ASSESSMENT OF YOUTHS PARTICIPATION IN CASSAVA PRODUCTION UNDER THE VALUE CHAIN DEVELOPMENT PROGRAMME (VCDP) IN BIDA LOCAL GOVERNMENT OF NIGER STATE, NIGERIA

Abigail John JIRGI[*]**, Cornelius Owoniyi ADEBAYO*, Abdulwahab ABDULLAHI**,
Faith Debaniyu IBRAHIM*,** Ayodeji Alexander Ajibola COKER***

Federal University of Technology, [*]Department of Agricultural Economics and Farm Management, [**]Department of Agricultural Extension and Rural Development, Minna, P.M.B. 65. Niger State, Nigeria. Phone: +2348168983283, Emails: cadebayo2015@gmail.com, abdulwahababdulahi6@gmail.com, idfaith006@yahoo.com, ayodejicoker@futminna.edu.ng

Corresponding author:jirgi.abigail97@gmail.com

Abstract

The study was carried out to assess youths participation in cassava production under value chain development programme (VCDP) in Bida local Government Area of Niger State, Nigeria, with the specific objectives of describing the socio-economic characteristics of the VCDP participants, costs and returns, level of youths participation and factors influencing youth participation in the VCDP. A multi-stage sampling technique was used to select 100 young cassava farmers and data collected were analyzed using simple descriptive statistics and probit regression analysis. The level of profitability was measured using gross margin and net farm income analysis. The results obtained shows that farmers in the study area had low formal education and were mostly married males with an average age and household size of 32 years and six (6) persons respectively. The gross margin and net farm income were ₦109,050.00 and ₦103,450.00 per hectare, respectively. The level of youths' participation under the VCDP was moderate and this was influenced by their age, gender, level of education, marital status, household size, farming occupation and cooperative membership. The major constraints faced by the farmers includes: poor extension agents/farmers' ratio, inadequate capital and lack of market linkage. To this end, it was recommended that change agents should enlighten farmers on the benefit of VCDP and functional cooperative that could facilitate credit and group dynamism.

Key words: *Value Chain Development Programme (VCDP), Cassava, youths, probit model*

INTRODUCTION

The agricultural sector is one of the most key non-oil sectors in Nigeria and it is the largest employer of 70% labour force [6]. Despite several interventions such as the *Fadama* I, II, and III, and ATAP (Agricultural transformation Agenda) high productivity have not been achieved the sector is still characterized with low yields, low level of inputs and limited areas under cultivation due to government dependence on mono-cultural economy based on oil [3]. In order to explore the huge potentials of agriculture in the country across the value chain of commodities, the Federal Government of Nigeria implemented a six years Federal Government of Nigeria/International Fund for Agricultural Development (FGN/IFAD)

assisted VCDP in six states of Anambra, Benue, Ebonyi, Niger, Ogun, Taraba, and in five Local Government Areas each in all the States with a total sum of USD 104.4 million approved on October, 2012 as start up fund. The programme is aimed at directly improving the livelihoods of approximately 17,480 household (15,000 smallholder households, 1,680 processors and 800 traders) and to benefit indirectly approximately 22,000 household (FGN-VCD-Programme Implementation Manual 2014).

The primary target groups of the programme are; (i) poor rural households engaged in the cassava and rice value chain (VCs) who with not more than 5 hectares of land under cultivation; and (ii) small-scale processors (processing capacity of an average of 2MT/day for cassava and 4MT/day for rice)

and traders, with emphasis on women and youth as principal groups. The programme takes holistic and demand-driven approach to addressing constraints along the cassava and rice value chain. The objective is to sustainably enhance rural incomes and food security through the provision of improved inputs such as seed, fertilizer, agrochemicals, machineries, improved extension services as well as improved processing and packaging (FGN-VCD-Programme Implementation Manual 2014).

Cassava (*Manihot esculenta*) is a starchy root crop and a major source of food security in Africa because of its ability to grow in low-quality soil, its resistance to drought and disease, and flexible cultivation cycle [4] [12]. According to [1], Nigeria is the world's leading cassava producer with about 21 percent share in the global market. A small fraction of cassava output in the country is produced for commercial use in the livestock feed, ethanol, textile, confectionery, and food industries, while the majority is produced by smallholder farmers for subsistence or small scale processing in form of granules, pastes, flours etc. or consumed as a green vegetable, which provides vitamin A and B. Cassava tubers can be stored underground until needed thus making it an ideal food security crop [8]. Cassava is the most widely consumed food staple in Nigeria [12].

Youth (the state of being young) is an in-between period in personality development that bridges the years between childhood and adulthood [1]. Youths are the successor farming generation and therefore the future of food security in Nigeria. Youths sometimes have their farms and on the other hand complement parents' farm effort by supplying labour in almost all the farm operations. Youths are innovative and easily adopt technologies.

However, despite the contributions of youths to household agriculture, there exist little empirical data to back it up thus, an assessment on the level of youths participation in VCDP becomes relevant. This is necessary in order to design appropriate intervention policies and redesign strategies for the achievement of the existing policies. To this end, this study aims at assessing the determinants of youths' participation in cassava production under the VCDP in Niger State, Nigeria. Specifically, the objectives of the study are to:

-describe the socio-economic characteristics of the VCDP participants,
-determine the costs and returns of the cassava farmers under VCDP,
-assess the level of youths participation in the programme,
-examine the factors influencing youth participation in the VCDP,
-identify the constraints limiting youths' participation in the programme.

MATERIALS AND METHODS

Study area
The study was conducted in Niger state, Nigeria. The state is situated in the middle belt zone of Nigeria and lies within latitude 3^o20^1 E and longitude 8° and 11^o30^1N [6]. Niger state is bounded by Sokoto, Kebbi, Kogi, Kwara, Federal Capital Territory Abuja and Kaduna State in the North, West, South, South–West, South-East and North-East, respectively. The population of the state according to 2006 census figure was about 3,950,249 however, going by the annual population growth rate of 2.5 percent in Nigeria, the population of Niger State was projected to be 5,556,200 people by the end of the year 2016 [7]. In the same vein, over 80 percent of the land in Niger State is suitable for agriculture thus, nearly 90 percent of the population engaged in arable farming in the State. Niger State has the capacity to produce most of Nigeria's stable crops. It also has ample opportunities for grazing, fishing and forestry.

However, the major crops cultivated in the state include; cereal, legumes, yam and cassava. Other crops: vegetables, livestock and aquaculture are also raised by the farming households.

Sampling Procedures and Sample Size
A multi-stage sampling technique was used to select respondents for this study. The first

stage involves purposive selection of Bida Local Government from zone 'A' area of Niger state based on cassava farmers participation in the VCD Programme. The second stage involves random selection of eleven (11) out of the seventeen (17) cassava farmers groups in the VCDP. The third stage was the selection of young farmers from the selected groups, thus, 100 young farmers were randomly selected using the Yamane formula for appropriate sample size selection. The distribution of the respondents in the study area was as presented in Table1 and the Yamanne's formula is mathematically expressed as:

$$n = \frac{N}{1+N(e)^2} \qquad (1)$$

where:
n= samples size,
N= finite population,
e= limit of tolerable error (0.05%),
l= constant.

Table 1. Sample Frame for youth farmers in cassava production Bida LGA under VCDP

LGA	Farmers Associations	Sampling frame	Sampling size
Bida	Sokomajino camps	5	4
	Emishiru camps	10	7
	Falalu camps	12	9
	Amab camps	5	4
	Alpha camps	16	12
	Ndakama camps	20	15
Limamsagi camps	24	18	
	Migibbo camps	19	14
	Cincinfarmers' cooperative	6	4
	Baley camp Ltd	11	8
	Imoku camps	7	5
Total	11	135	100

Source: International Fund for Agricultural Development (2018).

Method of Data Collection
Primary data were used for this study. The data were obtained using a well-structured questionnaire with the assistance of trained enumerator. Information was sought on farm input, output and their prices.

Method of Data Analysis
Data were analyzed using descriptive statistics, farm budget analysis and probit regression models. A farm budgeting analysis is a tool used to determine the level of resources used and the output realized in any given enterprise. Farm budgeting analysis was used to determine the profitability of cassava enterprise of the farmers in the study area. The gross margin (GM) and the net farm income (NFI) are expressed in equation 1 and 2.

$$GM = GI - TVC \qquad (2)$$

where:
GM = Gross margin (₦)
GI = Gross Income (output multiplied by unit price of the product) (₦)
TVC = Total variable cost (₦)

$$NFI = GI - TVC + TFC \qquad (3)$$

where:
NIF = Net farm Income (₦)
TFC = Total fixed cost (₦)
The probit regression model was utilized to examine the factors influencing youth's participation on cassava farming under VCDP. The probit regression model is implicitly stated as:

$$Y^* = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, \ldots + e) \qquad (4)$$

where,
Y_i^* = level of participation= 1 High participation (0.51 -1.0) and 0= Low participation (0 - 0.50)
e = error term $X_1 - X_{13}$ = as defined in equation (ii) above
X_1 = Age of respondents (years)
X_2 = Gender of respondents (male=1, female=0)
X_3 = Level of education (years)
X_4 = Marital status (dummy 1, 0)
X_5 =Major occupation (dummy 1, 0)
X_6 = Farm size (in hectares)
X_7 = Cassava farming experience (years)
X_8 = Household size (number of person)

X_9 = Access to credit (dummy 1, 0)
X_{10} = Total output (kg)

RESULTS AND DISCUSSIONS

Socio-economic Characteristics of the Respondents

Socio-economic characteristics plays important role in farmers' decisions-making processes in any production enterprise. These attributes such as; gender which help to identify the involvement of males and females in farming operations, age which account for farming experience, marital status which contribute to household size, educational attainment and farm size all have impact on farmer's participation in development programs.

Table 1 revealed that over one-third of the farmers (45.0%) were below 35 years with the average age of 32 years. This implies that, farmers in the study area were still in their active age and therefore constitute readily available labour force in cassava production. Similarly, (84.0%) of the farmers had been into cassava production for the past six (6) years with average farming experience of 11 years which is an indication that farmers in the area had relatively good experience in cassava production. The result therefore, conforms to the cultural belief that 'almost every rural person is a farmer from birth'. And this assertion is further supported by the findings of [9] who reported that, the average age of respondents in the rural areas of Abia State was 40years. The table also revealed that majorities (80.0%) of the farmers were male while female farmers accounted for only 20.0%. This is perhaps due to the cultural and religious restriction that tends to place females to mere household keepers rather than participating in strength-demanding farming activities. This result is also consistent with the findings of [9] who reported that majority of the farmers in Abia State were male.

Equally, majority (99.0%) of the farmers were married thus, are likely to have larger family labour to support cassava production. This result corroborate with the findings of [10] who pointed out that, married persons were more involved in farming activities due to higher food demand in the household. Similarly, farmers with household size of between 6–10 persons in the area accounted for 88.0% while the mean household size of the sampled farmers was six (6) persons. This finding corroborate with the result of [2] who reported that average household size among the rural migrant farmers in Maiduguri Metropolis was eight (8) persons.

The result further revealed that majority of the youths had Non formal (40%) and primary education (34%). The non formal education could be related to skills acquisition pattern of education or training programs. While only 11% of the respondents attended tertiary education. This implies that, there is low level of literacy among the youths in the study area and this may limits their level of awareness on improved farming techniques and the benefit of VCD programmes. This finding agreed with [11] who reported that personal characteristic especially, education influences adoption of new technology and this tend to increase the rate of crop production among the rural people.

Table 2. Scio-economic characteristics of cassava farmers under VCDP

Variables	Frequency (100)	Percentage	Mean
Age(years)			
≤25	12	12.0	
26-30	33	33.0	32
31-35	31	31.0	
36-40	24	24.0	
Cassava farming experience			
≤5	16	16.0	
6-10	46	46.0	11
>10	38	38.0	
Gender			
Male	80	80.0	
Female	20	20.0	
Marital status			
Single	1	1.0	
Married	99	99.0	
Household size			
≤5	12	12.0	6
6-10	88	88.0	
Educational level			
Non formal	40	40.0	
Primary	34	34.0	
Secondary	15	15.0	
Tertiary	11	11.0	

Source: Field survey, 2017.

Cost and Return Analysis

Cost and returns analysis is an attempt to show how profitable the cassava production was in the study area. In the production system, costs are usually incurred on input just as returns and income are generated from the sales of output produced. Production cost consists of fixed cost and variable cost, either of these in the African context could be cash or non-cash cost [12]. Table 3 shows the costs and returns to cassava production of the VCDP farmers.

The result shows that, the variable costs constituted the highest share of costs of production (₦209,950.00) while fixed cost is₦5600.00.00. Cost of labour accounted for the highest share (46.68%) of variable cost in cassava production, this is followed by the cost of fertilizer (16.19%).The gross margin and net farm income were ₦109,050.00 and ₦103,450.00 respectively. This implies that cassava production is profitable in the study area. While the return per naira invested was ₦0.47. This implies that for every ₦1.00 cost incurred on cassava production, ₦0.47 was earned.

Table 3. Cost and Return of Cassava Production per Hectare

Variables	Amount (₦)
Variable cost	209,950.00
Fixed cost	5600.00
Total cost	**215,550.00**
Gross income	**319,000.00**
Gross margin GI – TVC	109,050.00
Net farm Income GI – TVC + TFC	103,450.00
Return Per variable cost NFI/TVC	0.49
Return Per Naira Invested NFI/TCP	₦0.47

Source: Field survey, 2017
Note: 1 USD is equivalent to ₦360 as at 2017.

Level of youth's participation in VCDP

The results in table 4 shows that youths in the study area do not have enough motivation to aid them participate highly in cassava production practices under VCDP. Youths participation in Value Chain Development Programmes is relatively moderate (41%).

Only 26% of the youths participate in all the recommended practices under the VCDP while majority (74%) rarely participate in more than four (4) programmes. This result could be due to lack of awareness on the benefit of VCDP in the area or the conservative mindset of the rural people which tend to make them suspicious of most developmental initiatives.

Table 4. Level of youths' participation in VCDP

Participation level	Frequency (100)	Percentage (%)
Low participation (1-2)	33	33.0
Moderate participation (3-4)	41	41.0
High participation (5-6)	26	26.0

Source: Field survey, 2017.

Factors influencing youths participation in VCDP

The result of probit regression analysis in Table 4 revealed the determinants of youth's participation in cassava production under the value chain development programmes in Bida local Government Area of Niger State. The result showed Pseudo R^2 of 0.3798 implying that about 37% of variations that occurs in youth participation were explained by the independent variables included in the model, while the remaining 63% could be due to other externalities outside the control of the researcher. The chi–squared statistic of 42.72 was significant at 1% level of probability indicating the goodness of fit of the overall model over all fitness of good. From the t values, six variables (age, gender, cooperative membership, farm size, household size and major occupation) out of the ten (10) variables included in the model were statistically significant at 1%, 5% and 10% level of probability.

Age had negative coefficient and statistically significant at 1% probability level implying that age of the respondents had inverse relationship with youths' participation in VCDP. Thus, as the youths advance in age, the probability of their participation in VCDP decreases. This could be due the fact that

older people rarely view VCDP as a yield improving programme as such should be reserved for young farmers. This finding is in agreement with [13] who reported negative relationship between age of the respondents in their study area and rural participation in social capital formation suggesting that participation declines with age.

The result further revealed that, household size had positive coefficient and statistically significant at 10% probability level implying that household size had direct relationships

with youth's participation in VCDP. Increase in household size of the young farmers will increase the probability of their participation in VCDP. This is consistent with the norm of rural areas where farmers keeps larger household size in other to acquire family labour for farm operation. This finding is further supported by the study of [11] who reported that household demographic characteristics play significant role in enhancing rural participation in social capital formation as it affects their welfare.

Table 5. Probit regression analysis on the factors influencing youths participation in VCDP

Variables	Coefficient	Standard error	Z	p>|z|
Years of education	0.0183671	0.0408281	0.45	0.653
Household size	0.1775482	0.1036959	1.71*	0.087
Major occupation	-0.6819451	0.4009282	-1.70*	0.089
Farming experience	0.0154169	0.0909052	0.17	0.865
Farm size	2.972172	1.327142	2.24**	0.025
Access to credit	0.0000226	0.0000213	1.06	0.288
Gender	1.348281	0.3945397	3.42***	0.001
Cooperative	1.27844	0.4314515	2.96***	0.003
Age	-0.2312964	0.0786731	-2.94***	0.003
Output	0.0004805	0.0004212	1.14	0.254
Constant	3.130848	2.025453	1.55	0.122
Number	100			
LR chi2(8)	42.72***			
Prob> chi2	0.0000			
Pseudo R2	0.3798			

Source: Field survey, 2017.
***= Significant at (1%), **= Significant at (5%), *= Significant at (10%)

Furthermore, cooperative membership had positive coefficient and statistically significant at 1% probability level implying that cooperative had direct relationships with youth's participation in VCD programmes. This shows that cooperative membership increases the probability of the youths participating in VCDP which conform with the *apriori* expectation that farmers acquires ease in production through participation in informal networks and registered organizations. Membership in an organization can stimulate investment in cassava production under the VCDP. This is also in line with [13] who reported that village with more social capital network are more likely to enjoy advanced agricultural practices and participate in communal activities and these in turn increases their income. Similarly, farm size was positively significant at 5%

probability level implying that a probability increase in farm size will lead to corresponding increase in youth's participation in VCD programmes. This is expected as the farmers increased their area of cultivation which could translate to increased income.

Equally, sex had positive coefficients and significant at 10% level of probability implying a direct relationship with participation in VCDP. This implies that male folks participate in VCDP than female folks. This is not surprising considering the drudgery nature of farming activities and the socio-cultural and biological nature of women which tend to limit them to domestic functions. In the same vein, the result showed that farm occupation under the VCDP was negatively significant at 1%. This implies that farming as an occupation by the youths had

inverse relationship with participation in VCDP. Therefore, the probability of youths who consider farming as their primary source of livelihood participating in VCDP is less likely. This could be due to the fact that most rural farmers are conservative and rarely view VCDP as an alternative to boasting their production in the near future.

Constraint limiting young farmers participation in VCDP

Despite the success recorded, the VCD programme is however not deprived of challenges. Table 5 shows the various constraints faced by the farmers under the programme. These constrains were derived using a 3-point Likert type of scale to categorize the level of seriousness, and a mean score of two (2) was used as the decision rule.

Table 6. Showing constraint limiting youths participation in VCDP

Constraints	Very serious	Serious	Not serious	Weighted Sum	Mean	Rank
Inadequate capital	99(99.0)	1(1.0)	0(0.0)	299	2.99	1st
Small farm size	31(31.0)	69(69.0)	0(0.0)	231	2.31	10th
Old age	50(50.0)	50(50.0)	0(0.0)	250	2.50	5th
Inadequate Extension service	98(98.0)	1(1.0)	1(1.0)	297	2.97	2nd
Inadequate knowledge of VCDP	98(98.0)	1(1.0)	1(1.0)	297	2.97	2nd
Problem of land ownership	8(8.0)	91(91.0)	1(1.0)	207	2.07	12th
Lack of organized cooperative	50(50.0)	50(50.0)	0(0.0)	250	2.50	5th
Problem of transportation	2(2.0)	98(98.0)	0(0.0)	202	2.02	13th
Inadequate farm inputs	36(36.0)	64(64.0)	0(0.0)	236	2.36	9th
Lack of subsidy on farm input	48(48.0)	51(51.0)	1(1.0)	247	2.47	7th
Lack of continuity on VCDP	46(46.0)	54(54.0)	0(0.0)	246	2.46	8th
Inadequate storage facilities	30(30.0)	69(69.0)	1(1.0)	229	2.29	11th
Inadequate market linkage	98(98.0)	1(1.0)	1(1.0)	297	2.97	2nd

Source: Field survey, 2017.

The study reveals that inadequate capital is a serious constraint among the respondents. This is expected considering the fact that these farmers used mainly their personal savings in production. This result corroborates with the findings of [12] who reported that 50.3% of the respondent in his study claimed inadequate capital is a severe constraint to youth's participation in agricultural programmes. The result also shows that inadequate market linkage (98.0%) is a major constraint to engagement in the VCDP which also corroborate with the findings of Mathew and [5] who reported that 31.4% strongly agreed that lack of market is a major constraint in rural participation in agricultural programmes. Similarly, majority of the respondents claimed that inadequate

Extension services and inadequate knowledge of VCDP also limit youth participation in value chain development programmes.

CONCLUSIONS

Based on the findings of this research work, it can therefore be concluded that cassava farming was mostly undertaken by youths within the age range of 26 – 35 years and low level of formal education. Similarly, cassava production was found to be a highly profitable and high yielding venture considering the net farm income and the gross margin analysis. However, youths' level of participation in the VCDP was relatively moderate.

Therefore, in other to enhance youth's participation, it was recommended that

change agents should enlighten farmers on the benefit of VCDP through the regular sources of information in the area. Farmers should also be motivated to operate a functional cooperative that could facilitate credit and group dynamism.

REFERENCES

[1]FAOSTAT Online Statistical Database, http://faostat.fao.org, Accessed on 01/07/2013.

[2]Gimba, Z., Kumshe, M., 2012, Causes and effects of rural-urban migration in Borno State: A Case Study of Maiduguri Metropolis, Asian Journal of Business Management Science 1(1), 168-172.

[3]Izuchukwu, O.O., 2011, Analysis of the contribution of Agricultural Sector on the Nigerian Economic development. World Review of Business Research 1(1): 191-200.

[4]Meridian Institute, 2013, Cassava Value Chain Overview. Innovations for Agricultural Value Chains in Africa: Applying Science and Technology to Enhance Cassava, Dairy, and Maize Value Chains. http://www.merid.org/en/value-chain-innovations/Examples.aspx, Accessed on 10/02/2013.

[5]Nnadi, F.N., Akwiwu, C.D., 2008, Determinants of Youths` Participation in Rural Agriculture in Imo State, Nigeria. Journal of Applied Sciences, 8(2): 328-333.

[6]National Bureau of Statistics (NBS), 2013, https://www.citypopulation.de/php/nigeria-admin.php?adm1id=NGA027:, Accessed on 21 March, 2016.

[7]National Population Commission of Nigeria (NPC), 2016, https://www.citypopulation.de/php/nigeria-admin.php?adm1id=NGA027, Accessed on 21 March, 2016.

[8]Nweke, F. I., 2003, New Challenges in the Cassava Transformation in Nigeria and Ghana." Conference Paper No. 8. Paper presented at the INVENT, IFPRI, NEPAD, CTA conference. Successes in African Agriculture, December 1 and 3, Pretoria.

[9]Obidike, K. E. U. F. E. E. P. C.,2015, Managing rural-urban migration and brain drain for sustainable economic recovery in Nigeria: Constraints and options, 1(August 2013), 1–7.

[10]Ofuoku, A., 2015, Effect of rural-urban migrants' remittances on arable crop production in Delta State, Nigeria. Journal of Agricultural Sciences, Belgrade, 60(1), 49–59.

[11]Onubuogu, G.C., Esiobu, G.C., Nwosu, C.S., Okereke C.N., 2014, Resource use Efficiency of Small holder Cassava Farmers in Owerri Agricultural zone, Imo State, Nigeria. Scholarly Journal of Agricultural Science.4 (6): 306-318.

[12]Sanni, L. O., Onadipe, O. O., Ilona, P., Mussagy, M. D., Abass, A., Dixon, A. G. O., 2009, Successes and Challenges of Cassava Enterprises in West Africa: A Case Study of Nigeria, Benin and Sierra Leone. Ibadan, Nigeria: International Institute of Tropical Agriculture.

[13]Ukoha, O.O., Okoye, B.C., Emetu, J., 2010, Analysis of the Determinants of Total Factor Productivity among Small-holder Cassava Farmers in Ohafia Local Government Area of Abia State. Munich Personal Repec Archive (MPRA) paper, 26125.pp.1-7.