

**EXTENT OF VALUE ADDITION AND ESTIMATE OF VALUE ADDED IN CASSAVA ENTERPRISE
IN IKONO LOCAL GOVERNMENT AREA, AKWA IBOM STATE – NIGERIA**

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ABSTRACT

The research was carried out to identify the extent of value addition and also estimate the value added on cassava tubers in Ikono Local Government Area of Akwa Ibom State, Nigeria. The sampling frame was cassava farmers based an ADP structure, while a multi-stage random sampling technique was adopted to select one hundred (100) respondents. Structured questionnaires were administered to collect primary data, complemented by personal interviews and observations. Extent of value addition by cassava farmers employed descriptive tools such as frequency, tables and percentages; while budgetary approach was employed to estimate the monetary value that accrued to each processor from every derivative of cassava tubers. The study found out that most cassava tubers' processors in the study area did not exceed fufu and garri production. It was however discovered that 1 kg of cassava tubers that valued ₦60, yielded ₦237.02 from garri. Similarly, 1 kg of cassava tubers processed into fufu yielded ₦641.54, implying that processing 1kg of cassava tubers into garri attracted about ₦177.02, while that same quantity processed into fufu yielded ₦581.54. It was therefore concluded that processing of cassava tubers is more rewarding than selling the raw tubers for immediate cash. The study therefore recommended that cassava farmers should go beyond fufu and garri to products at the higher wrung of the chain such as industrial starch and ethanol which are highly demanded and better rewarded. Moreover, government should encourage cassava processing by linking the farmers' cooperatives and agro-processors to ready markets or introduce a buy-back programme as this would boost production, processing and profitability in cassava enterprise. Moreover, cassava farmers in Ikono should strengthen their cooperative membership by increasing their savings with their financial institutions through which they could draw more funds to invest in cassava processing at the higher wrung of the chain that is more finance involving. Financial institutions and non-governmental organizations (NGOs) should assist in providing credits and other inputs and make them accessible to the local farmers to avoid being hijacked by non-practicing farmers

Keywords: Cassava farmers, processing, value addition, extent, Ikono

INTRODUCTION

Cassava (*Manihot spp*) production is vital to the economy of Nigeria as the country is the world's largest producer of the commodity (FAO 2013; James and Faleye 2015). The crop is consumed by a substantial proportion of population in Nigeria and it is renown supplier of calories after maize (Nweke, 2004; Anyaebunam *et al.*, 2010). Besides its functionality as a food crop, it is also a good source of income and employment for rural dwellers in Nigeria and also a dependable tool against poverty (Abang *et al.*, 2001 and Iheke, 2008). Cassava has numerous uses which ultimately makes it an income spinner. Several industries use cassava to produce livestock feeds, textiles, confections, ply woods, and soft drinks. High quality cassava flour (HQCF) is useful in food industries and also in non-food industries where starch, a product of cassava, is useful in manufacturing, of textiles, paints, adhesives and other chemicals (Aniedu and Nwakor, 2012). In spite of these numerous benefits, a number of farmers still sell their raw cassava tubers for an immediate cash and forfeit an array of benefits that accrue from higher levels in the cassava value chain. This assertion is corroborated by McNulty, Emily and Adewale (2015) as they remarked that the main traditional cassava products in Nigeria are gari, fufu, and lafun.

The current global commerce lays much emphasis on value addition because of its associated benefits. Thus, the relevance of the Nigerian economy Vis a viz the global economy underscores the imperatives of prompt integration of value addition into Nigerian agriculture. From a global perspective, a value chain can is a vehicle through which technologies, logistics, labor processes, organizational relations and networks interact to create commodity values for markets (Trienekens, 2011). Value addition, if applied in cassava production can transform the economic fortune of Ikono local government in particular and Nigeria in general, given its enormous potentials. Huge economic benefits are realizable from the transformation of cassava tubers into fufu, garri, tapioca, flour, starch, chips, pellets and alcohol, among others (Adebayo, 2009).

The Value Chain concept acknowledges that production must be linked to demand and the critical role of organizing the flow from farmer to consumer (Porter, 1985; Webber and Labaste, 2010; FAO, 2012 and Onwualu, 2012). Over the years, many

African countries have not had a good bargain in the global trade because of low-skilled, low-valued products and services. Consequently they have lost huge gains to nations with competitive advantage derived from higher valued products and services. However, recently there has been a positive shift in the paradigm as many developing and business communities involved in agriculture and agribusiness in Africa have experienced a strong resurgence of interest in promoting value chains as an approach that can help design value adding interventions, lower transaction costs, diversify rural economies and contribute to increasing rural household incomes. It therefore follows that raising the productivity and increasing the efficiency of agricultural value chains are basic to the success of rural economies and to the growth of incomes of their rural populations, especially in sub-Saharan countries (Webber and Labaste, 2010).

In Nigeria, the popularity of value addition especially in agriculture has been very weak due to decades of national sustenance from crude oil. However, the current slump in the international crude oil market signals the need to source for a sustainable option to finance the economy. The trust on agriculture to accomplish this task succinctly resides in the agribusiness value chain with resultant benefits like increased sectoral contribution to employment generation, wealth creation, poverty reduction and growth in GDP (Tronstad and Unterschultz (2005); WDR and (2008) Given the enormous potentials in the value chain, an investigation of the extent of cassava farmers' involvement in value chain in the study area becomes compelling. The extent of the value added as well as the monetary values that result from the transaction will guide appropriate policy formulation.

Many studies have been carried out on issues that relate to value addition in agriculture in Nigeria. Muhammad-Lawal *et al.*, (2013) carried out a study to examine returns to cassava processing in Kwara State. The study revealed that four cassava products namely garri, flour (lafun), fufu and starch were the major products from cassava processing in the study area. Analysis of the costs and returns revealed that processing cassava to garri gave the highest Gross Margin even though processing cassava to all the four products was profitable. Inyang, *et al.*, (2015) compared the economics of processing Cassava using three indigenous technologies in Cross River State. Data were collected from 180 cassava processors grouped into three processing methods garri, fufu and tapioca across the state. The results showed that all processing methods were profitable. However, the profit per kg from garri was lower than that of fufu and this was lower than that for tapioca. There was also a significant difference in their profit level at

1%. The LSD also showed significance at 1% for any three of the methods. The profit made per kg of cassava processed has a potential to boost not only the local but also the national economy. PIND (2011) evaluated the impact of cassava value chain intensification intervention on Nigerian economy with evidence from Delta state in 2012. Primary data collected from randomly selected 100 respondents with the aid of questionnaire, were analyzed using descriptive statistics, regression technique and profit function. The result shows that average net returns added on fufu and garri processing per year are ₦105,750 and ₦107,835; with return on investment of 81% and 89% respectively. Cassava value chain intensification intervention created impact in terms of number of project beneficiaries: producers (111.43%), processors (186.76) and traders (688.89%); increased output of cassava/ha and increased volume of cassava root processed into gari and fufu (66.67-71.43%).

Umeh (2013) conducted a study on the effect of cassava value addition on the income generation of households in Etinan Local Government Area of Akwa Ibom State, Nigeria. A total of 120 respondents were sampled through multi-stage random sampling technique. Primary data were collected from the respondents with structured questionnaire. The result showed the major cassava value addition activities and the value added products of the farm households to include garri (100%), fufu (100%), cassava flour (80%), livestock feed (60%) and tapioca (54.17%). Value added products of the industrial use processed by cassava value addition were ethanol (26.67%), starch (36.67%) glucose syrup (13.33%) and cassava adhesive (15%). Result on income differentials due to value addition showed that equal quantities of raw cassava tubers processed to garri yielded ₦5,000 gain as a return to value addition; ₦3,500 for fufu; ₦7,700 for cassava flour and ₦4,150 for ethanol, etc. However, the major constraints to cassava value addition in the area were categorized into market and information, institutional and economic, infrastructural and labor factors.

In Ondo, Oyo and Ogun States of Nigeria, Abdulsalam-Saghir (2010), investigated the relationship between value addition in agriculture and poverty alleviation and reported that incomes of small holder households in some parts of these States had increased significantly by fifty Euros (ten thousand naira) per month. Similarly, increased income through cassava processing in Ewekoro in Ogun State was reported by Adeleke (2013). Conducting a study on profitability of value addition to cashew farming households in Nigeria, Lawal *et al.*, (2011) found out that gross margin, gross revenue and net income per farmers adding value are higher at 566.42 dollars; 495.55 dollars and

487.26 dollars than those not adding value at 375.28 dollars, 313.83 dollars and 306.49 dollars.

In Africa, Woldensenbet (2013) analysed the value chain of vegetables in Ethiopia, and reported that most of the actors were input suppliers, vegetable producing farmers, wholesalers, retailers, collectors, exporters and consumers. Moreover, the average price that sampled respondents received for a quintal of tomato, potato and cabbage was reported to be 476.7, 380 and 350br/qts whereas the price consumers paid was 900,800 and 600 br/qts respectively. From this study there is no clear picture whether there was value addition on each of the crops and where it was added in the chain except that which accrued from the exchange between vegetable sellers and buyers. Other empirical value chain studies outside Africa were conducted in the United States by Lambert *et al.*, (2006) and Burt and Linda Brewer (2007).

MATERIALS AND METHODS

The study was conducted in Ikono Local Government Area, usually referred to as the cradle of Ibibio nation. It occupies the Northern fringe of Akwa Ibom State and it’s predominantly inhabited by the Ibibios, the largest ethnic group in the state. It is bounded on the North by Ini Local Government Area, South by Abak and Uyo and East by Itu and West by Ikot Ekpene Local Government Area. It has a land mass of about 407.16 square kilometers and is made up of three (3) Agricultural Blocks of Ibiaku Ntok Okpo, Aka Ekpeme and Ukpom Ita. Using the ADP structure, a multi-stage sampling technique was adopted to select the 100 respondents. In the first stage, two (2) ADP blocks in the Local Government Area was purposively selected out of the existing

three (3) because of the intensity of cassava processing in the area. In the second stage, five (5) circles were randomly selected from each of the two (2) blocks. In the last stage, ten (10) processors were randomly selected from the five cycles to ensure that practicing cassava processors were selected. This brought the total number of the respondents to one hundred (100).

Data on the extent of value addition on cassava tubers were analyzed with descriptive tools such as percentages and frequencies. This was examined in relation to the wide array of cassava tuber derivatives such as: fufu, garri, industrial starch, cassava chips, cassava flour, ethanol, glucose syrup, and livestock feed, cassava-based adhesives cassava amongst others. Data on estimates of value added on the cassava tubers were analyzed with budgetary approach, where the value added was the monetary value that was realized by the processor from his output after sacrificing a certain quantity of input for processing.

Mathematically; value addition was measured as; Value added on cassava tubers = (revenue from cassava derivatives) – (monetary values of cassava tubers) expressed as;

$$VAD = (P_x D_1 + P_y D_2 + P_z D_3 + \dots P_n D_n) - (U_1 Q_1) \dots \dots \dots (1)$$

Where:

- VAD = Estimate of value addition in Naira
- P_s = Unit of price derivatives in Naira
- D_s = Quantities of derivatives sold in Kg
- U₁ = Unit of price of parent material in Naira
- Q₁ = Total Quantity of parent material obtained from which the Derivatives were obtained (kg).

RESULTS AND DISCUSSION

EXTENT OF VALUE ADDITION ON CASSAVATUBERS BY FARMERS IN IKONO LOCAL GOVERNMENT AREA

Table 1: Extent Of Value Addition On Cassava Tubers By Respondents.

| Extent of Value Addition | Frequency | Percentage (%) |
|---------------------------------|------------------|-----------------------|
| Cassava Tubers | 9 | 9.00 |
| Fufu | 37 | 37.00 |
| Garri | 54 | 54.00 |
| Total | 100 | 100.00 |

Source: Field Survey Data (2016).

From Table 1, it was realized that about 9 cassava farmers sold their raw cassava tubers without processing them. This may have been induced by the farmers’ preference for cash to meet up with urgent family needs or a consequence of the complaint of drudgery in cassava processing upheld by some of the farmers. However, the cassava farmers that made effort to add value on their cassava tubers were limited to only two major products which were fufu

and garri, thus missing huge economic opportunities that are hid in the upper level of the chain. This is because processing these two products involves small funding and few processes compared to those products like animal feed, ethanol, industrial starch, cassava flour, cassava chips, glucose syrup, livestock feed and cassava-based adhesives and bread amongst others. Few of them scarcely produced tapioca in very small quantities for domestic use. This shows

that these processors were lagging far below in cassava value chain which invariably reflects the degree of waste of opportunities that would have upgraded their economic status. As reflected on the table, about 37 cassava processors processed the cassava tubers into fufu, while 54 cassava processors processed the tubers into garri. Relatively, these processors were below cassava processors in Kwara state in the value chain as reported by Muhammad-Lawal *et al.*, (2013) that the cassava processors in Kwara state produced four major products of garri, flour (lafun), fufu and starch. It is expected that if

they were progressing in the chain that shall have added obtained more derivatives from cassava tubers unlike the farmers in Ikono local government who are trailing far behind even with the time lag.

Estimates of Value Added on Cassava Tubers in Ikono Local Government Area

Value addition on cassava tubers was solely examined on the basis of monetary value that 1 kilogramme (kg) of cassava tuber attracted to the processor in the chain.

Table 2: Estimates of value added on cassava tubers in Ikono Local Government Area

| Variables | Freq | Total Output (kg) | Average Output (kg) | Total Output Price (₦) | Average Output Price(₦) | Total Revenue (₦) | Average Revenue (₦) |
|----------------|------|-------------------|---------------------|------------------------|-------------------------|-------------------|---------------------|
| Cassava Tubers | 9 | 29,700 | 3300 | 540 | 60.00 | 198000 | 22,000 |
| Garri | 54 | 198,050 | 3,667.59 | 12,799.02 | 237.02 | 869,292.18 | 16,098.00 |
| Fufu | 37 | 469,250 | 12,682.43 | 23,736.98 | 641.54 | 8,136,286.14 | 219,899.63 |

Source: Field Survey Data (2016).

Value addition on cassava tubers in Ikono Local Government was assessed using the revenue gained between cassava tubers and fufu/garri as seen in table 2. About 9 cassava processors did not proceed beyond selling the raw tubers after harvest. This might have been due to the need for immediate cash or the intent to avoid the drudgery associated with processing the tubers into other derivatives. Each of the 9 cassava farmers realized about ₦22,000 as average revenue, while each of those that processed their cassava tubers into fufu and garri got average incomes of about ₦219,899.63 and ₦16,098.00 respectively. Assessing the value addition from income-output price perspective indicates that when 1 kg of cassava tuber that cost ₦60 was processed into garri, it yielded ₦237.02 per kg of garri. Similarly, when 1kg of cassava tubers was processed into fufu, it yielded ₦641.54 per kg of fufu. It further implies that processing 1kg of cassava tuber yielded about ₦177.02 from garri which represents the value added to the cassava tubers. Similarly, processing 1kg of cassava tuber that cost ₦60 yielded about ₦581.54 from fufu which represents the value added to cassava tubers from fufu. This implies that every processor received at least the quoted amount as revenue for being involved in cassava processing. This is in consonant with the findings of Ani, and Baiyegunhi (2013) who reported that cassava processing is a profitable venture. A similar study was carried out by Achem *et al.*,(2013) in Kwara state-Nigeria, to compare the profitability of cassava derivatives - garri, lafun and cassava chips and concluded that these derivatives yielded low but positive gross margins, with Garri having a mean gross margin of N2,970:00, Chips N2,950:00, and Lafun N2,350:00 per tonne of processed root. This

result appears to be at variance with that of Achem *et al.*, (2013), as fufu gave the highest return per kilogramme of cassava tuber processed in the study area. The differential might have been accounted for by a number of factors such as: cassava variety, processing technology, season of processing and the preference by consumers of the products. Consumers have preference for cassava derivatives which may influence the price of such derivative. Nweke (2004), cited in McNulty (2015) assessed consumption the pattern of cassava products in urban areas in comparison with the rural counterpart and reported that though both geographically dispersed areas consume high quantities of cassava products, urban consumers prefer convenient, easy-to-prepare, long shelf life products, like gari, fufu, and lafun than fresh than fresh (un-cooked fufu),while the rural consumers combine both fresh cassava and gari, fufu, and lafun.

Conclusion and Recommendations

Investigation into the extent of value addition by the processor indicates that about 9 respondents sold their cassava tubers without processing them. About 91 out of 100 cassava farmers added value on cassava tubers by processing, but only stopped at fufu and garri leaving the other derivatives like starch, cassava flour, glucose syrup, livestock feed, and cassava based derivatives. The implication is that the cassava farmers in Ikono local government have not explored the vast potentials in cassava value chain. Average revenue from cassava sales was ₦22,000; fufu sales was ₦219,899.63 and from garri sales was ₦16,098.00. From these figures it could be concluded that processing of cassava tubers into other derivatives attracts more economic reward than

selling the raw cassava tubers. This study therefore recommended that since it is more rewarding to process the tubers than selling them raw, farmers should not only stop the raw sales of cassava tubers but should also move beyond the traditional fufu and garri to higher products in the chain in order to benefit from the enormous income stream in the chain. Farmer should get enlisted in viable cooperative bodies in order to have a formidable income base from which processing at the higher level of the chain could be eased. Cooperative officers should liaise with the agricultural extension agents to educate the cassava farmers on the need to enlist in cooperatives through which their capital base could be increased. The cassava farmers/processors should look beyond the domestic economy, and target exporting their products to other countries in the world, while they earn foreign exchange to the nation. Non-Governmental Organizations (NGOs) and financial institutions should assist in providing credits and other inputs and make them accessible to the local farmers to avoid being hijacked by the non-practicing farmers. Extension service should be strengthened to properly synergize with the farmers for the actualization of the goals of both farmers and processors.

References

- Abang, S.O, Ekpe,E.E., and Usani, W. W. 2001.Technical and Allocative Efficiencies of small scale cassava growers in five selected local government areas of Cross River State, *Global Journal of pure and Applied Science*, 3(1); 37-42.
- Abraham Tegegn Woldesenbet(2013). Value Chain Analysis. of Vegetables: the case of Habro and Kombolcha Woredas in Oromia region, Ethiopia a thesis submitted to school of Agricultural Economics and Agribusiness, School of Graduate Studies Haramaya University in partial fulfillment of the requirements for the degree of master of science in agriculture (agricultural economics)
- Abdulsalam-Saghir P.B., 2011. Cassava: Adding Value for Africa – Gender and Diversity as a Driving Force. *Agricultural Innovations for Sustainable Development*. Vol 3 (2)
- Adebayo, K. 2009. Dynamics of Technology Adoption in Rural-Based Cassava Processing Enterprises in South-West Nigeria. *International Journal of Agricultural Economics and Rural Development* 2 (1): 15-24.
- Adeleke, O. A.(2013). Contribution of the “Cassava: Adding Value for Africa” (C: AVA) project to income generation in Nigeria: The case of cassava farmers and processors in Ewekoro area of Ogun State. *Journal of Agricultural Extension and Rural Development* .Vol. 5(9), pp.189-200.
- Aniedu, C., Aniedu; O. C. and Nwakor, N. 2012.Imperfect and Adoption of Value Added Innovation in Root and Tuber Crops among farmers in Imo State, Nigeria. *Global Journal of Science Frontier Research Agriculture and Veterinary Science R* (11): 1-5.
- Anyagbunam H. N. , Okoye, B. C. Asumugha, G. N. Ogbonna, M. C. Madu, T. U. Nwakor N. and Ejechi M. E. 2010 Labour productivity among Small- holder Cassava Farmers in South East agro Ecological zone, Nigeria *African Journal of Agricultural Research* Vol. 5(21), pp. 2882-2885
- FAO (Food and Agriculture Organization of the United Nations). 2011. “FAQ: Contract Farming Resource Centre, Food and Agriculture Organization of the United Nations (FAO).”
- FAO. (2012).Agricultural cooperatives and gender equality.
- Foundation for Partnership Initiatives in the Niger Delta (PIND). 2011.A Report on Cassava Value Chain Analysis in the Niger Delta.
- Iheke, O. R. (2008): Technical efficiency of cassava farmers in South Eastern Nigeria. *Agricultural Journal* 3 (2): 152-156.
- Inyang Nyambi N,Obuo P O.& Arigor AJ .2015.Comparative Economic Analysis of Three Cassava Processing Technologies In Cross River State, Nigeria. *African Journal of Advanced Agricultural Research* Vol.3 (1) p 24-9.
- Literature to Inform the Integration of Vitamin A Cassava. Harvest Plus
- McNulty, E. and Oparinde, A.(2015).Cassava Value Chain in Nigeria: A Review of the Literature to Inform the Integration of Vitamin A Cassava HarvestPlus
- Muhammad-Lawal, Omotesho, and Oyedemi,2013. An Assessment of the Economics of Cassava Processing in Kwara State, Nigeria. Invited paper presented at the 4thInternational Conference of the African Association of Agricultural Economists, Hammamet, Tunisia
- Ndubueze-Ogaraku, M. E. and Edema, O. I. 2015. Cassava Value Addition Analysis. Ughelli North Local Government Area, Delta State Nigeria. *Journal of Agriculture, Food and Environment*, 11(1): 23-28.
- Nweke, F. 2004. New Challenges in the Cassava Transformation in Nigeria and Ghana. Environment and Production Technology Division (EPTD) Discussion Paper No. 118, International Food Policy Research Institute, Washington, D.C., USA, June, 2004, 118 pp

- Onwualu, A. P. 2012. Agricultural Sector and National Development: Focus on value Chain Approach: 5th Edition of the Annual Lecture of Onitsha Chamber of Commerce: Onitsha – Anambra State, Nigeria
- Porter, M.E. 1985. The Competitive Advantage. *Academy of Management Review*. Vol.10 (4) pp 873-875
- Trienekens, J. H. 2011. Agricultural Value Chains in Developing Countries: A Framework for Analysis. *International Food and Agribusiness Management Review*, 14(2): 51 – 82.
- Tronstad, R. and Unterschultz J. 2005. Looking Beyond Value -Based Pricing of Beef. *Supply Chain Management: An International Journal*, 10(3): 214-222.
- Webber, C. M. and Labaste, P. 2010. Building competitiveness in Africa's Agriculture: A guide to Value Chain Concepts and Applications. Washington DC, World Bank.
- World Development Report(WDR) 2009. Reshaping Economic Geography. The World Bank Washington