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Critical Challenges Of Cassava Value Chain Actors in Imo State, Nigeria

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Abstract

The study analysed the cassava value chain in Imo State, Nigeria with the view of identifying and examining the functions of the Value Chain Actors (VCAs), their constraining factors, the relevance and adequacy of government policies and institutional frameworks. A multiple sampling technique was employed in the selection of 130 VCAs in the three Agricultural zones of Imo State, namely; Owerri, Orlu and Okigwe. Descriptive statistics, functional analyses of the VCAs were employed in the methodology. Results showed that of the four VCAs, namely; major input suppliers (1st Stage), producers (famers) and traders (marketers), the major input suppliers (i.e. cassava stem suppliers), were not visible as a business entity in the registered ADP farmers used in the study. These constituted the weak link in the value chain and its implications. The farmers/producers perform this function of supplying the stems in addition to their natural role of producing cassava tubers thereby distorting the gains of specialization. The results also showed that the VCAs were mainly small-scale operators, going by any of these categorization; be it farm size (<1ha), weight to tonnage of products (<1MT), turnover (<1 million Naira) or employment (less than five persons). The major constraining factors of the Cassava VCAs were inadequate credit facilities, high cost of labour, massive theft of the field unharvested products, high cost of fertilizers, poor and unpassable road network, feeble government policies and institutional frameworks and the implementation concerns. The study further highlighted the limited number of products of the VCAs and most of them are for domestic products, whereas the export potentials of the products are enormous and were not deliberately harnessed. Critical to the situation is the limited number processing among the cassava VCAs, the fulcrum of value addition. It was therefore recommended that the export market of the VCAs should be strengthened, by the government in providing export incentive, proper quality assurance and in packaging of products, importation and local development of machines, and spare parts crucial to the VCAs. Finally, to strengthen the input supply stage would require considerable in research of cassava seeds to harvest the numerous benefits associated with it.

Keywords: *Value Chain Actors, Cassava, Challenges.*

INTRODUCTION

Agriculture is the main source of National Income for most developing economies, including Nigeria, unlike developed economies where its contributions to its National income are relatively low. In Nigeria despite the decline in the share of agriculture in the GDP done rising importance of crude oil, with its attendant price fluctuations and management issues, agriculture continue to play significant role in the development in its economy. Most importantly, it provides the nation with food, fibre and new materials to its industries. One of the main sources of carbohydrates (major food) in Nigeria is cassava (*manihot esculenta* crantz). According to FAO (2018), world cassava production was about 278 million MT| and African's total production 170 million MT, which was about 56% of world production, and Nigeria's production was about 60MT (FAO, 2019).

Cassava is also known to be used in the production of over 10 products (including garri, fufu, glue, starch, ethemtte, crumbers, floor and chips) requires for both domestic and export markets. Unfortunately, Nigeria rarely meets its domestic requirement for food and industrial raw materials and has very poor performance metrics in terms of exports. The crop is a choice crop for rural development, poverty alleviation, economic growth and ultimately food security (FAO, 2018).

Some researches including Eke-Okoro & Njoku (2012) capture three phrases in the past efforts to improve cassava production in Nigeria. The first two phases of the research looked at the challenges from input generation and production perspectives, which coincided with the Nigerian Cassava Master Plan (NCMP) perspective; Well-developed techniques for long term preservation of cassava stems, and use of high yielding varieties (such as IITD-TMS varieties).

NCMP looked at the issues at a macro-level highlighting marketing issues, involving packaging and storage, hygroscopic nature of products and the need to pack in air tight moist proof bags, as well as marketing channels of the products. NCMP further observed that cassava is a rudimentary industry although large, underdeveloped, inefficient and uncompetitive in the global arena, a consequence of high ex-factory prices.

Another major cause of low production in the sector is the neglect of agriculture by the government generally. This is a contributory factor responsible for the poor performance of the sector, since the oil boom period of mid- 1970s. The government paid greater attention, in terms of budgetary allocation to the construction and service industry. The consequences (and evidence) are as follows: Increase in youth migration from rural to urban centres (and even overseas) in search of better job productivity due to rising cost of labour; Decrease in contribution of agriculture to GDP, in the sixties, agriculture contributed up to 48% of the GDP in Nigeria and employed over 60% of the rural population. (Mgbenka, *et al.*, 2016) but now it contributes about 24% of the GDP (NBS, 2020); Increase in inflation rate (industrial equipment) partly fuelled by increase in importation of food items like rice, poultry products, fish, etc. worth USD 10 bill (NBS, 2021) in the ever increasing foreign exchange rate; Increase in Balance of Payment (BoP) deficit (external equilibrium) in the 2017 BoP was USD 10.381 billion showing an increase from the previous year amount of USD 2.714 billion and Increase in debt profiles of Nigeria in both local and foreign contents.

These problems are not yet addressed principally due to socio-economic consideration bordering on concerns such as educational level of farmers, low productivity and income to mention but few.

The broad objective of the study is to identify and highlight the factors constraining the different cassava value chain actors in this state. The specific objectives are to identify and examine the various cassava value chain actors (VCAs), their function, weaknesses and strengths; and examine the relevance and the adequacy or otherwise of the Nigerian Government Agricultural Policy and Institution frameworks. This study focused attention to cassava value chain and its actions. It is worthy to note that cassava was previously regarded as a "female oriented crop" as against the most prestigious and socially prime crop, yam, which was considered "male oriented crop" in the south-east states of Nigeria. Cassava has risen to a commanding height in local and perhaps regional and international markets. This is partly because cassava is the major source of food (carbohydrate) of the geographical zone as well as it is potentials as a growing source of foreign exchange earner.

METHODOLOGY

Study Area

The study focuses on Imo State, one of Nigeria's 36 states, with Owerri as its capital. Imo is divided into three agricultural zones: Owerri, Orlu, and Okigwe, comprising a total of 27 Local Government Areas (LGAs)—11 in Owerri, 10 in Orlu, and 6 in Okigwe. Geographically, Imo State is bordered by Abia State to the east, the River Niger and Delta State to the west, and Anambra State to the north. It lies between latitudes 5°45' and 6°45' North and longitudes 6°45' and 7°28' East. The state covers a land area of approximately 5,100 square kilometers and has a population of 4.8 million people, with a population density ranging from 230 to 1,400 persons per square kilometer. The vegetation is predominantly forest, although much of it has been deforested, leading to secondary regrowth. The soil is mainly ferralitic, characterized by fine texture, low water retention, and acidity with a pH between 5.0 and 5.5. Agriculture in Imo State supports a variety of crops, notably cassava, which is crucial given that Imo is among the top 11 cassava-producing states in Nigeria, boasting an average yield of 13.1 metric tons per hectare. The entrepreneurial spirit and industrious nature of the Igbo people contribute significantly to the agricultural productivity of the region, making Imo State a purposeful choice for this study.

Sample Selection

The study on cassava production in Imo State was systematically stratified into three agricultural zones—Owerri, Orlu, and Okigwe—and further broken down into local government areas (LGAs) and communities. A pre-diagnostic test lasting three months involved 24 farmers to gain initial insights into cassava production systems, varieties in use, producer dominance, and value chain actors. It was found that no respondents were solely

engaged in cassava stem input production as a business, and the adoption of improved cassava varieties and inorganic fertilizers was notably limited.

The main study employed a multi-stage sampling technique over six months, focusing on three categories of value chain actors: producers, processors, and traders, while excluding input suppliers due to their low visibility in the pre-diagnostic assessment. The sampling began with purposive selection of four LGAs from each agricultural zone, targeting those known for significant cassava production. This resulted in a total of 12 LGAs: Ohaji/Egbema, Ngor Okpalla, Mbaitoli, and Owerri North (Owerri Zone); Nwangele, Oru-East, Ideato North, and Ideato South (Orlu Zone); and Okigwe, Obowo, Onuimo, and Ihette Uboma (Okigwe Zone).

The sampling frame consisted of 9,695 registered active cassava farmers across Imo State, compiled with the assistance of the Agricultural Development Programme (ADP) and local government offices. From this population, a subset of 384 registered cassava value chain actors was identified within the selected LGAs/communities to form the sampling frame for the study. In the second stage of sampling, a proportionate random sampling technique was used to select farmers from the 12 communities, resulting in a sample size of 120 LGAs. This method ensured that each stratum was represented in proportion to its population size, maintaining consistent sample fractions and reflecting the diverse composition of cassava value chain actors in the state. The sample size determination followed the formula by Yamane (1967) and Ohajianya (2006) are as stated below:

$$n = \frac{N}{1+N(e^2)} \text{.....} \text{ Eqn.1}$$

Where;

nj = sample size of the jth stratum

N = total sample frame

e = limit of tolerable error (i.e. level of precision)

1 = Unity

Further, simple proportion or proportionate sampling model for selecting sample size for each community is as stated below.

$$n_h = N_h\left(\frac{n}{N}\right) \text{.....} Eqn\ 2$$

Where;

n_h = sample size selected from each community

N_h = sampling frame in each community

n = sample size for the study

N = total sampling frame.

TABLE 1: SAMPLE SIZE SELECTION

AGRIC ZONE/L.G.A	POPULATION OF REGISTERED CASSAVA FARMERS	NAME OF SELECTED COMMUNITY	NUMBER OF REGISTERED CASSAVA FARMERS IN THE COMMUNITIES	POPULATION SAMPLING	SAMPLE SIZE
OWERRI: OHAJI EGBEMA		UMUOKANNE	42	$42\left(\frac{134}{384}\right)$	15
NGOR OKPALA		UMUOWA	45	$45\left(\frac{134}{384}\right)$	16
MBAITOLU		NWORIEUBI	24	$24\left(\frac{134}{384}\right)$	8
OWERRI NORTH		AMAKOHIA URATTA	23	$23\left(\frac{134}{384}\right)$	8
	3,950	**Sub-total**	**134**		**47**
ORLU NWANGELE		AGBAJAH	40	$40\left(\frac{129}{384}\right)$	13
ORU EAST		AWOOMAMA	25	$25\left(\frac{129}{384}\right)$	8
IDEATO NORTH		OHIAUCHU (ARONDIZOGU)	29	$29\left(\frac{129}{384}\right)$	10
IDEATO SOUTH		UMUEZEALA	35	$35\left(\frac{129}{384}\right)$	12
	3,591	**Sub-total**	**129**		**43**
OKIGWE OKIGWE		IHUBE	30	$30\left(\frac{121}{384}\right)$	10
OBOWO		OTOKO	40	$40\left(\frac{121}{384}\right)$	13
ONUIMO		OKWELLE	21	$21\left(\frac{121}{384}\right)$	7
IHITTE UBOMA		ONICHA UBOMA	30	$30\left(\frac{121}{384}\right)$	10
	2,154	**Sub-total**	**121**		**40**
	9,695		**384**		**130**

Field Survey, 2024

Data Collection

The study relied mainly in the use of primary data using well-structured questionnaire for the producers, processors and traders and they were administered personally and partially by trained enumerators. Extensive use of the respondents' recall ability was employed. Use of observations, discussions, and interview schedules were used in data collection in addition.

Data Analyses

Data were analyzed with descriptive statistics such as means, and percentages. Also functional analysis, was employed while descriptive information was presented in tables and charts.

RESULT AND DISCUSSION

1. Actors in the Cassava Value Chain, their functions and Structure in Imo State:

1.1 Mapping of Cassava Value Chain Actors (VCAs) by Gender and Scale of Operations

The Simplified Mapping/Diagrammatic Disposition of Cassava Value Chain Actors by Gender and Scale of Operations in Imo State is represented in Figure 1 below. It showed the land owners/arable land, where initial operations and supposedly input suppliers in the cassava value chain should have started (all in dotted lines).

The Producers, are the bona-fide farmers and constitute the riskiest and crucial node of the cassava value chain in the state. This is because they activate other segments by pooling value from the supposedly (input suppliers) to the (processors) and (traders). About 87% of the farmers/producers were essentially small-scale operators, with less than one hectare of farm size, leaving about 13% as medium scale operators. The female operators were more predominant and constituted about 53% as against about 47% of the males. The mean age of the producers was about 47 years, suggesting that the respondents were mainly of middle age bracket and by implication that the youths are yet to embrace farming as a major means of livelihood.

The next VCAs were the processors, who process the cassava into garri and other products. Garri constitute about 71.77% of the product, followed by fufu (24.95%) and cassava flour 3.28%.

On gender basis, male constituted about 64% while females were about 36% with mean age of about 48years (middle age). The interactions with the operators and consumers suggest potential rising demand for fufu, if it is well prepared and packaged as they were unable to meet the consumers' market- demand. This may require further investigation and research.

Regarding the marketers/ traders, the females constituted about 56% as against the males of about 44%. More males were involved mostly in wholesale trading of garri and the females were more involved in retail trading, especially of fufu. The mean age of the traders was about 44years.

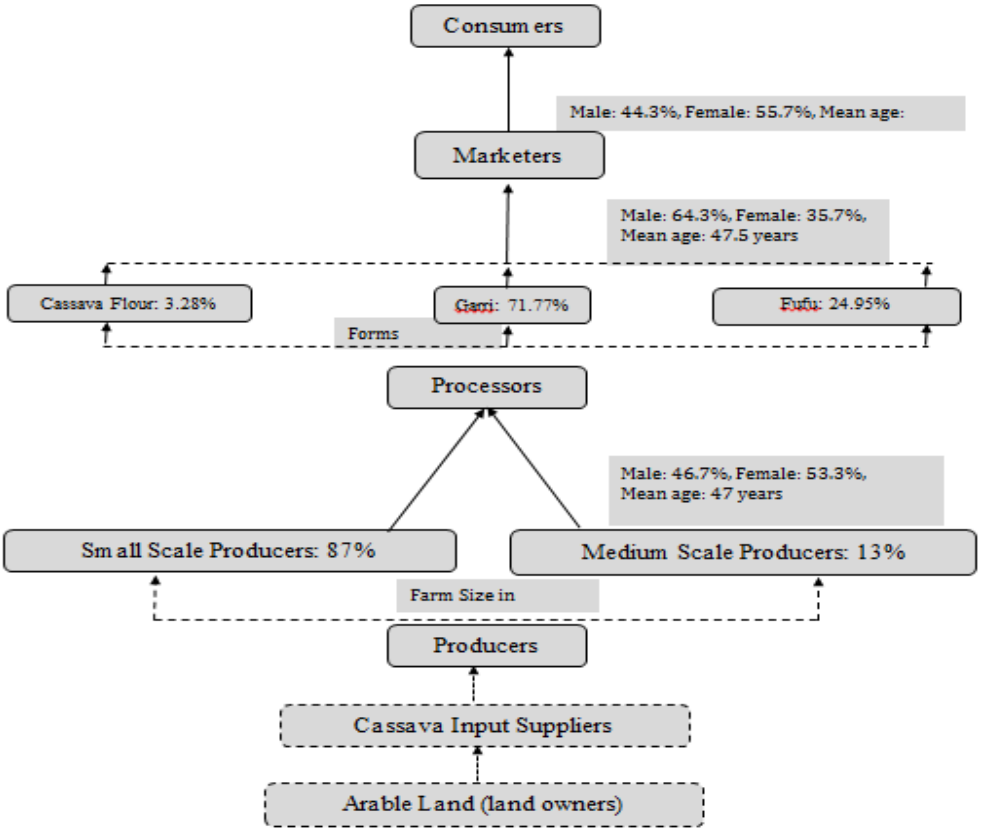

Figure 1: Simplified Cassava Value Chain Map in Imo State, Nigeria.
Source: Field Survey, 2024

1.2: Structure and Functional Analyses of Cassava Value Chain Actors in Imo State:

Table 2 : Functional Analyses and Characteristics of Cassava Value Chain Actors:

S/N	Value Chain Actors	Stage of the VC	Functions	Agents	Output
1	Input Suppliers **(Not Visible as a Business entity for Cassava stems)**	Input Supply	Other Inputs (fertilizers, agro chemicals, farm tools, logistics, etc)	FMARD State ADPs, Research Institutions, Manufacturers of Inputs and Dealers	-
2	Farmers	Production	Cultivation	Households, Micro, Small and Medium Scale Operators.	Cassava Tubers and Stems
3	Processors	Processing	Transformation of Inputs	Machine Operators, Manual/Household Operators	Garri, Fufu, Flour and Tapioca
4	Traders	Marketing, Buying and Selling of Products	Trade, Storage, Packaging and Transportation	Wholesalers, Retail traders and transportation.	Garri, Fufu, Flour and Tapioca

Source: Field Survey Data, 2024

Input Suppliers

The first value chain actors, naturally is the input suppliers, whose function is to provide the main input (cassava stems) to the farmers. Unfortunately, this is the weak link in the Cassava Value Chain Actors (VCAs) as it does not exist as a visible business entity in Imo State. The farmers in Egbeda (Mbaitoli LGA) observed that in the past, a research Institute (identified as IITA) was associated with these activities in the course of their stem multiplication programme. They partnered with selected farmers, who provided the land that was cultivated with improved varieties and the farmers harvested the roots while they harvested the stems to distribute to other locations in and outside the state (e.g. Onne in Rivers State). Information gathered from some farmers in Owerri Zone indicated, that there is a Seed Multiplication Associations in the state partnering with research institutes like Umudike Seed Multiplication Centre (an off-shoot of National Root Research Institute, Umudike), Abia State and a few Universities like University of Agriculture and Environmental Services, Umuagwo, Imo State, to address the problem of input supply of farmers in the state. The use of cassava seeds, though in its rudimentary stage in its development, was expounded in the bid to substitute the use of cassava stems, through the Early Seed Generation (ESG) Programme. If this effort succeeds, there are many benefits associated with it, like oil extraction from the seed; aside its use as planting materials and it portends great business opportunity. Other subsidiary input supplies include fertilizers, agro-chemicals, farm tools and logistics, mostly provided by the Ministry of Agriculture and Rural Development, ADPs and associated agents.

Producers

The second stage of the Value Chain Actors is the producers and they are responsible for the production of cassava roots. They are mainly made up of households, micro and small-scale farmers. In addition, this node produces significant portion of the cassava stems used in cultivation and this constitute a huge portion of their income. The farmers use limited number of improved varieties, which include; TMS 419 (Imo best), TMS 9800581, TMS 9800505, NR8082, NR8083 and various local varieties, such as *Nwaocha*, *Aguegbu*, *Sand Paper* (milky) and *Famiwa* (Yam Cassava). Their activities include; establishment and management of the farm production of cassava and harvesting of cassava stems, which are labour intensive activities. The procedures mostly involved are; land clearing, land tillage, weeding, planting of cassava stems, and harvesting. Most farmers use family labour or paid labour (which they usually employ on a daily basis) or both. Men and women are involved in different cassava production activities. Some activities are done by men while others are done by women. The study noted that land clearing was mostly done by men and a few other activities. The rest of the activities were done by women including; planting, weeding and harvesting. Farmers in the study area were classified (based on farm hectares cultivated) into subsistence or small- scale (less than one ha, with less than ₦250,000 fixed capital) and constitute about 87%; and medium scale with about 1- 3 ha, constituting about 13% of the respondents. This is in line with Ayozie. et al., (2013), that any business or enterprise below the upper limit of ₦250,000 of fixed capital investment is a small- scale business.

The results showed that majority of the farmers were small scale as depicted by the mean hectare (0.6 ha). This is

similar to the findings of TRIAS (2012) and Adeoye et al., (2013) as these studies confirmed that small-scale farmers were the main producers of cassava in Africa. Farmers in the study area inter- cropped cassava with other crops such as melon, maize, vegetable. Their sources of revenue include; sale of cassava tubers, its stems, other crops, fire woods and renting of unused land.

Processors

The VCAs in this stage transform the cassava tubers into very few products mainly garri, fufu, tapioca and to a negligible quantity; flour, chips and crude starch. The transformation method used is essentially primary processing involving manual activities. Other products that could be produced by this stage, under secondary processing include; pellets, bakeries, pharmaceuticals, dextrin, ethanol, high quality cassava flour (HQCF) and textile associated products (NCMP, 2006, and Chiamaka *et al.,* 2014). This transformation stage commands huge prospects for the cassava industry, if developed. Cassava processing involves a sequence of steps transforming cassava roots into various products. These steps include sorting, peeling, washing, grating, drying or dewatering, fermentation, sieving, toasting or dry frying (specifically for garri), packaging, storage, and refining. Traditionally, these processes were carried out manually or semi-automatically. However, manual methods have become less popular due to their labor-intensive nature and the increasing importance placed on formal education, especially for children involved in family labor. Both men and women participate in cassava processing, but women predominantly handle root preparation and many of the processing tasks, such as fermentation, sieving, and toasting/dry frying of garri. Men typically manage size reduction tasks by operating grating and dewatering machinery. Both genders collaborate in drying and dewatering grated cassava. The major income source in this sector comes from fees or rent charged to customers for the use of processing equipment or services.

Processed cassava products are widely sold and accepted in the study area but little has been done on international standards and exportability, which commands a huge market. This node holds the future prospects of the cassava industry, if automated. This is because processing is the fulcrum of value addition and the base for the platform for dualistic markets (local and foreign). The major problem of this stage is lack of capital or credit with which to acquire the relevant machines to enhance the quantity of processed cassava.

Traders

Traders are the fourth VCAs and they are involved in marketing of cassava products, mainly garri, fufu (which is fast gaining wider market acceptance) and flour. The traders provide these items to consumers in different places at prices that are profitable and promote the product and build good relationship with the consumers (4Ps of Marketing).

Cassava products such as garri, fufu, *abacha* (tapioca) and cassava flour are traded in major markets in the study area (rural and urban markets). Each market usually represents different customers, who demand for different quantities of garri. The wholesale marketing of garri is usually done by men while the retail aspects are dominated by women. This also agrees with the findings of John *et al.,* (2013). It is noteworthy to observe that international trade which wields great potentials for the industry is not meaningfully, involved in the cassava value chain.

Generally, the Value Chain Actors are subsistence, small-scale operators with little and variegated commercial orientation in terms of production and marketing. Instances of involvement in export markets were minimal and needs to be explored. Financing, packaging, storage and product dispersion were important concerns. Major input (cassava stems) generation was not a visible business entity. Processors were relatively few because of relatively high financial involvement in procuring the necessary equipment and spare-parts. Sources of power and infrastructural and credit facilities were inadequate and of great concern. The vicious circle of poverty was pervasive among the farmers. Government policies and programmes on agricultural development appear feeble, generally. Revenue from taxes is not administered and if this is captured as indicated may result in reasonable source of revenue for the government. Figure 2 is a conceptualized and integrated VC Map proposed to address some of the concerns.

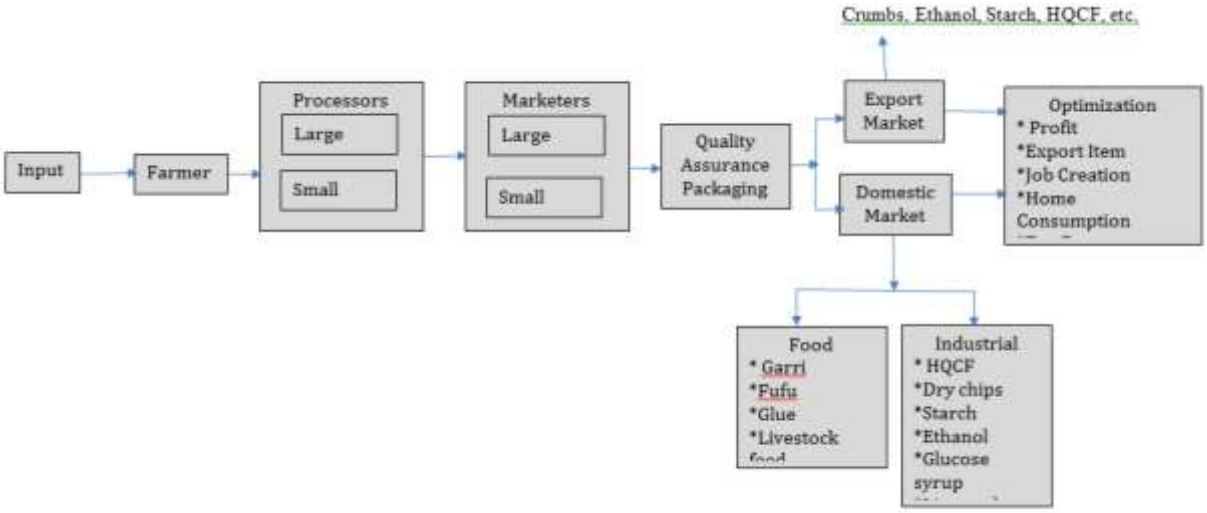

Figure 2: Proposed Conceptualized and Integrated Value Chain Map:
Source: Research Result, 2024

2. Identify and Examine the Critical Constraining Factors of the Cassava Value Actors in Imo State.

The constraining factors are presented in Tables: 3, 4, and 5 for Producers, Processors and Traders, respectively.

Table 3: Critical factors constraining the cassava producers in Imo State (n= 45)

Constraints	Frequency	Percentage	Rating
Pest and Disease	30	67	7n
Insecurity (theft of produces)	40	89	3rd
Variability of Input Prices (e.g stems Ago chemicals)	25	56	9th
High Cost of Fertilizers	40	89	3rd
High Cost of Labour	41	91	2nd
Poor Access to Credit	42	93	1st
Climate Change Factors	26	58	8th
Poor Access Roads	38	84	4th
Inadequate processing Facilities	40	83	5th
Feeble Government Policies and Institutional Frameworks	36	80	6th
Inadequate Availability of Improved Varieties	30	67	7th
Cattle Herders destruction of crops	20	44	10th

Source: Field Survey data, 2024
* Multiple responses.

The table shows that the producers or farmers indicated that the High Cost of Labour was the most critical constraint in their production and this to a large extent reduced their net profit. To worsen this situation is the reduction of the contribution of family labour due to the need for the family to acquire formal education

This brings to the fore the need to acquire some level of technology in carrying some task like clearing, weeding, planting and harvesting to mention but a few. To discharge these duties this would require acquisition of credit.

The next important constraint of farmers was Poor Access to Credit, which would enable them procure ever increasing needed inputs like labour in adequate quantum to optimize production and harvest. The required credit according to the respondents was sourced from both informal and formal sources.

The High Cost of Fertilizers acquisition is of the same intensity (89%) as theft of produces as expressed by the respondents. This problem may be associated with dividing government revenue, foreign exchange and the backlash of the war in Ukraine (a major source of world supply of fertilizer). In response, organic fertilizers, like poultry droppings, cow dungs, etc are now in high demand and their prizes are rising. However, these are observed to be better options but unfortunately, they are becoming unavailable because of the dwindling production of the associated livestock farms due to economic straits.

About 84% of the farmers identified Poor Access Roads (4th in ranking) to farmers and markets were major constraints

in acquisition of farm inputs and disposal of products. The government rural development programmes especially the non-functioning of the local governments (weak-link in the structure) are associated with this critical problem.

The 5th in the rankings of the constraints was the Inadequate Processing Facilities available in the communities. This problem is reflected in the poor number of respondents (14 processors) in the selected communities. Some of the farmers reported that to process their produces might take two to three days (i.e. in the use of semi- auto-processors) delay. This situation may not be unconnected to poor access to credit facilities as reported in the 5th ranked constraint. The weak government credit facilities and institutional frameworks are associated with these constraints, which is the focus in the next ranked constraint.

The feeble government policies and institutional frameworks were ranked as the 6th major constraint and was scored 80% by the farmers. It does appear that government policies and programmes are always sound on paper but very poor in implementation. This may be associated with the financial straits reported by the government official and the quality of staffs of its managers. Also, poor extension services were reported as source of concerns.

Pest and Diseases were reported by the farmers as critical constraints and this was ranked 7th in the position. This reflects the importance attached to research and utilization of research results by the producers. Effective extension services are required in this dispensation.

The next constraint identified by the producers was the Inadequate Availability of Improved Varieties. This was also ranked 7th in the hierarchy of the problems, and should serve as a panacea to the foreign issue of pest and diseases. It does appear that these problems are tied also to reported poor government financial status and inability to fund researches and its dissemination.

About 56% of the respondents expressed their concerns on the Price Variabilities (inflation) of cassava stems, agro-chemicals, etc). And this was ranked 9th in the hierarchy of constraints. There is no doubt that input constraints (like high cost of labour and fertilizer, inadequate supply of credit) had to be isolated for visibility and emphasis.

The last ranked constraint (10th) was cattle herdsmen destruction of crops and farms. This has attained increased dimension in the state and has resulted in loss of crops/revenue and sometimes violent encounters leading to the destruction of properties and deaths. The government should step up its conflict resolution in this regard and consider the option of providing state ranching.

Table 4: Critical Factors constraining Cassava VC Processors in Imo State (n=14)

Constraints	Frequency	Percentage (%)	Rating
Inadequate Number of Processing equipment	10	71	4th
Inadequate Credit Facilities support	14	100	1st
Poor Power Supply	12	85	2nd
Poor Public Water Supply	10	70	5th
Lack of Favourable Government Policies and Institutional Frameworks	12	80	3rd
High cost of Fuel/Diesel	14	100	1st
High cost of Processing Equipments/Machines (Local and Imported)	12	85	2nd
Limited Number of Processed	10	70	5th

Source: Field Survey data, 2024

* Multiple responses recorded.

The factors constraining Value Chain Processors in Imo State is represented in Table 4. All the respondents/ processors (100%) indicated that Inadequate Credit Facilities Support was a critical problem. This was because they were unable to acquire expensive (both locally fabricated equipment and exorbitant processing equipment) as well as procuring exorbitant spare parts inputs. The rate of inflation in Nigeria was reported to be 32.5% in March, 2024 (NBS Report, 2024).

High Cost of Diesel and Fuel was ranked 100% by the respondents. According to the respondents, this provoked high cost of transportation cost and indeed affected the cost of other inputs and activities.

About 85% of the processors also identified the High Cost of Procuring Processing Equipment and spare Parts (both imported and locally fabricated) as the next critical constraints. This explains the lean number (14) of processors, who are critical stakeholders in value addition chain. The problem was ranked 2nd by the respondents and

is also related to the constraint of Poor Power Supply/Utility, which was also ranked 2nd by the processors. The public utility, especially the supply of power was identified by the respondents as a major source in price fluctuations. This was because the cost of diesel was about ₦1,200 per litre and cost of fuel about ₦750 per litre as at June, 2024. (NBS Report, 2024), all having direct consequences with the removal of fuel subsidy.

Lack of Favourable Policies and Institutional Frameworks were ranked 3rd in the hierarchy of constraints and about 85% of the processors expressed their views that most times this policy and frameworks are provided but their implementation were weak and constitute major sources of concerns.

Inadequate Number of Processing Equipment was identified as a major constraint and ranked 4th. This can also be related to the inadequate credit facilities (ranked 1st) constraint. It explains the limited number (14) found in the communities and therefore calls for immediate attention.

Poor Water Supply (Utility**)** was ranked 5th in the hierarchy of the processors' constraint and about 70% of the respondents expressed their views. The situation would have been ranked as high as 2nd ranked constraint (poor power supply), except for the initiative by private borehole endeavors of citizens and communities, which mitigated the problem.

Limited Number of Processed Products was also found to rank 5th in the list of constraints and about 70% of the respondents was of this view. The processors lacked the capacity to produce the various goods/products derivable from cassava for both the foreign and domestic markets. The fundamental problem is lack of credit and capacity development in this respect. Government policies are puerile in this important concern.

Table 5: Critical Factors Constraining the Garri Traders in Imo State. (n=61)

Constraints	Frequency	Percentage (%)	Rating
Input/Product Price variability (Inflation)	45	77	4th
Poor road Network to Market	60	98	1st
Poor Access to Credit Facility	50	82	2nd
High Cost of Transportation	45	75	3rd
Poor storage Facility	45	75	3rd
Multiple Level and Taxes	50	82	2nd
Poor Access to foreign Markets	44	66	6th
Limited Number of products	36	59	7th
Poor Quality Assurance and Standardization	44	72	5th

Source: Field Survey data, 2024
* Multiple responses, hence>100%

Table 5 showed that poor road network to markets was the highest- ranking constraints (1st) and about 98% of the traders expressed this view. This is related to the poor performance of the government, especially the Local Government Council, on rural development programmes. There are no railway facilities in the entire project area (Imo State) and this could be a possible remedial option.

This is followed by poor access to credit, which ranked 2nd with 82% of the respondents expressing this view. Access to credit infuse "Live Blood" to enterprises in improving its production capacity and efficiency.

About 75% of the processors identified High Transportation Cost as a critical constraint and this ranked 3rd in the hierarchy of the constraints.

Similarly, Poor Storage Facilities was ranked 3rd with 75% of the respondents expressed this view. Appropriate storage facilities availability, encourages bulk purchases during bumper harvest (or surplus supplies) and is economical to value chain participants. Equalization and dispersion of products are optimized with this facility.

Inflation (Input/ Output Price Variability) was a major constraint in the trading value chain, and it ranked 4th in the hierarchy of constraint and about 74% of the respondents expressed this view. The NBS statistics on inflation affirmed this situation with their reported inflation rate 0f 34.19% in June, 2024; about the highest in Nigeria's history.

This was followed by Poor Quality Assurance / Standardization and Appropriate Packaging (5th) commanded 72% of the traders view point.

The 6th major constraint was Poor Access to Foreign Markets, which 66% of the respondents expressed this view. This may be related to the poor export infrastructure put in place by the government in terms of incentives, programmes and policies. This constraint, if properly handled could generate more foreign exchange than the export of crude oil as its potential is enormous.

The 7th ranked critical constraint of the markets is the Limited Number of Products traded and about 59% of the respondents expressed this view. Cassava value chain can produce over 12 products as identified by previous chapters for both domestic and foreign markets. Unfortunately, only few products are domesticated with very negligible products for export and global markets, notwithstanding, Nigeria being the highest producer of cassava in the world.

CONCLUSION

The input suppliers, which usually is the first Value Chain Actors (VCAs) were not visibly identified as a business entity and therefore was considered as the weak link in the stages of the cassava value chain in Imo State. The producers/farmers, which are the second stage actors carry out the function of input supply, notably producing the cassava stems. This is so because it was discovered that the existing cassava seeds, the possible alternative to cassava stems as planting materials, are not yet in use except for researches in developing cassava varieties. In other words, the seeds are in its rudimentary stages of its development by researchers and could be the game changer in the cassava value chain revolution. Interactions with the farmers, as earlier noted, indicated that some farmers have formed Seed Multiplication Association in Imo State to address this important constraint as it affects most crops. Further, there have been interactions between some of the farmers' / their Seed Multiplication Association, and some Universities, including University of Agriculture and Environmental Sciences, Umuagwo, both in Imo State and Umudike Seed Company Limited (an off-shoot of NRCRI), Abia State, making efforts to have the problem resolved.

The next stage of the cassava value chain is the processors, who transform the cassava tubers into garri, fufu and other products out of over 12 possible and commercially viable products. In other words, the products of these actors are limited for viable commercial activities. Another limitation of this stage is the limited number of processors existing in the study area, which of course was reflected in the sample size of 14 small-scale operators, using manual and semi-automated methods. The operators constituted less than 12% of the sample size with inadequate capital being the major constraint and their yearly mean output of about 0.45 MT. This stage is the fulcrum of value addition in the cassava value chain and holds great potentials and impact for both domestic and export markets.

The last stage of the VCAs was the traders, who undertake in the storage and distribution of the products, mainly garri and fufu to various markets in both rural and urban markets. They were mainly retailers and female dominated and constitute the largest number of 61(51%) of the respondents. It was found that the traders were not meaningfully engaged in international trade of their products. The State obviously loses accruable tax revenue from export taxes as there were no functional export/consultancy unit in the Ministry of Trade and Industry.

Finally, the government policies and institutional frameworks were generally found to be feeble, bearish, inadequate in coverage, diversity and relevance, and suffer poor implementation and sometimes policy summersaults.

RECOMMENDATIONS

The following recommendations were proffered based on the findings of the study:

1. Collaborative efforts should be made by the government, international donors, Research Institutions and Farmers Organizations to support the development and generation of cassava seeds for use as planting materials. This practice if executed, has several advantages, in terms of reduction of cost of input and the drudgery in planting using the stems. Thus, stimulating the commercialization of this vital stage (Input Supply) of the cassava value chain.
2. Motivating the farmers to increase use of research findings, particularly of improved cassava stem varieties, to boost production. The Research Institutes in Nigeria and their partners have developed over 20 improved types of cassava stems yet only around five improved varieties are presently in use by the farmers in the study area. To optimize output, this story ought to be changed by promoting the better varieties readily available at reasonable prices.
3. Enhancing the supply and distribution of inorganic fertilizers and the reduction of its exorbitant price as well as developing and repackaging the organic fertilizers into more refined and portable products would impact positively to the input value chain. A synergistic approach involving the farmers associations, research institutions, the government, international partners and other stakeholders would fast-track the realization of this strategy.
4. Modern and affordable machineries/equipment and spare parts should be made available to the VCAs, especially the processors, who are capable of transforming the inputs into various products required by both domestic and export markets. Also, there is need to upscale the quality of the local fabricated machinery and promote its diversification. Government policies on importation, excise taxes, credit facilities and researches on machineries should be more liberal and persuasive, in favour of the operators in terms

of reduction in cost and the ease of doing business in Nigeria and by implication Imo State.

5. There is need to upscale the broad spectrum and number of products generated by the cassava VCAs in Imo State to make their enterprise more profitable and internationally acceptable. Currently, they produce mainly; garri, and fufu and in limited quantity flour and tapioca; whereas, the enterprise has the potential of producing exportable products such as; starch, glues, ethanol, crumbs and livestock feeds, etc. Regarding this, bolstering the export abilities of the VCAs and growing the export markets at the sub-national level, alongside proper quality assurance and standard optimization, as displayed in Figure 2, the proposed Integrated and Conceptual framework of Value Chain Map in Imo State. Moreover, the government stands to profit, as revenue will be increased via suitable export taxes.
6. Improving the infrastructural facilities and public utilities, especially power, water supply and good and accessible road networks at the rural areas would engender enhanced production, processing and marketing. These would greatly improve input procurement and output distribution and thus reduce the price volatility induced by high transport cost and in the process improve the profitability of the VCAs. The Imo State government should spearhead this task in synergy with the Federal Government and other stakeholders in the transportation business.
7. The inadequate provision of credit facilities futured as a major constraint across the VCAs. The government should review the existing weak policies and institutional frameworks in this regard to energize the enterprises, so that they can increase the use of efficient inputs and expand their product-base, in order to post meaningful profit and by implication enhance their socio-economic status of the VCAs, especially their income. In addition, minimum or zero tariff for importation of equipment of the VCAs would be of tremendous assistance.
8. Creation of effective awareness of government policies and programmes for both National and Sub-Nationals, especially in the rural communities, have become imperative. In the analyses of cassava Value Chain producers, awareness to government policies and programmes only 20% affirmed knowledge of these. The situation is even worse in other segments of the VCAs. It was therefore recommended to translate and dove-tail government policies and programmes in the local dialects and the people's cultural and religious festivities; such as New Yam festivals. This can be realised by undertaking the sponsorship of major aspects of these activities to capture their interest and increase their enthusiasm and hence, enhance their participation. This should be deployed as a deliberate strategy allied to increase instrumentalities of extension activities.

Contribution to Knowledge:

The following discoveries and their significances, which dwell in the realm of Agricultural Policy Formulation and Implementation, the main foci of Agricultural Economics, were made by the research work:

1) The Cassava Value Chain in Imo State is focused mainly for the domestic markets as depicted in Fig.1. In addition, there were very few products engaged by the Value Chain Actors (VCAs). Export and international markets were virtually excluded or at best under reported by the respondents. The situation leaves a yawning gap that needs to be filled because it is significant for the success of the VCAs. Further, the foreign currencies that they would have earned from exports, could empower them financially to make more profits and procure machineries and equipment (local and abroad) for modernization and expansion of their businesses. In addition, this would have provided the operators the opportunity to increase the broad spectrum of the produce-able, commercially viable products and bye-products, required both in Nigeria and abroad. Nigeria entered into a Bilateral Agreement with China to supply over USD 1 billion worth of cassava products, but Nigeria's production could not even meet its local demand for food and industrial use. This supply deficit should serve as motivation for cassava farmers to produce more. Further, the government is losing enormous revenue that would have accrued through appropriate export taxation or tariff. Therefore, a Conceptualized and Integrated Value Chain Map was produced for Imo State to address this policy gap (Fig. 2).
2) From the four Value Chain Actors, namely; Input Supply, Producers, Processors and Marketers, the Input Suppliers (1st VCAs) was discovered not to be present as a business entity in Imo State and therefore constituted the weak link of the VCAs. This serious gap has not been flagged -up (or at best seriously under reported) in Imo State by available literature. This was owing to the fact that the main function of the Input Suppliers was carried out by the Producers and at such disguised the enormity of the problem. The major input of CVAs is the cassava stems, characterized by its bulkiness and associated drudgery in cultivation.

Producers (2nd VCAs) carrying out this function is consequential and not their direct function, though conceding that it may be profitable to some extent but constitute diversion of focus in their real function and this has implications, which adversely affect their optimal production and derivable benefits of specialization.

3) Available literature indicates that cassava have seeds but are very tiny for use as planting materials. They are mainly used by scientists in researches for developing some required traits for cassava hybrids. The study postulates that the problem is not the tiny nature of the cassava seeds but rather lack of intensification of the research efforts, increase funding and collaboration, and perhaps the lack of will to execute this task. The critical reasoning and submission in this respect being that the proverbial mustard and orchid seeds, are known to be among the tiniest seeds in the world and yet grow to produce bodies and fruits (and even the biggest tree in the case of mustard seeds). Embarking on further research on this issue is cogent and significant because of the enormity of business opportunities cassava seed portends, in terms of ease of mechanization in cultivation, production of vegetable oil from the seeds and more so, the stems, which contain cellulose, can be incorporated into animal feeds as well as use in the production of fuel (if dried and processed).

This is considered as one of the challenges of Agribusiness and perhaps commercialization of Agriculture in Imo State, as the state is one of the important and leading cassava producing state in Nigeria. Therefore, it becomes imperative to draw the attention of the Government and the Research Community, including; Universities, Research Institutions and Foreign Research Partners of the need to intensify research efforts in this regard.

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