexts including dangerous and illegal sites such as sex and drug houses (International Labor Organization-ILO, 2006). According to the UNICEF (2012), around 246 million children are engaged in child-labor, which is pervasive in every state in Nigeria. It involves the employment of children under the age of 18 in work that restricts or prevents them from basic education and development. In 2006, the number of child workers in Nigeria was estimated at about 15 million (Nwazuoke, 2016). The US Department of Labour in its 2010 report claimed that Nigeria is witnessing the worst form of rural child labour, particularly in its agricultural sector. In rural area, most children work in the production and processing of several crops like cassava and in the process, they are exposed to pesticides and chemical fertilisers. This is because of the limited use of protective equipment and grossly inadequate mechanisation of farm operations (Nwazuoke 2016).

In Nigeria, myriads of rural farmers produce cassava, cowpea, melon, pigeon pea, yam and many other crops that contribute immensely to economic growth and food security. However, cassava stands out greatly for everyone because of its many products that are very common in the daily meal of many Nigerians. Cassava production in Nigeria reached the highest level with an estimated value of 59 million metric tons and accounted for 20.4% of the global production in 2017 (Olutosin and Barbara, 2019).

Cassava is an economic crop with many useful and edible products that are easily converted into cash. Yet, farmers need to add value to their cassava to earn substantial income. Value-addition is achieved through cassava processing, which is highly labour intensive (Apata, *et al*., 2010). Given the enormity of labour required for the processing and the high rate of rural-urban drift of agricultural labour force, children are increasingly used as a cheap source of labour in the processing of casava into various products such as garri, fufu, starch and tapioca. These products are crucial for sustaining rural households.

However, the participation of children in the processing of cassava into various products has remained relatively under-researched and under-theorised, hence this study. This research would contribute to the bourgeoning body of work on children's participation in agriculture. To this end, this paper addresses the following research questions: What are the socioeconomic characteristics of children participating in cassava processing in the research area? What are the factors that determine the children's participation in the processing? What are the constraints associated with cassava processing? Why are the children participating in the processing of the crop? What types of products are extracted from cassava? The paper, therefore, described the socioeconomic characteristics of the farm children, assessed the constraints faced by farm children cassava processors, determined the reasons for children's participation in cassava processing and identified determinants of the children's participation in the cassava processing.

METHODOLOGY

The study was carried out in Ivo local government area (LGA)of Ebonyi state, Nigeria. It has an estimated population of 129,068 people based on the 2006 census (NPC, 2006). The local government area is made up of the following communities: Ishiagu, Ishiaka, Ndiokoroukwu, Nzerem and Obinagu. The people are mainly farmers and some are engaged in stone crushing to supplement their farm income. The cash crops produced include: oil palm, raffia palm, peanut, melon, corn, etc. Food crops such as yam, cassava, cocoyam,

breadfruit and three-leaf yam are produced in large quantities.

Multi-stage random sampling procedure was used in the selection of the respondents. At first stage, five communities of Ivo LGA were purposively selected based on the record of high cassava production and large number of cassava farmers in those communities. The second stage was also the targeted sampling of two (2) villages from each of the 5 communities and was done on the basis of high number of farm children of the cassava farmers in the area. The third stage was a random sampling of fifteen (15) respondents from each of the ten (10) selected villages making a total of 150 respondents. The respondents were children under the age of 18years.

The socioeconomic characteristics of the respondents were analysed using descriptive statistics such as frequencies and percentages while the determinants of children's participation in the processing of cassava were identified using a probit model. It was preferred to ordinary multiple least squares regression (OLS) because of its ability to analyze dependent variables of ordinal nature. The choice of model was useful to account for the dichotomized dependent variables: participation and non-participation of children in the processing of cassava. The choice of this model followed Adeoti and Adewusi (2005), Apata *et al*. (2010) and Ogunwande *et al*. (2011) in which the dependent variable was chosen as traditional cultivation and mechanized cultivation and represented by "0" and "1" respectively. The model is explicitly expressed below in accordance with Gujarati (2004)

$Pi = [y=1] = [FRi]$…… 1

Where,

$Zi = \beta_0 + \beta_i R_i$….. 2

$yi = \beta_i + \beta_2 iR_2 i + \ldots \beta kRhi + Ui$ …… 3

yi * is un-observed but yi = 0 if yi* <0 ;yi = 1 if yi* ≥ 0

$P(yi = 1) = P(yi^* > 0)$

$= P(U_1 \geq - \beta_1 - \beta_2 R_2 i - \ldots - \beta_k R_k i)$ …4

i = 1, 2 … 150 respondents.

Y = Cassava processing participation

β = A vector of unknown coefficients.

Ri = vector of characteristics of children representing independent variables.

Y = Cassava processing Participation

X_1 = Age (in yrs)

X_2 = Gender (male=1; female=0)

X_3 = Households' size (No).

X_4 = Parents' marital status (Married=1; Single=0)

X_5 = Children's education (in years)

X_6= Parent's educational status (literate= 1; non-literate= 0)

X_7 = Household income (in Naira)

X_8 = Financial needs Gap-Value of household felt needs minus value of possession (in Naira)

X_9=Dependency ratio: (Number of dependent children: for children(0-14Years)/Household members (15-64 years) x 100

X_{10} = Household type (Monogamy=1; Polygamy=0)

X_{11} = Distance to School/Training (in km)

X_{12} = Type of technology used (Mechanized=1; Manual= 0)

X_{13} = Extension contacts/month (No.)

X_{14} = Daily wage (in Naira)

X_{15} = Number of friends

RESULTS AND DISCUSSION

Socioeconomic Characteristics of Respondents

Table 1 shows the socio-economic characteristics of rural children participating in the processing of cassava. The mean age of the respondents was 11years old with a standard deviation of 2.10. This result shows that the ages of the farm children clustered around 11 years. This implies that most of the children who participated in the processing of cassava were either too young or very tender. This can result to inefficiency and reduction in output. This result is similar to the findings of Rosati and Rossi (2003) who

stated that child labour comprises children under the age of 18 working in abusive, dangerous or inappropriate settings. This view was also emphasised by Akarro and Mtweve (2011) who noted that such dangerous settings open the way to the slavery of children, which is even worse than the reduction of their chances of schooling. With respect to gender, the results revealed that the majority (65.3%) were females while their male counterparts were minority (34.7%). The disproportionate population has confirmed the female's natural familiarity with sedentary and less energy-consuming and money-generating activities.

Households with 6 to10 members constituted about 65% of the sampled households while those with greater than 10 members made up about 27% of the sample. Average household size was about 7 for cassava-based farming children. This indicated that the household size across the sampled farmers was relatively large and this may enhance the release of more family labour provided household members received the right incentive. This result also indicates that children constitute a greater number of these rural households and hence will form a greater part of the work force. Also, the monogamous nature of households in the study area equally affected the size of their households.

Parents' marital status showed that married households represented approxi mately 61.3%, which shows that the culture and tradition of marital status of couples were held in high esteem. The educational level of the children revealed that primary attempts (61.3%) were the highest. This result suggests that most of the children involved in cassava processing were still in their primary education level when they could not yet know with certainty the career they had chosen in life. This result also goes hand in hand with the conclusions of Rosati and Rossi (2003) who agreed that the low educational progress of children in rural areas results in a serious setback in their educational path. Parents' level of education showed that the majority (46%) of parents in different households have only completed primary school. This result suggests that most children in this type of household will not pay a high premium for education and, on this basis, release their children for work from time to time.

Household income showed that 65.3% of households earned less than 10,000 N of monthly income, which equals 15,649 naira/month and 522 naira/ day. This result suggests that the majority of households from which the children processing cassava come are in low income and this may be the reason for the release of their children for such employment. This result is associated with Rutta (2012) who found in their study that the number of brothers and sisters does not have much effect on schooling but has a significant effect on child labor. The remittances earned to parents by the children were less than N2,000 for 92.7% of children in rural areas on a monthly basis. This monthly allowance once converted is 3,132 naira / month and 104.4 naira / day. This amount is very small and very insufficient for a child to be able to support himself on a daily basis. However, this can encourage a child to seek income-generating employment to supplement the limited financial care offered at home. The parents' occupation showed that the majority (42.7%) are farmers. This result suggests that this nature of the job will encourage more of their children to process cassava because it is a step to enhance the products of their parents' farms. Cassava processing revealed that the manual method was used by approximately 97.3% of respondents. Although the manual processing method requires a large number of workers, which

increases job opportunities, but the operation can be long and monotonous.

Determinants of the Participation of Rural Children in the Processing of Cassava

Table 2 shows the maximum probit probability regression of the determinants of the participation of rural children in the processing of cassava. Of all the variables included in the model, age (0.9715***), gender (-0.4314*), parents' marital status (0.4159*), education (-0.7714***), household income (-0.1400***), the gap in financial needs (0.0195***), the dependency ratio (0.1827*), the type of household (-0.6183**), the type of technology (0, 5272***), daily wages (0.2522*) and number of friends (0.7125***) were found to be significant at the three significant conventional levels of 1%, 5% and 10% respectively. Age was positively significant at 1%. A unit increase in the age of respondents leads, on average, to 0.8482% increase in the probability that children participate in the processing of cassava. This result suggests that with advanced age, children are more attracted to cassava processing and the reason is probably the financial gain that helped children meet their various needs during this period of their lives. However, the result agrees with Akpan (2010), that rural children engage in farming activities for the financial gain which usually improve their livelihood. The gender result of the respondents showed that girls participated more than their male counterparts. Consequently, a unit increase in the number of male cassava processors results in an average decrease of 0.4314 in the probability that children participate in cassava processing. This result shows that more females were found in the processing of cassava, which suggests that the operation is less rigorous and sedentary and, on this basis, has attracted more female children. According to the results in Table 2, married parents discourage children from participating in cassava processing compared to the other categories listed. A unit increase in the number of married parents leads on average to a decrease of 0.4159 units in the probability that the children participate in the processing of cassava. We can deduce from this result that children from married households benefited more from good parenting and moderate financial support, which translates into the satisfaction of their needs by their parents, while children from the areas rural households, separated, divorced and widowed, among others, were deprived of this opportunity thus forced to child labour by their parents. This finding is consistent with the findings of Adekunle *et al*, 2009, that parents in developing countries often assign different roles to children, which increases the number of children working in the workplace.

The children's education years were found to be negatively significant for children's participation in cassava processing in the study area. A unit increase in the children's education year leads on average to 0.7714 reduction in the probability of children's participation in the processing of cassava. This suggests that there is a likelihood of reduced participation in cassava processing as children progress in their educational careers, which requires greater attention to their educational vehicle to improve their relative academic performance. This finding is consistent with Akarro and Mtweve, (2011) that the low enrollment rate significantly reduces the employment of children worldwide. Household income was found to be negatively significant at 1%; a unit increase in household income leads on average to a decrease of -0.1400 in the probability that children participate in cassava processing. This result suggests that with more income generated by a household, more of the needs of children in the household will be met. In this way,

their attention would not be diverted to the search for another source of income, which in most cases is the initiative of their parents to increase the household income. In addition, the gap in financial needs is also positively significant at 1%. Therefore, a unit increase in the gap in household financial needs results in an average increase of 0.0195 units in the probability that children participate in cassava processing. We can deduce from this result that the greater the needs of a household, the greater the pressure on children to participate in the processing of cassava. The dependency ratio was also found to be positive and significant. A unitary increase in the household dependency ratio leads on average to a 0.1827 increase in the probability of children's participation in the processing of cassava. This finding suggests that with an increase in the number of dependent household members, there is pressure for more household needs than current income may not be enough to acquire. As a result, more children in the household would be released to generate the income necessary for the farming family to meet additional and felt needs. The type of household showed that polygamy encouraged the participation of a larger number of children in the processing of cassava among the respondents, while monogamy proved the opposite. A unit increase in the number of monogamous households leads on average to a reduction of 0.6183 unit in the probability of participation of children in the processing of cassava in the study area. We can deduce from this result that monogamous households are numerous, which invariably results in an insufficient income available for the well-being of households, since household income per capita is generally low; this leads to increased pressure to encourage more children in households by parents to engage in cassava processing for more income to support family needs. The type of culture was found to be positively significant at 1%; a unit increase in the manual type of cassava processing technology results in an average increase of 0.5272 units in the probability of children participating in cassava processing. This result indicates that with the manual processing method, more workers would be necessary for the processing of cassava, otherwise, most of the stages of the operation would be carried out by machines, hence the reduction in labor requirements. 'artwork. The daily wages earned by respondents were found to be positively significant. A unit increase in the respondents' wages leads on average to 0.2522 unit increase in the probability of participation of children in the processing of cassava. The result suggests that the amount of salary earned by the respondents encouraged their participation because it creates more purchasing power to acquire their relative basic needs. The number of friends was also found to be positively significant. A unit increase in the number of friends leads on average to 0.7125-unit increase in the probability of participation of respondents in cassava processing. The result suggests that some children in certain cases could be encouraged to participate in the processing of cassava because of their intimate peers who do so even when there are no compelling reasons or pressure to do so. The log-likelihood ratio of -84.32 was found to be significant at 1% significant level. This suggests that the model used was fit and appropriate for the analysis.

Constraints of Cassava Processing among Children in Rural Area

Table 3 showed the constraints faced by children in rural areas in the cassava development process. Of all the various problems presented, poor remuneration was considered the most important (28.7%), followed by insufficient water (16.0%) and crude processing tools (14.7%) have proven to be important. It

was confirmed that the daily wages paid to cassava processors was very low based on the responses received. This could be the case due to the supply of labor greater than the demand for labor required for the task. However, the demand for work and the salary received are inversely linked, by this salary becomes low. This result obtained is consistent with that of Kuye (2015), who identified poor remuneration, crude processing tools and insufficient water as the constraints faced during cassava processing. In addition, the crude processing tool was also identified as a constraint faced by cassava processors because it was supposed to make the task monotonous and long. This situation could make many cassava processing participants reluctant to become actively involved in this distinctive stage of added value. Some respondents felt that processing cassava was risky and able to keep current and potential industry participants away. Some of the inherent risks may have been encountered in steps such as peeling, washing and grinding, among others. The least of the constraints identified by the respondents was insufficient vocational training, with a minimum of 3.3%, which was due to the rural nature of the region, which could lead to a shortage of professionals to transmit the necessary skills. In addition, the scarcity of extension contacts could be an obstacle to better performance of the cassava processing among rural children. Ashaye *et al* (2018) reported that scarcity of extension contacts, insufficient vocational training and Slowness of operation were barriers rural farmers encountered in cassava processing in Kwara state.

Reasons for the Participation of Rural Children in the Processing of Cassava

The main reason for the participation of rural children in cassava processing was income generation, as shown in Table 4 with 58.7% of respondents, while 2.7% were recorded for the acquisition of knowledge. This result goes hand in hand with Bequele and Boyden (1988) who explained that children work the longest hours and are the lowest paid of all workers. Most rural households are poor and, among many other reasons, this can be attributed to their low level of education and their conservative nature. Households are large, with a high dependency ratio, limited resources and the failure to embrace innovation in a timely manner characterize their way of life.

Conclusion and Recommendation

It can be concluded from the study that children in rural areas participated in the processing of cassava mainly to generate income, but it is obvious that the method used in processing the crop is still manual, which resulted in low production but further encouraged the use of labor. Based on the results, it is however recommended work that government should make primary and post primary education accessible to the poor farmer children in rural communities so as to produce a generation of literate farmers that can easily understand and adopt new improved farm technologies to enhance their output in cassava products. Government should promote the adoption of safer agricultural practices and prevent rural farmer children from carrying out hazardous work in cassava processing.

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Table 1: Socioeconomic characteristics of cassava processors from field survey of 2019

Variable	Frequency(F)	Percentage (%)
Age (in years)		
≤10	95	63.3
11-12	35	23.3
>12	20	13.3
Mean Age= 11 years		
Standard Deviation =2.10		
Gender		
Male	52	34.7
Female	98	65.3
Household Size		
≤5	11	7.3
6-10	98	65.3
>10	41	27.4
Mean Household size= 7 years		
Standard Deviation = 1.43		
Parent's Marital Status		
Single	20	13.3
Married	92	61.3
Divorce	18	12
Separated	14	9
Widow	6	4
Child's Educational Level		
No formal education	-	-
Attempted primary	92	61.3
Primary	28	18.7
Attempted JSS	18	12
Completed JSS	6	4
Attempted SSS	5	3.3
Completed SSS	1	0.67
Tertiary	-	-
Parents' educational level		
No formal education	-	-
Attempted primary	42	28.0
Completed primary	69	46.0
Attempted secondary	21	14.0
Secondary	15	10
Tertiary	3	2
Household's Income/Month(in N)		
<10,000	98	65.3

10,000-15,000	40	26.7
>15,000	12	8.0
Mean Income/Month=N8,600		
Standard Deviation = (9201)		
Children's remittance(in N)		
<2.000	139	92.7
2,000-2,500	7	4.7
>2,500	4	2.6
Mean Remittance/Month=N2,200		
Household type		
Monogamy	139	92.7
Polygamy	11	7.3
Parents' occupation		
Farmer	64	42.7
Artisan	39	26.0
Civil servant	26	17.3
Trader	14	9.3
Politician	7	4.7
Technology type		
Manual	146	97.3
Mechanical	4	2.7
Total	**150**	**100**

Source: Field Survey, 2019

Table 2: Probit regression on determinants of rural children participation in cassava processing

Variable	Co-efficient	t-ratio
Constant	1.1461***	5.32
Age(in years)	0.9715***	7.53
Sex(Male=1; female=0)	-0.4314*	-1.50
Household Size (No.)	0.7138	1.35
Parents' marital status(Married=1; if otherwise=0)	-0.4159*	-1.74
Child's Education (in years)	-0.7714***	-5.69
Parents' educ. status	-0.1413	-0.56
Household income(in Naira)	-0.1400***	-4.13
Financial needs gap(in Naira)	0.0195***	11.2
Dependency ratio	0.1827*	1.88
Household type(Monogamy=1; Polygamy= 0)	-0.6183**	-2.37
Distance(school/training)-in km	0.2515	0.77
Technology type(Manual=1; Mechanized= 0)	0.5272***	11.0
Extension contacts	0.0824	1.66
Daily wage(in Naira)	0.2522*	1.66
Number of friends	0.7125***	13.7
Likelihood Ratio(LR) = 23.82		
Prob. Chi-sq.($\chi 2$) = 0.000		
Pseudo R^2		
Log-Likelihood Ratio(LLR)		
Sample size = 150		
Dependent variable(Participants)		

Source: Field survey, 2019

Table 3: Constraints to cassava processing among rural children

Constraint	Frequency(F)	Percentage (%)
Poor remuneration	43	28.7
Insufficient water	24	16.0
Crude processing tools	22	14.7
Risk ridden	15	10.0
Dearth of expert for repair	14	9.3
Slowness of operation	14	9.3
Poor drainage	08	5.3
Government rate/charge	5	3.3
Insufficient professional training	05	3.30
Total	**150**	**100.00**

Source: Field Survey, 2019

Table 4: Reasons for rural children's participation in cassava processing

Reason	Frequency(F)	Percentage (%)
Income generation	88	58.7
Keeping busy	11	7.3

Training purpose	14	9.3
Peer influence	20	13.3
Personal interest	13	8.7
Knowledge acquisition	04	2.7
Total	**150**	**100.00**

Source: Field Survey, 2019