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Comparative Analysis of Profitability of Cassava Production among Agricultural Development Programme (ADP) and Non-ADP Contact Cassava Farmers in Abia State, Nigeria

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Abstract

This study was conducted in Abia state, Nigeria with specific objectives to describe socio economic characteristics of ADP and non-ADP contact farmers; estimate profitability level of the two farmer groups; compare profitability of cassava production among the two farmer groups; determine factors that influence profitability of ADP and non-ADP contact cassava farmers and identify problems constraining the cassava farmers. Multistage sampling technique was used to select respondents. Data collected using structured questionnaire and interview schedule were analysed using descriptive statistics, cost and returns analysis, paired t-test and ordinary least square regression technique. The paired-t-test result showed that ADP contact cassava farmers had a statistically significant higher net return (₦93, 638.6) per hectare of cassava production than non-ADP contact farmers (₦65, 715.58). Factors that influenced profitability of cassava production among ADP contact farmers were age, variable costs, education and selling price while factors that influenced profitability of cassava production among non-ADP contact farmers were age, farming experience and selling price. Main constraint to cassava production among the ADP and non-ADP cassava farmers was inadequate access to credit. It was recommended that the scope of Agricultural Development Programme (ADP) in the state should be enlarged to accommodate more cassava farmers as evidence showed that ADP impacted positively on profitability of cassava production. To this end, additional skilled manpower should be employed and encouraged to visit more farmers on regular basis to teach them modern agricultural technologies.

Keywords: Agricultural Development Programme, Cassava production, Profitability

1. Introduction

Cassava is a major root crop grown throughout Nigeria for cash, food, feed and raw material for agro-allied firms for the production of starch, alcohol, pharmaceuticals and confectioneries (Onwumere *et al.*, 2006; Toluwase and Abdu-raheem, 2013). Cassava production in Nigeria is by far the largest in the world; a third more than the production in Brazil and almost double the production in Indonesia and Thailand (FAO, 2004a). Cassava production in other African countries who are also major producers appears small in comparison to Nigeria substantial output (Chukwuji, 2008). Annual production of Cassava in Nigeria is put at over 40 million metric tons from a cropped area of about 3.5 million hectares, and an average yield of 12.83 tons per hectare (FAO, 2009 and PCU, 2006). Comparing the outputs of various crops in Nigeria, cassava ranks first, followed by yam production at 27 million tonnes, sorghum at 7 million tonnes, millet at 6 million tonnes and rice at 5 million tonnes in 2002 (FAO, 2004b). On a per capita basis, north-central Nigeria is the highest cassava-producing region at 0.72 tonnes per person in 2002, followed by south-eastern Nigeria at 0.56 tonnes per person (IITA, 2004).

Cassava production in Nigeria is dominated by farmers operating small holder farming system (Osondu *et al.,* 2014). These farmers are constrained by limited access to credit facilities, use of out dated farming technologies and inefficient use of resources (Osondu *et al.,* 2014; Zaknayiba *et al.,* 2014).

According to Olayide (1980) the greatest problem faced by most Nigerian farmers including cassava farmers is inaccessibility of farmers to improved technologies. The concern about the problems faced by farmers led successive Nigerian governments to institute various programmes and policies, some of the time in collaboration with donor agencies. The programmes and policies were expected to increase quantity of food crops produced and income earned by farmers. Examples of such programmes include: The National Accelerated Food Production Programme (NAFPP) launched in 1972; The River Basin Development Authorities (RBDAs), 1976; The Agricultural Development Programme (ADP), 1975; The Agricultural Credit Guarantee Scheme (ACGS), 1978; Operation Feed the Nation 1976; The Green Revolution, 1980 and National Fadama Development Programme launched in 1992 (Okereke, 2000; Girei, and Dire, 2013). Most of these programmes however, have been scrapped as a result of recording little success and much failure over the years.

The Agricultural Development Programme (ADP) is one of the few agricultural programmes that are still in operation today. Agricultural Development Projects (ADPs) are part of the Agricultural Development Programme and were conceived and started as an enclave in Gombe, Gusau and Funtua in 1975 (Abah, 2001). Later six other projects were established in Bida, Ekiti-Akoko, Lafia, Ayangba, Ilorin and Oyo North between 1975 to 1980 using integrated rural development programme approach and Training and Visit extension system with funding from the World Bank, Federal and State governments (Adebayo and Idowu, 2000). With the success recorded in these pilot Agricultural Development Projects, a multistate ADP was implemented such that at the end of the second phase in the 90s all states of the federation and the Federal Capital Territory (FCT) had been covered. The Agricultural Development Programme (ADP) is currently responsible for carrying out the bulk of agricultural extension work in Nigeria. The ADPs were established with a mandate to improve agricultural productivity and well-being of farmers who are the centerpiece of all agricultural development efforts in Nigeria. They provide technical support through extension services to farmers as a means of promoting their adoption of improved farming technologies with an overall aim of raising their profitability levels, level of output and standard of living (Garba, 2000; Akpobo, 2007; Omonijo, *et al.,* 2014). Apart from its academic worth to the body of knowledge and contribution to the Literature, this study intends to find out if the existence of Agricultural Development Programme has actually impacted on farmers, in terms of profitability level of cassava production. Therefore, the study was conducted with the specific objectives to: (i) describe socio economic characteristics of ADP and non-ADP contact farmers in the study area; (ii) estimate profitability level of the two farmer groups; (iii) compare the profitability of cassava production among the two farmer groups under study; (iv) determine factors that influence profitability of ADP and non-ADP contact cassava farmers in the study area and (v) identify problems facing cassava farmers in the study area.

2. Materials and methods

2.1 Study Area

This study was conducted in Abia State of Nigeria. The state was created in August 27, 1991 from old Imo State of Nigeria and has a land area of 7,677.20 square kilometers, with a total population of 2,833,999 persons, made up of 1,434,193 males and 1,399,806 females (NPC, 2006). The State is located between latitudes 5^0 47 ✓ N and 6^0 12´ North of the Equator and between longitudes 7^0 23´ E and 8^0 02´ East of the Greenwich Meridian (NRCRI, 2003). Administratively, the state is made up of seventeen (17) local Government Areas (LGAs), clustered within three agricultural zones (Aba, Umuahia, and Ohafia). More than 60% of the inhabitants of Abia state are farmers growing crops such as cassava, yam, maize, rice, melon, fluted pumpkin, okra, garden egg, oil palm, cocoa, plantain and banana among others and raising livestock such as pigs, sheep, goats and poultry (Emerole, *et al.,* 2009).

2.2 Sampling Technique and Data Collection

Multistage random sampling technique was used to select samples for the study. In the first stage, one agricultural zone (Umuahia zone) was randomly selected from the three agricultural zones in the State. In stage two, 4 extension blocks were randomly selected from Umuahia zone. The third stage involved a random selection of 5 circles from each of the 4 selected Blocks, to give 20 circles. In the third stage, 240 cassava farmers were randomly selected 12 Cassava farmers per circle (consisting of 120 ADP contact cassava farmers and 120 non ADP contact cassava farmers) from the selected 20 circles making a total of 240 cassava farmers for a detailed study. The list of ADP farmers in the selected circles was obtained from the ADP office located in Umuahia Town, Abia State. Data were collected through semi structured questionnaire and focus group discussion between January and August, 2015. The questionnaire elicited information on farmers' socio-economic variables, their costs and returns as well as constraint faced by both group of cassava farmers.

Table 1. Distribution of ADP and non-ADP Contact Cassava Farmers according to Socio-Economic Characteristics

	ADP Cassava Farmers			Non-ADP Cassava farmers		
Variables	Frequency	%	Mean	Frequency	%	Mean
Gender						
Male	54	45.0		48	40.0	
Female	66	55.0		72	60.0	
Age			44.1			42.2
21-30	18	15.0		18	15.0	
31-40	44	36.7		36	30.0	
41-50	42	35.0		36	30.0	
51-60	12	10.0		22	18.3	
61 and above	4	3.3		8	6.7	
Education level						
No formal education	16	13.3		18	15.0	
Primary education	32	26.7		26	21.7	
Secondary education	66	55.0		58	48.3	
Tertiary education	6	5.0		2	1.7	
Farm size			1.1			0.8
0.1-0.5	34	28.3		30	25.0	
0.6-1.0	46	38.3		46	38.3	
1.1-1.5	26	21.7		20	16.7	
1.5-2.0	8	6.7		14	11.7	
Above 2.0	6	5.0		10	8.3	
Total	120	100		120	100	

Table 2. Gross Margin and Net Returns of Cassava Production among ADP Contact Farmers per Hectare

Items	Unit	Quantity	Unit cost	Value (₦)
A. Revenue				
Cassava tubers	Tonnes	17.13	12000	205, 560.00
Cassava stems	Bundles	36.1	500	18, 050.00
Total revenue				223,610.00
B. Variable cost				
Cost of cassava stem	Tonnes	1.5	4000	6000
Land preparation (clearing, ploughing, making mounds)	Mandays	17	803.80	13, 664.6
Planting	Mandays	8	706.40	5, 651.2
Fertilizer	Kg	143.7	138.50	19902.45
weeding	Mandays	36.6	756.80	27,698.88
Harvesting	Mandays	14	700.20	9802.8
Marketing, transportation, processing				14,500.9
miscellaneous cost				7,050
Total variable cost				104,270.83
C. Gross margin (A-B)				119,339.17
D. Fixed cost				
Rent on land				21,200.57
Depreciation cost on tools (machetes, hoes, wheel barrow) at 10%				4,500
Total fixed cost				25700.57
Total cost (TC)				129, 971.4
Net return (C-D)				93,638.6
Benefit cost ratio (TR/TC)				1.72:1.0

2.3 Analytical Technique and Model Specification

A number of analytical techniques were employed in the processing of the data collected. Descriptive statistics such as means, percentage count and frequency distribution tables were used to analyze the farmer's socio-economic characteristics and constraints to cassava production. Gross margin and net return analysis were used to analyze the profitability level of ADP and non-ADP contact cassava farmers, while students paired t-test was employed to compare the profitability level of the two farmer groups. Ordinary least square (OLS) regression technique was employed to determine factors that influenced profitability of the ADP and non-ADP contact cassava farmers.

The gross margin and net return equation is implicitly stated in accordance with Brown (1979) and Olukosi and Ernabor (2005) as:

GM=TR–TVC… (1) Where:

TR = Total revenue (₦)

TVC = Total variable cost (₦)

GM = Gross margin (₦)

Net return=GM–TFC… (2)

Where:

TFC = Total fixed cost

The study employed use of paired treatment test (paired t-test) developed by William Sealy Gosset (Student, 1908).

The OLS regression employed is implicitly stated as follows:

$I=F(X_1,X_2,X_3,X_4,X_5,X_6,X_7,X_8,X_9,ei)\ldots$ (4)

X_1 = Age (years); X_2 = Gender (male =1, female =0); X_3 = Educational level (number of schooling years); X_4 = Price of product (Naira); X_5 = Farming experience (years); X_6 = Household size (number); X_7 = output; X_8 = Variable cost (Naira); X_9 = Farm size (hectare);

ei = Error term assumed to fulfill all assumptions of the classical linear regression model, E.i~ N (0, δ^2).

Four functional forms of the model (Linear, exponential, double logarithmic and semi-logarithmic) were fitted with the data. The lead equation was selected based on statistical and econometric criteria including number of significant variables, magnitude of the F- ratio, R^2 and the conformity of the variables to a priori expectation.

3. Results and discussion

3.1 Socio-economic characteristics of the Cassava Farmers

As shown in Table 1, 55.0% and 60.0% of ADP and non ADP cassava farmers respectively were females. This shows that the female farmers were more involved in cassava production than the male farmers in the study area. This finding is in line with Adebayo (2009) assertion that cassava is a female crop and that women perform certain agricultural operation with greater skill than men (Ofuoku, 2011). With respect to age, it is shown in Table 1 that 36.7% and 30.0% of ADP and non ADP cassava farmers were within the age range of 31-40 years. Mean age of ADP and non ADP contact cassava farmers were 44 years and 42 years respectively. This has a positive implication for agricultural production in the area, because the farmers are still energetic, rational decision makers and can effectively withstand the rigours, strain and stress involved in agricultural production (Onyenucheya and Ukoha, 2007; Akpa, 2007). In terms of education level it is seen in Table 1 that 55.0% and 48.3% of the ADP and non ADP contact cassava farmers had secondary school education, while 13.3% and 15.0% of the ADP and non ADP contact cassava farmers had no formal education. The level of education attained by a farmer not only increases his/her farm productivity but also enhances ability to understand and evaluate new production technologies (Obasi, 1991). The ability to read and write would enable the farmers to better utilize effectively and efficiently whatever resources exist in the area. Lastly, Table 1 shows that 38.33% of the ADP and non ADP contact cassava farmers had farm sizes ranging from 0.6 – 1.0 hectare. The mean size of farmland cultivated by the farmers was 1.1 hectares for ADP contact cassava farmers and 0.8 hectare for non ADP contact cassava farmers. This implies that the farmers were smallholder farmers who inherited or accessed small parcels of land. Most farmers in Nigeria are predominantly smallholders with average farm size of between 1 and 2 hectares (Awoyemi, 1999, Osondu *et al.,* 2014). The paucity of the units of production leaves the farmers little or no chances of taking advantage of modern agricultural techniques.

3.2 Profitability of cassava production among ADP Contact farmers

The farmers preferred to process cassava into garri before selling as it generated more profit than selling the cassava tubers whole. Therefore, in order to account for the profit generating ability of cassava production, the study computed value of cassava tuber and garri sold along with value of cassava (garri) consumed by the farmer's household and those given as gift to friends and relatives. From the result in Table 2, total revenue obtained per hectare of cassava by the ADP contact cassava farmers was ₦223, 610.00, while total cost of producing cassava per hectare among the ADP contact farmers was ₦129, 971.4. Table 2 further showed that production of cassava among the ADP contact farmers was a profitable business venture.

This is evidenced by the gross margin and net return of ₦119, 339.17 and ₦93, 638.6 respectively. The net return of ₦93, 638.6 implies that cassava production among the ADP contact farmers was very profitable. The benefit cost ratio was ₦1.72K, indicating that for every ₦1.00 invested in cassava production 72 Kobo was realized as profit. This result compares favourably with the findings of Eze and Nwibo (2014) who reported BCR of 2.0:1.0 for cassava farmers in Delta State, Nigeria.

3.3 Profitability of cassava production among non ADP Contact farmers

The results as shown in Table 3 indicate that the total variable cost of cassava production incurred by non ADP farmers was ₦80, 649.82, while the total fixed cost was ₦23, 434.6 to give a total cost of ₦104, 084.42. Among the total variable cost, Cost of weeding (₦19, 240.20) accounted for the highest variable cost items followed by the fertile cost (₦ 12,550.59). Studies (Fakayode *et al.*, 2008; Ogisi *et al.*, 2013; Yugudu *et al.*, 2014) on cassava production in Nigeria have confirmed that the cost of labour input is the highest of all cost components incurred in cassava production.

The results further showed that production of cassava in the study area was a profitable business venture. This is evidenced by the gross margin and net profit of ₦89, 150.18 and ₦65, 715.58 respectively. The benefit cost ratio was ₦1.63K, indicating that for every ₦1.00 invested in cassava production by the non ADP contact cassava farmers 63 Kobo was realized as profit. The figures posted indicate that cassava production among non-ADP contact farmers was a safe and profitable venture because of the high return on the investment. This net return is in agreement with finding of Fakayode *et al.,* (2008).

3.4 Test of difference in profit of cassava production among ADP and non-ADP Contact Cassava Farmers

Table 4 shows paired t-test result of difference in profit of the ADP and non-ADP contact cassava farmers. From the results it is adduced that there was a significant difference in the profit made from cassava production by the ADP and non-ADP contact cassava farmers in the area as evidenced by the t-value of 6.207 which is significant at 1.0% alpha level.

3.5 Factors influencing Profitability of Cassava production among ADP Contact Farmers

The result of the multiple regression analysis of factors that influenced profitability of cassava production among the ADP contact farmers is presented in Table 5. The result shows that all the functional forms of the regression were statistically significant at 1.0% probability level implying that any of the functional forms was adequate in estimating and explaining the variations in the profitability of cassava production among the ADP contact farmers. However, the profit model was best estimated and explained using the exponential functional form which explained 66.59% of the total variation in the dependent variable. Furthermore, other statistical and econometric considerations such as the number of significant coefficients and their conformity to a priori expectations were in favour of the exponential functional form. The F-statistic value of 37.78 is statistically significant at 1.0 alpha level, implying goodness of fit and that the independent variables were important explanatory factors of the variations in the dependent variable.

The coefficient for farmer's age was positive and impacted positively on profit of ADP contact farmers. Its coefficient was 0.222483 with t-stat of 2.90, implying that the higher the age of the farmers, the higher the net profit realized from cassava production. The sign of the variable is not in consonance with *a priori* expectation and does not compare favorably with Ogundari and Ojo (2006). The positive sign could be attributed to the fact that farmers are getting more experience as they grow older (Itam *et al.,* 2014). This might be explained based on the notion that experience gained as a result of old age and also while operating in the farm would thus make significant impact.

The coefficient of variable cost (-1.801492) was negative and statistically significant at 10.0% alpha level. The sign is in accordance with a priori expectation. This implies that the higher the variable costs incurred in cassava production, the lower the net profit realized by the farmers. This result supports the findings of Nwaru and Ekumankwama (2002) that increase in variable cost items lower the profit earned by traders.

The coefficient (0.6335164) of selling price was positive and statistically significant at 5.0% alpha level. This suggests that the profit arising from cassava production would increase as the selling price of the product increase. This result is in consonance with Kadurumba (2008) who obtained similar result in his study of economic efficiency of processed palm oil marketing in Imo State, Nigeria.

The positive coefficient of educational level (1.053168) was statistically significant at 1.0% risk level. This implies that an increase in years of formal education will likewise increase the net profit earned by the farmers. This is in consonance with a priori expectation.

Table 3. Gross Margin and Net Returns of Cassava production among non-ADP Contact Farmers per Hectare

Items	Unit	Quantity	Unit cost	Value (₦)
A. Revenue				
Cassava tubers	Tonnes	13.15	12000	157,800
Cassava stems	Bundles	24	500	12,000
Total revenue				169,800
B. Variable cost				
Cost of cassava stem	Tonnes	1.6	4000	6,400
Land preparation (clearing, ploughing, making mound)	Mandays	15	764.6	11,469
Planting	Mandays	6.4	700.5	4,483.20
Fertilizer	Kg	66.3	189.3	12,550.59
weeding	Mandays	27	712.6	19,240.20
Harvesting	Mandays	16	687	10,992
Marketing, transportation, processing				10, 506.83
miscellaneous cost				5,008
Total variable cost				80,649.82
C. Gross margin (A-B)				89,150.18
D. Fixed cost				
Rent on land				21,234.6
Depreciation cost on tools (machetes, hoes, wheel barrow) at 10%				2,200
Total fixed cost				23,434.6
Total cost (TC)				104,084.42
Net return (C-D)				65,715.58
Benefit cost ratio (TR/TC)				1.63:1.0

Table 4. Paired t-test result of difference in profit of ADP and non-ADP contact cassava farmers

Variable	Individual mean	Mean difference	Standard error mean	t-value
Mean profit of ADP contact cassava farmers	93638.6	27923.02	342.55	6.207***
Mean profit of non-ADP contact cassava farmers	65715.58		290.52	

Table 5. Estimate of factors that influence the profitability of cassava farmers among non ADP contact farmers in Ikwuano Local Government Area of Abia State, Nigeria.

	Functional forms			
Independent variable	Linear	Exponential +	Double log	Semi log
Constant	305583.4(0.51)	-1.67e+07(-0.75)	14.9094(0.76)	-287983.2(-0.05)
Age	14474.19(0.09)	.222483***(2.90)	1.928989*(1.93)	1044816(0.93)
Gender	-19062.69(-0.32)	1.58e-06(1.34)	-0.4247507(-1.12)	-307382.3(-0.72)
Educational level	21796.9(0.31)	1.053168*(1.82)	0.4634029(1.36)	1071359***(2.79)
Price of product	1.077598***(4.14)	0.6335164**(2.38)	1.534902(1.03)	123679.396(0.39)
Farming experience	-28876.23(-0.19)	-4249028(-0.62)	0.4743938(0.23)	41397.21(0.27)
Household size	23792.91(0.35)	-.3150659(-1.24)	0.0166301(0.03)	-326876.7(0.56)
Output	-3.01439(-0.03)	0.0002762(0.54)	.7636542(0.74)	3654985***(3.12)
Variable cost	-2.636934(-1.16)	-1.801492*(-1.65)	-1.837498(-0.93)	-3785062(-1.70)
Farm size	-273027(-1.02)	0.3201883(0.51)	-0.7486112(-0.08)	-85056.08(-0.08)
R square (R^2)	0.6367	0.6659	0.5943	0.6532
Adjusted R^2	0.5277	0.6403	0.2624	0.6091
F-ratio	5.84***	37.78***	1.79*	19.37***

***, **, * indicate variables are significant at 1.0%, 5%, and 10% risk level respectively.
Figures in parenthesis are the t-ratio,
+ = lead equation.

Table 6. Estimate of factors that influence the profitability of cassava farmers among non ADP contact farmers in Ikwuano Local Government Area of Abia State, Nigeria.

	Functional forms			
Independent variable	Linear +	Exponential	Double log	Semi log
Constant	-75155.514*** (-3.381)	9.961***(30.200)	0.260(0.109)	-1154296.1***(-4.377)
Age	47.226*(1.990)	0.012(0.377)	0.069(0.373)	-14752.070(-0.723)
Gender	-5480.396(0.870)	-0.122(-1.302)	-0.161(-0.650)	-17975.296(-0.654)
Educational level	-3718.756(-1.064)	-0.088*(-1.270)	-0.233(-0.751)	-15261.477(-0.444)
Price of product	75.489***(4.833)	0.000(1.323)	0.838**(2.812)	123679.396***(3.744)
Farming experience	1102.844***(5.035)	-0.014(-1.270)	0.025(0.102)	1096.034(0.040)
Household size	0.058(0.885)	-13.218 (0.072)	3.247(0.367)	3.061(0.428)
Output	-5.261(-1.327)	-8.603(1.075)	0.80(-0.726)	-1167.185(-0.096)
Variable cost	1247.974(0.895)	0-022(-0.872)	-0.024(-0.199)	16692.227(1.232)
Farm size	138.464(0.191)	0.017***(5.108)	1.291(4.653)	95457.077***(3.105)
R square (R^2)	0.723	0.672	0.710	0.654
Adjusted R^2	0.706	0.644	0.676	0.598
F-ratio	43.818***	30.656***	26.678***	15.361***

***, **, * indicate variables are significant at 1.0%, 5%, and 10% risk level respectively.
Figures in parenthesis are the t-ratio. + = lead equation

Table 7. Constraints to Cassava production by ADP and Non-ADP Cassava Farmers in Ikwuano Local Government Area of Abia State, Nigeria.

Constraints	ADP Farmers		Non-ADP Farmers	
	Frequency*	Percentage	Frequency*	Percentage
Lack of capital to purchase variety/denied access to farm credit	25	41.7	23	38.33
Limited access to extension agents	14	23.33	15	25.0
Limited of access to land	19	31.67	28	46.67
Inadequate access to mechanized equipment	23	33.33	24	40.0
Denied access to improved farm input	11	18.33	22	36.67
Inadequate reliable public transportation	10	16.67	11	18.33
Labour availability	16	26.67	15	25.00

*Multiple responses recorded

The result agrees succinctly with (Onyebinama, 2004), who stated that the level of educational attainment is likely to affect the degree of one's business alertness and ability to seize business initiatives and advantages, hence increased profit.

3.6 Factors influencing profitability of cassava production among non-ADP Farmers

The result of the multiple regression analysis of the factors that influenced profitability of cassava production among non ADP farmers in Ikwuano Local Government Area of Abia State, Nigeria, is presented in Table 6. The Linear function was chosen as the lead equation indicates that, about 72.3 percent of variability in the dependent variable (net profit) is attributed to the specified explanatory variables in the model. This shows that the specified explanatory variables were important were important determinants of net profit among the respondents. The F-statistic value of 43.818 is statistically significant at 1 percent probability level, suggesting that the data fit the model and that the independent variables were important explanatory factors of the variations in the net return of palm oil retailers.

The coefficient of age (47.226) was positive and statistically significant at 99.0% confidence level. The sign of the variable is not in consonance with a priori expectation. This implies that the higher the age of the respondents, the higher the net profit earned. This might be explained based on the notion that experience gained as a result of old age and also while operating in the business would thus make significant impact.

The coefficient (75.489) of selling price was positive and statistically significant at 1.0% alpha level. This suggests that the profit arising from cassava production would increase as the selling price of the product increases. This result is in consonance with Kadurumba (2008) who obtained similar result in his study of economic efficiency of processed palm oil marketing in Imo State, Nigeria.

The empirical results show that the coefficient (1102.844) of years of farming experience was positive and statistically significant at 1.0%

alpha level. The sign is in accordance with a priori expectation. This implies that the higher years of experience in cassava production, the higher the net profit earned by non ADP farmers. This result supports the findings of Nwaogu (2006) that the longer the years of farming experience, the more exposed and efficient the farmers becomes.

3.7 Constraints to Cassava Production by ADP and non-ADP Cassava Farmers

The constraints perceived by ADP and non ADP cassava farmers to militate against cassava production in the study area are shown in Table 7. The table showed that the main constraint to cassava production among the ADP and non ADP cassava farmers were lack of capital to purchase improved variety as a result of denied access to credit as identified by 41.7% and 55.0% of the ADP and non ADP contact farmers respectively. Other constraints that militated against cassava production among the respondents were denied access to land as highlighted by 31.67% and 46.67% of ADP and non ADP farmers respectively.

Another hindrance to cassava production in both group of respondents was inadequacy of mechanized equipment which was attested by 33.33% and 40.00% of ADP and non ADP and non ADP cassava farmers respectively. Other serious constraints to cassava production among ADP cassava farmers denied access to improved farm input (18.33%), limited access to extension agents (23.33%) and inadequate reliable public transportation (16.67%). While other serious constraints to cassava production among non ADP cassava farmers were denied access to improved farm input (36.67%), limited access to extension agents (25.0%) and inadequate reliable public transportation (18.33%). The implication of these results is that hindered access to credit and land were major constraints to cassava production in both group of respondents. This supports the findings of Anyiro and Oriaku (2011) that inadequate access to credit was a problem confronting small scale farmers in Nigeria.

4. Conclusion and recommendations

From the findings of this study, it is concluded that cassava production was more profitable to the ADP contact farmers than the non-ADP contact farmers as evidenced by the gross margins and net profits posted. The factors that influenced the profitability of cassava production among ADP farmers were age, variable costs, education and selling price while factors that influenced profitability of cassava production among non-ADP contact farmers were age, farming experience and selling price. Main constraint to cassava production among the ADP and non-ADP cassava farmers were lack of capital to purchase improved variety as a result of denied access to credit as identified by 41.7% and 55.0% of the ADP and non ADP contact farmers respectively.

Based on the findings of the research, the following recommendations suffice.

The scope of Agricultural Development Programme (ADP) in the state should be enlarged to accommodate more cassava farmers as evidence showed that ADP impacted positively on profitability of cassava production. To this end, more skilled manpower should be employed and encouraged to visit more farmers on regular basis to teach them modern agricultural technologies. If more farmers begin to put into use agriculture innovations, there will be tremendous improvement in the output and profitability of cassava production.

Government should promulgate policies that would enhance cassava farmers' access to credit and enable them surmount the problem of inadequate capital.

Subsidy on fertilizer input to relieve costs of cassava production is very necessary to enhance cassava output and profit.

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