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Labour Input Productivity among Cassava Farmers in Osun State, Nigeria

***Egbetokun O. A., Ajijola, S. and Babalola, I.R.**

Institute of Agricultural Research and Training, Moor Plantation, Ibadan
*Corresponding Author's email: oaegbetokun@gmail.com

Abstract
This study was carried out to estimate labour input and productivity among cassava farmers in the Irewole Local Government Area of Osun State. A Multistage sampling technique was employed in the selection of the respondents and a well-structured questionnaire was used to gather information on labour input and productivity. A total of 80 questionnaires were administered but only 75 could be retrieved and subjected to analysis. The analytical techniques include descriptive and probit regression analyses. The results show that the average age is about 51 years. Probit analysis showed that factors influencing farmers' level of labour input productivity were age, marital status, household size, years of formal education, farm income and farmers' group/association which are significant at $p<0.05$. It is therefore recommended that government should intensify efforts to assist the cassava farmers by introducing low-interest loan programme in order for the cassava farmers to access credit to improve labour productivity in cassava production. Also, there should be a policy formulation on the creation and regulation of commodity-based cooperatives across the nation.

Keywords: Labour, Input, Productivity, Cassava Farmers, Nigeria

Introduction

Cassava is an important crop in Nigeria. Its comparative production advantages over other staples encourage its cultivation even by resource-poor farmers. Cassava production generally requires more intensive labour per unit of output than other major staples. Cassava can grow and give reasonable yields in low fertile soils (Nweke, 2004). It is a good staple whose cultivation if encouraged can provide the nationally required food security minimum of 2400 calories per person per day. The vicious circle of poverty among farmers has led to the unimpressive performance of the agricultural sector (Ajibefun, 2002). According to Ajibefun and Daramola, (2003), resources must be used much more efficiently with more attention paid to eliminating waste. This will lead to an increase in productivity and income. The cash income from cassava proves more equalitarian than the other major staples because of cassava's low cash input cost (Nweke, 2004). Compared with other major staples, cassava, therefore, benefits farmers across a broader swath of ecological zones. Cassava is likewise, less expensive to produce.

The policy direction of the Federal Government of Nigeria on 10% cassava flour substitution for wheat flour in bakery and allied industries, has encouraged cassava development leading to a new orientation in the research-extension farmers' linkage. The kind of problems experienced by the rural farmers in rural communities all over the world has been a very factor that affects the generation of income to the rural farmers, which is the lack of accessibility to factors of production (e.g. land, labour and capital). Lack of access to services (e.g. credit, inadequate capital) and factor of all is the lack of education or illiteracy of the rural farmers which affects them in the manner of communicating with people, especially the extension agent and also connection. Over the years, our rural farmers depend on indigenous or local knowledge for improved farming systems and animal husbandry. Such knowledge (indigenous or local knowledge) refers to skill and experience gained through oral tradition and practice of such primitive skills by our rural farmers (e.g. rural farmers in Irewole Local Government Area of Osun State) have not helped to improve agricultural yield (Olaseni *et al*., 2004).

Most literature on labour input productivity concentrated and identified whether farmers participate in the labour market (Goetz, 1992; Key *et al*., 2000). However, this study is important in that it would provide information on factors that influence the level of labour input productivity among cassava farmers. It would serve as background for farmers' targeted development policies. Given the various cassava programme and policies implemented over the years to raise farmer's

efficiency and productivity in cassava production, it then becomes imperative to empirically analyze the relationship between labour productivity and socio-economic variables of cassava farmers; estimate factors influencing the input of labour productivity and compare the profit level of low labour productivity and high labour productivity. This will further guide policymakers in making policies for the improvement of the welfare of cassava farmers which will give room for the expansion of their cassava production.

Methodology

Study Area

The study was carried out in Irewole Local Government Area Osun State with its headquarters in Ikire. It is situated in the South Western of the State and lies in the rainforest belt of the country with altitudes of between 121.92 and 298.70m and above sea level. It is located within longitude 4°8`E and latitude 7°7`W 30`N with a land mass of 978.67 m. The people are predominantly farmers, the fertile land supports the growth of cereals and tuber crops such as maize, rice, cassava, sweet potatoes, cocoyam, yam, and guinea corn (Egbetokun and Fraser, 2020).

Data Collection and Sampling Techniques

The main source of data was primary data. Primary data were collected from farming households through the administration of a well-structured questionnaire. Two-stage sampling technique was employed in the collection of data on socio-economic characteristics, labour input and production practices. The first stage was the random selection of two villages (Wasinmi and Osun villages) in the Local Government Area. The second stage was the purposive sampling of forty (40) cassava farmers from each of the selected villages; this gives a total of 80 cassava farmers. However, out of the eighty (80) questionnaires administered, seven-five (75) were found to have complete information and thus used for analysis.

Analytical Techniques

The analytical tools used in the study were descriptive analysis which includes mean, frequency, percentage and Probit regression analysis. Descriptive analysis was used for the socio-economic characteristics while the Probit model was used to estimate the factors influencing the labour input productivity among cassava farmers in the area of study as shown in equation 1. The probit model which is the first stage of the Heckman procedure was embedded in the Gragg Double Hurdle Model and was employed to determine the probability of labour input productivity among cassava farmers. The procedure for analyzing the probit model starts with identifying the dependent variable, which is a dummy and can assume only two values (either 0 or 1). The probit model is given as:

$$P_{(zy-1)} = f(z_1) = \frac{1}{\sqrt{2\pi}} \sum_{00}^{z_1} \frac{LU^2 du}{2} \quad \ldots (1)$$

Where the unobserved z_1 is a linear combination of the observable explanatory variable. The dependent variable is the level of labour productivity which has a value of 1 if it is high and 0 for low productivity on a threshold of a threshold of labour input productivity having values between 0.1 – 0.55 falling within low level of input productivity and 0.56 – 1.0 falling within high input productivity using ($x \pm Sx$) (Swindale and Bilinsky, 2006). The explanatory variables are specified thus:

X_1 = Age of the household head (years),
X_2 = Sex of household head (dummy: if male 1 or 0 otherwise),
X_3 = Membership of farmers group association (dummy: if yes 1 or 0 otherwise),
X_4 = Marital status of the household head,
X_5 = Years of formal education,
X_6 = Household size (number), X_7 = Income from farming (naira).

Results and Discussion

Table 1 shows that the majority (76%) of farmers were male which might not be unconnected to the concentration of males in cassava production in the southwestern zone, while females are engaged in activities like processing and marketing. The average age is 51 years, however, the age group 46 – 65 has the highest percentage. Also, about 80% of the farmers were married which coincides with the mean household size of 10 persons. This depicts that the household size is large and this suggests that farmers use family labour in farming activities and that young farmers are relatively not found in the farming business. The finding is in agreement with the study carried out by Yusuf *et al*, (2015). About 69% of the farmers were involved in a group or association where they received information through the extension agents. Mixed cropping was more prominent in the area of study than sole cropping (figure 1). This implies that farmers were managing the available land resources and avoiding the risk of crop failure. This is in line with the findings of Obisesan and Omonona (2013). Consequently, the majority (84%) sell their produce in the urban markets while the village and the farm gate market have poor patronage which might be due to the lower price and bad road or the distance to the village *vis a vis* the cost of transportation from the village to the town. A study by Olatinwo and Wahab, (2022) finds out similar results. Table 2 shows the distribution of the farmers to low labour and high labour productivity. It shows that about 42% of the respondents use both manual and mechanical methods of weeding in their farming practices while 37.5% and 14% use manual and mechanical methods respectively under low labour productivity in land preparation while the remaining 13.9% of the respondents used tractor on their land preparation. This implies that the low labour productivity has the highest per cent of manual methods of land preparation. The lower percentage recorded from the high labour productivity in all the farming activities might be due to the poor financial status of the farmers and the use of family labour. The implication is that for a considerable high productivity farmers should make use of mechanical methods on their farms and

cultivate a vast land for economies of scale. Consequently, the income of the farmers more appreciably increased under lower labour productivity since the families were engaged in production. This result agrees with the finding of the study conducted by Olatinwo and Wahab, (2022). The result of the probit analysis in Table 3 shows that the age of the household head, household size, farm income and membership of farmers' group or association was significant ($p<0.01$) and positively influence the level of labour productivity. This implies that a unit increase in age would increase the probability of labour productivity level by 3%. Also, a unit increase in household size would lead to a probability of an increase in labour productivity level by 3%. A unit increase in farm income would increase the probability of labour productivity level by 2%. However, a unit increase in membership in farmers' associations would lead to a 5% probability increase in the level of labour productivity. Marital status was also significant ($p<0.05$) and positively influence the probability of an increase in the level of labour productivity.

Conclusion

This study revealed that farmers, under their age, were so much involved in cassava production. The majority of the household head was male large household size and about 80% are married which encourages family labour and less was spent on hired labour. The significance of the age of the farmers indicates that farmers were more experienced in farming activities and in adopting new technologies. Furthermore, age and household size have significant effects on the level of labour input productivity. Other factors that significantly contribute to the level of labour input productivity are income and membership in a cooperative society. These are the variables of policy implications to consider while formulating policies to improve the productivity of labour in the production of cassava. Therefore, the Government should assist the farmers by introducing a low-interest loan programme in order to the cassava farmers to access credit to improve labour productivity in the production of cassava. Also, there should be a policy formulation on the creation and regulation of commodity-based cooperatives across the nation. This would serve as a vehicle to drive productivity in cassava production.

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Table 1: Socio-Economic Characteristics of the Farmers

Variables	Frequency	Percentage
Age (Years)		
20 - 30	2	2.7
31 - 45	22	29.4
46 - 65	46	61.3
61 and above	5	6.7
Gender		
Male	57	76.0
Female	18	24.0
Marital status		
Single	9	12.0
Married	60	80.0
Widow	3	4.0
Divorced	3	4.0
Household size		
1 - 4	14	18.67
5 - 8	26	34.67
9 - 11	14	18.67
12 and above	21	28.0
Formal Education (Yrs)		
1 – 6	22	29.33
7 – 12	13	17.33
13 - 19	40	55.5
Group/Association membership		
No	52	69.3
Yes	23	30.7

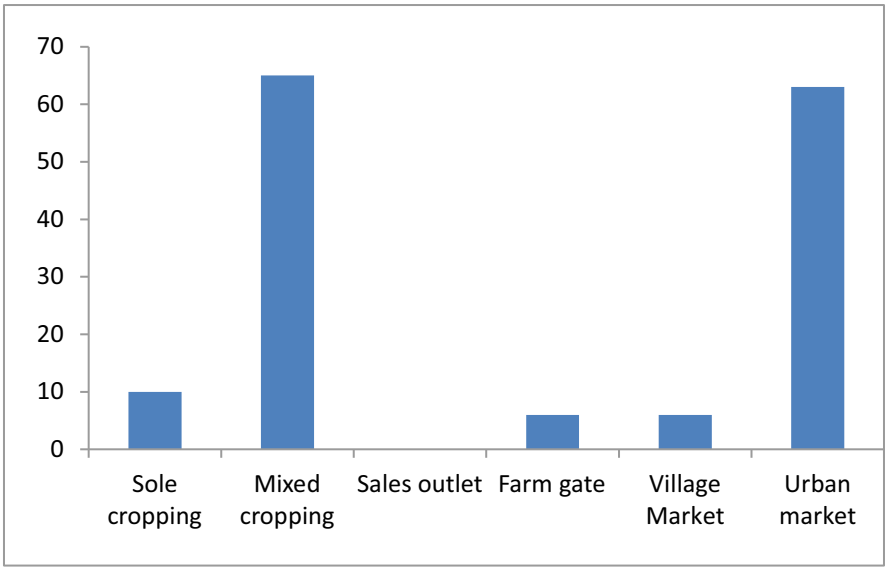

Fig. 1: Distribution of farmers to cropping systems and sales output

Table 2: Distribution of Farmers to Labour Input and Productivity

	Low Labour Productivity		High Labour Productivity	
Land preparation	**Frequency**	**percentage**	**Frequency**	**percentage**
Manual	27	37.5	4	5.6
Tractor	10	13.8	2	1.4
Both	32	41.7	0	0
Weeding				
Manual	45	60.0	3	4.0
Chemical	18	24.0	0	0
Both	7	9.3	2	2.7
Farmers income				
Below 49	11	15.1	0	0
50 – 99	20	27.4	0	0
100 – 149	12	16.4	0	0
150 - 199	9	12.3	0	0
200 and above	18	21.9	5	6.8

Table 3: Result of the Probit Analysis on Factors Influencing Labour Input Productivity

Variables	Coefficient	Standard Error	t value
Age of household head	0.03	0.109	3.10[x]
Sex of the household head	0.06	0.522	-1.10
Marital status of the household head	0.11	0.525	-2.10[x x]
Household size	0.03	0.100	-3.40[x]
Years of formal education	0.01	0.101	-0.30
Farm income	0.02	0.062	3.80[x]
Membership of Farmers' group/association	0.05	0.169	3.20[x]
Intercept	-3.620	1.408	-2.570[x x]
Chi-square	10.343		

Note: [X], [XX], represent significance levels at 1% and 5% respectively