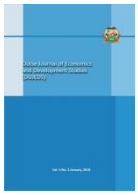
DUTSE JOURNAL OF ECONOMICS AND DEVELOPMENT STUDIES (DUJEDS)
DEPARTMENT OF ECONOMICS AND DEVELOPMENT STUDIES
FEDERAL UNIVERSITY DUTSE
E-Mail: dujeds@fud.edu.ng



EVALUATION OF VALUE CHAIN ANALYSIS OF CASSAVA PRODUCTION: STUDY ON CASSAVA CHAIN ACTORS IN ZARIA LOCAL GOVERNMENT AREA, KADUNA STATE

ABDULLAHI Hadiza

Department of Economics,
School of Arts and Social Sciences,
Federal College of Education,
Zaria, Kaduna - Nigeria

Abstract
This paper explored value chain analysis of cassava production in Zaria Local Government of Kaduna State studying all the chain actors (Producers, Processors and Marketers). Primary source of data collection was adopted through administration of questionnaires and One-way Analysis of variance (ANOVA) was used to test the hypotheses. The study found that most chain use crude implements and machines at their respective level and also use poor means of transportation and financial constraints. The study concluded that Cassava is one of the important and prominent staple crops cultivated by Kaduna State farmers; the farmers' involvement in cassava farming is not just to provide food for themselves but also with the aim of selling. The result of this study from both the descriptive statistics and ANOVA F-test fully suggested that the value chain analysis of cassava production is indeed significant at a larger scale even Zaria Local Government Area of Kaduna State. It is thus, concluded that Kaduna people should not hesitate to involve in stepping up the production of cassava since its value chain is very significant in the State Zaria Government Area. And recommended that government should provide improved varieties of cassava should be made available for these people carrying out the production, if not free, should be at the lowest possible cost, provide adequate infrastructure and support them financially.

Keywords: Value Chain, Cassava Production, Cassava Chain actors, Zaria

Introduction

Cassava is the chief source of dietary food energy for majority of the people living in the lowland tropics, and much of the sub-humid tropics of West and Central Africa (Echebiri and Adaba, 2008). It is one of the most staple food crops in many households in Nigeria (Daneji, 2011). Cassava is currently one of the important commodities that constitute the new presidential initiative for accelerated development of crop enterprises in Nigeria (Ayoola, 2004).

Nigeria is the largest producer of cassava in the world. It has overtaken Brazil and Thailand; there are more than 400 varieties of cassava species in the country now (Daneji, 2011). Cassava has become a major source of food and income for small-scale farmers and raw materials for industries (Tokula and Ekwe, 2006). It was confirmed as far back as 1985 that dietary calorie equivalent of per capita consumption of cassava in Nigeria amounted to about 238 kcal. This was derived mainly from the consumption of the principal cassava food forms, like garri (toasted granules), cassava chips/flour, fermented pastes and/or fresh root. This view has been corroborated when it was ranked that cassava provided some 70% of total calorie intake for over one-half of the Nigerian population (Ifeanyi, et al, 2012).

The International Institute of Tropical Agriculture (IITA) has made tremendous contributions to the improvement of cassava production in Nigeria (IITA, 1992). It is evident that about 90% of cassava produced is processed to add value, improve nutritional quality and external shelf life, before marketing (Ayoola, 2004). Also, about 13.2 million tons of cassava tubers were produced in 1989 and the most common food from cassava is garri. Some

by-products of cassava include starch and cassava flour (Daneji, 2011).

While engaging over 80% of the rural population in various aspects of production, processing, marketing and utilization enterprises, it has been succinctly argued that cassava production in Nigeria is a commercial enterprise with 62% of output from households' fields being marketed (Ifeanyi et al, 2012). According to Ayoola (2004), cassava production and processing in Nigeria was hitherto done using crude inputs. It is mostly grown by small holder poor households for subsistence purposes (Githunguri et al, 2008). For the past years, cassava production and processing have been facing a lot of problems. Unfortunately, no supply chain structures exist for the commercialization of supplying cassava products as the primary source of raw materials for agro-industries. At the farm level, the production costs for cassava in Nigeria are high, relative to other countries, production is not oriented towards commercialization, but instead farmers produce and process cassava as a subsistence crop (Akinnagbe, 2010).

In past years, cassava production and processing have been facing a lot of problems. Unfortunately, no supply chain structures exist for the commercialization of supplying cassava products as primary source of raw materials for agro-industries. At farm level, the production costs for cassava in Nigeria are high, relative to other countries, production is not oriented towards commercialization, but instead farmers produce and process cassava as a subsistence crop (Akinnagbe, 2010).

Recent studies have found that an increasing trend in the proportion of total cassava production is being marketed in Nigeria (Ifeanyi et al, 2012).By comparing the output of various crops in Nigeria, cassava production ranks first with 28 million tones, followed by yam at 27 million tons in 2002. By zone, the North Central Zone produces the largest share (over 7 million tons of cassava per year). By State, Benue and Kogi states in the North Central zone are the largest producers of cassava (IITA, 2004 cited in FAO, 2004). But Benue State is the leading producer of cassava in Nigeria, accounting for more than 8.87% of the total cassava output in the country. Nonetheless, its production, processing and marketing is highly technically inefficient. Separate studies by Odemenen and Otanuja (2011); and Asogwa, *et al* (2012) showed that out of the total land area of about 30,955 square kilometers in Benue State, the area of land devoted to cassava production was 268.11 ('000ha), the total number of farm families involved in the production was 413,159 while the total output stood at 3,533.69 ('000 metric tons).

While different varieties of cassava can be adequately grown across the state, It is expected that improved role performance on the part of private and public sectors would result in the evolution of territorial commodity chain of cassava. The issues at stake now have to do with enhancing the contribution of cassava to food security as well as increased household and national income through value chain activities of cassava production as well as marketing promotion for cassava products, which this study seeks to investigate.

Cassava farming is a very important occupation in Nigeria that needs to be given adequate and proper attention. This is so because cassava is a staple food for the population as well as a major source of income for many farmers (Daneji, 2011). But producers of cassava encounter some problems which have led to a decline in its productivity. Some of those constraints relate to post-harvest handling, processing, storage, packaging and marketing. The basic question that arises is to what extent has value chain analysis of cassava production contributed to household income in Zaria Local Government, Kaduna State in terms of improved standard of living and employment creation? It is against this background that the research was conducted to investigate the opportunities that cassava farming and production present to generating income and creating employment in the study area.

Literature Review

Origin of Cassava

Cassava also called mainihot, Esculenta and Crant as its botanical name is in the family of Euphorbraceael (SACRED EARTH, 2012). It is a tropical herbaceous perennial plant growing up to 3-5mm in height. The leaves are deeply indented palmate 3-7 lobes, attached to a slender stem by long pedicles'. The flowers are small greenish yellow occurring in Pericles. The seeds form in capsules which explode upon ripening to distribute their buds. The roots form large starchy tubers somewhat similar to sweet potato, with a dark brown fibrous covering and white flesh.

Cassava appears to have originated in Brazil and Paraguay, but has spread throughout tropical areas of South and Central America long before the arrival of Columbus. It is now one of the most important food crops in tropical countries throughout the world. It ranks as the 6th most important food crop worldwide, even though in western countries it is little known or used (SACRED EARTH, 2012). There are several types of cassava, but in the main it is differentiated as sweet and bitter types. The sweet varieties contain considerably less Linamarin than the bitter types. Different types are used in different countries - to make flour from which thin-like

cassava bread is made to prepare a mush or to fry like French fibers (SACRED EARTH 2012).

Cassava is a starchy root crop that develops underground. The edible tuberous roots grow between 15 to 100 centimeters and ranges in mass between 0.5 and 2.0 Kilograms. It holds the position of primary food security crop in Africa due to its resistance to drought and diseases, flexible planting and harvest cycle and tolerance to low quality soils. Cassava can remain in the ground for up to 18 months after reaching maturity (or more in the case of some varieties) and is well suited for a region that suffers both environment and political hardship (Meridian Institute, 2010). Total world cassava utilization is projected to reach 275 million tons by 2020 with researchers estimating the tubers closer to 291 million tons. Africa claims 62% of the total world production. Africa is the largest producer of cassava, with Nigeria leading the world, with 19% of global market square (Meridian Institute, 2010). Brazil is the second world largest producer of cassava with a total production comprising almost 16% of world production and representing near 75% of Latin America production (Ospina and Wheatly, 1990).

Cassava Value Chain

A value chain can be described as a series of sequential activities where at each step in the process, the product through the chain of activities gains some value (Meridian Institute, 2010). The institute also noted generally that chain of activities gives the products more added value than the sum of the added values of all the activities. Value chain comprises the full range of activities required to bring a product or service from conception through different phases of production - that involve a combination of physical transformation of inputs by various service providers, delivery to the final consumer and disposal after use (SLU 2010).

There are several types of value chains. However, only three were identified by SLU (2010).

1. Short value chain –e.g. chicken, fish chains in Africa;
2. Intermediate – farmers market in Europe and North America; and
3. Long distance – regional /continental more governance power and control.

Cassava value chain comprises input supplier, farmers/farmers co-operatives, processors, traders, creditors, intermediate and final consumers within and outside the region (PIND, New Nigeria Foundation FOFA, MSDF and LAPO, 2011). PIND et al (2010) furthered that there are three channels by which cassava and its bye-products reach the end market. Small scale production for traditional food products and large scale production for industrial products.

Empirical Review

Onoja, Ibrahim and Achinke (2009) in a bit to research on "Econometric Analysis of Credit and Farm Resource Technical Efficiencies Determinants in Cassava Farms in Kogi State, Nigeria; A Diagnostic and Stochastic Frontier Approach" selected 174 cassava farmers from two agricultural zones of the State. The Cobb-Douglas production function, White's test, Wald test and Chow's Break-point test using E-views were both employed to analyze the data. The result revealed that the form credit, farm size, chemical fertilizer quantity applied, labour and seedlings planted were significant determinants at 0.05% and 0.01 levels. An increasing return to scale (4.855) was confirmed among the farmers while the overall technical efficiencies were high (81%). The study also revealed a statistically unstable result across the two zones which could not be ascribed to heteroscedasticity. The chow test for structural break in the estimated function for the two zones gave an f-statistic of 5.907 which was significant at 1% alpha level. The variation among the two zones could be attributed to form management practices or other physical factors such as soil or climatic factors that may not be uniform across the state. The model's R^2 of 0.46 indicated that 46% of the variation in yield of cassava was influenced directly by the variables entered in the transformed Cobb Douglas Model.

Olusola and Biola (2006), in a study "Agro-food chains and sustainable livelihood: A case study of cassava marketing in Nigeria" revealed that the largest share of added value goes to secondary processors and middlemen. It was noted that organizing farmers and training them in entrepreneurship skill was needed to improve their bargaining position and their production and processing process. The study recommended that policy should provide an enabling environment in terms of banking facilities, quality regulation and control, etc. to support the entire chain, and promote closer and more sustainable interaction between producers, processors, salesmen and consumers in an agro-food chain.

Asogwa, Umeh and Okwoche (2012) in a bit to study "Agricultural policy in cassava sub-sector: Implications for welfare of cassava farmers in Nigerian" selected 360 cassava farmers in Benue State and analyzed the data through descriptive statistics. Findings indicated that the favorable policy intervention of government in the cassava sub-sector resulted to an improvement in the cassava output and income of the cassava farmers in Nigeria. The study strongly advocated policies that would

guarantee provision of adequate modern production resources to the cassava farmers.

Iyagba and Anyamwu (2012) in a study "problems and prospects of cassava production in River state, Nigeria: A case study of Oyigbo L.G.A" selected 6 villages. Using descriptive statistics, they found out that majority of cassava farmers were above 51 years while women were scarcely available for farm work. Also, about 50% of the farmers received primary education and most of them rented their farmlands used old cassava stem cuttings and were scarcely visited by extension agents. The study recommended that adequate infrastructural facilities be made available in the rural areas to reduce the immigration of the youth to urban centres in search of non-existent white collar jobs.

Torkula and Ekwe (2006), in a study "utilization of improved cassava varieties among extension agents in Benue State, Nigeria" employed descriptive statistics and linear regression. They found out that TMS 30572 was utilized more than other varieties studied. The factors that led to such utilization were high fresh tuber yield, early maturity and high cost of planting materials and inadequate information about other varieties (NR 8083). The regression showed that sex and education had a positive and significant relationship with utilization at 1% level, while age had negative but significant relationship with utilization at 1% level. It was recommended that efforts should be made to massively multiply improved cassava stems and effectively distribute at affordable prices to increase utilization of the improved varieties.

Okwoche and Asogwa (2012), studied the "impact of extension services in cassava farming in Benue State, Nigeria". Selecting 180 cassava farmers from 9 L.G.As in Benue state for the study, descriptive statistics and inferential statistics was used to analyze such data. It was found out that only 47.78% of the farmers had access to extension services. A significant relationship between farmers' access to extension services and profitability of farming was revealed. The study recommended that extension agents should put more effort in reaching cassava farmers that have not had contact with them so as to pass useful information to them in order to increase their profitability.

Obisesna and Omonona (2013) in a study "The Impact of RTEP Technology Adoption on food security status of cassava – farming households in South-west, Nigeria" sampled 540 households comprising of RTEP beneficiaries and Non–RTEP beneficiaries. Propensity score matching, descriptive statistics and Foster-Greer-Thorbecke (F.G.T) were used. The F.G.T food insecurity indices of the beneficiaries declined due to participation in the programmes and food security incidence of RTEP was lower than that of the non-beneficiaries which means that RTEP improved production technology has the potential to improve food security. The study recommended further sensitization on this technology to improve food security.

Methodology

The study used descriptive statistics to analyses and achieved some of the objectives with the help of questionnaire to collect data and One-way Analysis of variance (ANOVA) was used to test whether there are any significant differences between the means of three cassava activities highlighted in the study; the three means represent the value addition of producers, processors and marketers of cassava. The values compared are net incomes (i.e. The net values of the three cassava activities). The sample size use was 70 which comprises of 30 producers, 20 processors and 20 marketers; purposive and simple random sampling technique were used to collect the data.

Zaria LGA was created in the military edict of the Federal Military Government of Nigeria, with its headquarter in the town of Zaria. It has an area of 1,173km2. At present, Zaria LGA has thirteen (13) council wards from both inside and outside Zaria city. The council wards inside are only Six in number (namely: Kwarbai A, Kwarbai B, Kwara, Anguwan Juma, Anguwan Fatika, and), the ones outside are only seven (namely: Dutsan Abba, Kufena, Tukur-Tukur, Tudunwada, Dambo, Wuciciri, Gyallesu). It has boundary with Sabon Gari, Igabi, Soba, Giwa, in the North, South, East and West respectively.

Data Analysis and Discussion of Findings

This section covers data presentation and analysis on Cassava Value Chain constraints, Cassava Value Chain constraints in Zaria, estimated Average Annual Net Income of the respondents from their Cassava activities and distribution of Respondents by means of transporting their cassava products to the markets. It also cover the test of hypothesis and discussion of findings.

Table 1: Cassava Value Chain constraints in Zaria L.G.A.

Type of constraint	Frequency	Percentage (%)
Lack of funds and cost of input like fertilizers	59	84.29
Lack and cost of land	37	52.86
Cassava disease and low/heavy rain some years	13	18.57
Cost of labour too high	31	44.29
Lack of adequate infrastructure	41	58.57
Lack of HQC species and products	60	85.71
Lack and cost of processing/storage facilities	32	55.71
Cost of transport too high	49	70
Multiple taxation	29	41.43
Market/price fluctuation	40	57.14

Source: Field Survey, 2017

Note: - HQC means High Quality Cassava.

The above table presents 10 constraints experience in the value chain which impedes the people of Zaria to derive maximum value addition from cassava. The result of the table shows that lack of HQC species and low products (85.71%) lack of funds and cost of inputs (84.29%) inadequate rural infrastructure (58.57%) and cost of transportation (70%) are major problems or constraints of cassava value chain actors in the study area.

Table 2: Estimated Average Annual Net Income of the respondents from their Cassava activities

	Producers		Processors		Marketers	
Income (N'000)	**Responses**	**%**	**Responses**	**%**	**Responses**	**%**
20 – 199	19	63.33	7	35	1	5
200 – 399	5	16.67	5	25	1	5
400 – 599	2	6.67	1	5	1	5
600 – 799	2	6.67	2	10	2	10
800 – 999	1	3.33	1	5	4	20
1000 – 1999	1	3.33	0	0	6	30
2000 – 2999	0	0	2	10	3	15
3000 and above	0	0	2	10	2	10
Total	**30**	**100**	**20**	**100**	**20**	**100**

Source: Field Survey, 2017

The above table shows that most of the producers fall in the income group of N20,000 to N199,000 represented by 63.33%, but none of them attain the income group N2,000,000. Only 3.33% of the producers earn up to a million naira. Also, 35% of the processors have income in group N20,000 to N199,000 but 10% of them attain income groups of N2,000,000 – 2,999,000.

Again, 10% earn up to 3 million naira and above which could not be attained by producers. The result of the table further reveals the estimated annual net income of marketers with 30% earning income in group N1, 000,000 to N1, 999,000. Also, more marketers attain income group N2m to N2.999m compared with producers. The average income of producers, processors and marketers is N279,166.67, N653,050 and N1,270,050 respectively. This trend indicates that cassava get more value in the upper chain and is mostly enjoyed by marketers and intermediaries.

Table3: Distribution of Respondents by means of transporting their cassava products to the markets.

Means of transport	Frequency	Percentage (%)
Manual truck (Amalike, Wheelbarrow, Bike)	45	64.29
Pick-up Van	45	64.29
Truck (Lorries)	20	28.57
Human Porterage	9	12.86

Source: Field Survey, 2017.

The above table shows that respondents were allowed to choose more than one means of transport. The table reveals that most of the people in the value chain use manual trucks (64.29%) and pick-up Vans (64.29%) to carry their cassava produce to the market for sale. Just 12.86% use human porterage, probably because they locate their activities closer to the market, thus, need no machines to carry their wares. Personal observation and interview with the respondents revealed that the people in the study area do not have much problem concerning transport means, but finance to pay for the available means due to high cost as some rural roads are in the state anomy.

Table 4: ANOVAs test result for cassava value chain in Zaria

Test for Equality of Means Between Series				
Sample: 1 20				
Included observations: 20				
Method		Df	Value	Probability
t-test		57	-2.286903	0.0010
Satterthwaite-Welch t-test*		29.00911	-8.286903	0.0023
Anova F-test		(1, 57)	18.607101	0.0021
Welch F-test*		(2, 18.0103)	6.901111	0.1068
*Test allows for unequal cell variances				
Analysis of Variance				
Source of Variation		Df	Sum of Sq.	Mean Sq.
Between		1	20101209	10010921
Within		57	3.01E+08	2010102.
Total		58	3.01E+08	3004814.
Category Statistics				
				Std. Err.
Variable	Count	Mean	Std. Dev.	of mean
PR0DUCERS	20	117.9000	20.083	4.481916
PROCESSORS	20	125.0160	29.647	5.391513
MARKETERS	20	354.9023	31.980	5.567898
All	40	597.883	81.710	15.441327

Source: Authors ANOVA F-test (E-Views 8) Output, 2017

The test result from the above table shows that with the first degree of freedom (df_1) and the second degree of freedom (df_2) and the corresponding values of 1 and 57; the F-test reveals the value of 18.607 as the F-calculated. The F-tabulated which is the critical value at 5% level of significance is 4.08 with aforementioned degrees of freedom (df_1 v=1, df_2 v=57)

Decision Rule

Since the ANOVA F-test value calculated (F=18.607*) is greater than the tabulated value ($F=4.08_{0.05}$) with the degrees of freedom of df_1 v=1, df_2 v=57 and 5% level of significance researcher simply reject the null hypotheses (H_o) which states that "there is no difference in the value chain of cassava among operators in Zaria Local Government Area of Kaduna state and accept the alternative hypothesis (H_i) without hesitation.

Conclusion and Recommendations

Cassava is one of the important and prominent staple crops cultivated by Kaduna State farmers. The farmer's involvement in cassava farming is not just to provide food for them, but also with the aim of selling. The result of this study from both the descriptive statistics and ANOVA F-test fully suggested that the value chain analysis of cassava production is indeed significant at a larger scale even Zaria Local Government Area of Kaduna State. It is thus concluded that Kaduna people should not hesitate to involve in stepping up the production of cassava since its value chain is very significant in the State Zaria Government Area.

Based on the findings of the study, it was recommended that:

1. Since the producers of cassava faced the constraint of lack of High Quality of Cassava (HQC) in the study area which leads to low output. It is recommended that government should provide improved varieties of cassava should be made available for these people carrying out the production, if not free, should be at the lowest possible cost. This can lure more farmers into cassava farming and more value will be derived out of production level.

2. A reasonable amount should be made available for value chain actors of cassava especially producers through the micro-finance loans with long term at a very low interest rate so that the poor farmers can afford. Also cost of inputs needed by the actors should be reduced so that these actors will stop using crude implement and adopt modern technology for greater-value addition in cassava-chain.
3. The cost of transportation should be reduced and multiple taxations during the transportation of cassava produce should be checked from people who block the roads demanding for money in the name of government revenue. This will reduce the variable cost of the marketers in cassava chain and their performance will increase. Similarly, the states and federal governments should develop rural infrastructure like roads and electricity as well as provide water facilities to make cassava chain performance better and add more value to the actors.
4. Since the processors in the study area also lacked processing machines, these machines should be provided to them at low cost so that the processors can adopt the modern means of processing cassava. Similarly, processing factories of flour, garri, ethanol, glucose and others should be established in Zaria L.G.A since the value chain of cassava is very significant in this area. This will step up value addition as well as an increase in government revenue. As a complement to processing, storage facilities should also be provided in the area, especially at the market places and the processing points.

References

Adenji, A. A. (2006). "Cassava Processing and Marketing in Nigeria". *A paper presented at cassava workshop, Acra, Ghana. 20-22 march 2006.*

Alabi, Ebukiba, E. S. and Adeola, S. S. (2010). "Quantitative Determination of Allocative Efficiency in Cassava and Maize Cropping System in Mbaitolu L.G.A of Imo State, Nigeria". *International Journal of Agriculture and Rural Development Vol. I No 2, P185-189, August 2010.*

Asogwa, B. C., Umeh, J. C. and Penda, S. T. (2012). "Efficient Management of Resource Utilization in Cassava Production in a Friendly Policy Environment: Implication for Cassava Production in Nigeria". *European Scientific Journal vol. 8, No. 19 Pg 51-72.*

Ayoola J.B (2004). "Promoting Cassava Marketing in Benue State: Learning from Previous Experience of Agricultural Commodity Trade by Nigeria and other countries". *Food Agriculture & Environmental Vol. 2 (2). 177182. 2004*

BNARDA (2012). Annual Report of Jan-Dec 2012 prepared by planning, maintaining and Evaluation (P.M.E). Retrieved from BNARDA Office on 20th June, 2013.

Chukwuje, C. O. (2011). "Technical Efficiency in Cassava Based Food Crop Production in Delta State". *Nigerian International Journal of Agriculture and Rural Development Vol. I No 2, P13-23 June, 2010.*

Daneji, M. I. (2011). "Agricultural Development Intervention Programme in Nigeria (1960 to date). A Review". *Savannah Journal of Agriculture. Vol 6 (1), Pp 101-107.*

Efeamji, A. O., Chima, E., Godwin, M. A. and Nkang, N. M. (2012). "Spatial Integration and Price Transmission in Selected Cassava Products' Markets in Nigeria. A case of Lafun" *World Applied Sciences Journal 18 (9) 1209- 1219, 2012.*

F.A.O (2004). "A Cassava Industrial Revolution in Nigeria". Accessed at www.fao.org/../y5548e07.htm On 19th January, 2014.

Gasangwa, E. (2013). "Socio-economic Study of Cassava Value Chain in Rwanda: Case Study Kinazi Sector". *A dissertation submitted to the national University of Rwanda, Agricultural Economics and Agric. Business Department. An online copy*.

Idu, R. I, Obinne, C. P. O. and Idu, E. E. (2010). "Adoption of Cassava Post-Harvest Technologies among Rural Women Farmers in Benue State, Nigeria". *International Journal of Agriculture and Rural Development Vol. I No 2, P170-178 June, 2010.*

Igboji, S. E. (2012). "The Contribution of Cassava Production/Processing to Economic Welfare in Gwer-West L.G.A of Benue State". *A project copy submitted to the Department of Economics, BSU, Makurdi. December 2012*.

International Institute of Tropical Agriculture (IITA) (2004). Nigeria's Cassava Industry. Statistical Handbook. Ibadan, Nigeria.

Maridian Institute (2010). "Innovations for Agricultural Value Chain in Africa: Applying Science and Technology to Enhance Cassava Dairy and Maize Value Chains".

Nigeria Strategy Support Programme (2012). "Policy Option to Strengthen the Cassava and Rice Supply Chains".

Nigeria: Department of Agriculture, Federal Ministry of Agriculture and Natural Resources (1997).

Odemenem, I. V. and Otanwa, L. B. (2011). "Economic Analysis of Cassava Production in Benue State, Nigeria". *Current Research Journal of Social Sciences 3(5) Pg 406-411*

Okoh, M. E., Mohammed, M. B. and Umar, B. E. (2010). "The Relevance of Cassava Production, Processing the Growing Domestic and Foreign markets". *Nigerian Journal of Science Technology and Environmental Education. (NIJOSTEE). Vol 3. No I July 2010. ISSN 0331-9873.*

Olusola, B. O. and Biola, P. (2006). "Agro-Food Chains and Sustainable Livelihood: A Case Study of Cassava Marketing in Nigeria". *An online copy*.

Ospina and Wheattey (1990). "Processing of Cassava Tuber Meals and Chips in Columbia".

PIND, New Nigeria Foundation, FOFA, MSDF and LAPO (2011). "Cassava Value Chain Analysis in the Niger Delta". *A report on cassava value chain in Niger Delta Region.*

SACRED EARTH, (2012), Profile accessed at www.sacredearth.com/ethnobotom/plantprofiles/cassava-php

Terna, E. H. (2011). "Yam Production and Poverty Reduction in Benue State: Case Study of Ukum L.G.A." *A Project Copy Submitted to the Department of Economics, BSU Makurdi, November 2011.*

Torkula, M. H. and Ekwe, K. C. (2006). "Utilization of Improved Cassava Varieties among Extension Agents in Benue State, Nigeria". *Journal of Agriculture and Social Research (JASR) Vol 6, No 2, 2006 Pp 80-85.*

Urich, K., David, P., Marian, T. W. and Gregory, K. (2013). "C:AVA, Cassava Market andValue Chain Analysis: Ghana Case Study". *A final Report, January 2013.*