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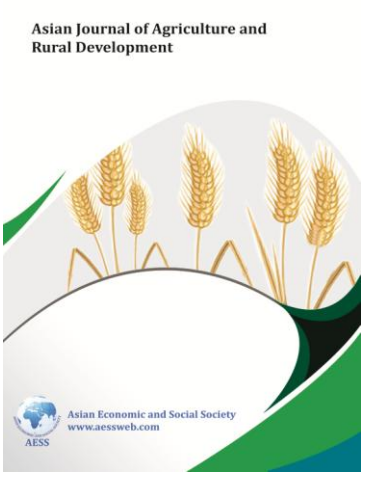

Evaluation of Income and Employment Generation from Cassava Value Chain in the Nigerian Agricultural Sector

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Abstract

Population in poverty and related statistics such as unemployment and income inequality in Nigeria is quite unacceptably high. In 2012, the country has unemployment of 23.9 per cent broken down to 17.1 per cent in the rural areas and 25.6 per cent in the urban centres. Cassava is now one of the priority crops to be used as a springboard to wriggle out of the menace of unemployment in the country. While cassava production is increasing at 3per cent every year, the country continues to import various industrial products that can be made from the crop. Therefore the paper analyzed the capacity of cassava value chain to create new jobs and generate increased income and employment in the economy. Framework of analysis of collected primary data was based on the concept of value chain. Descriptive statistics such as frequency distribution, percentages and measures of central tendency were employed in the analysis and presentation of results. Results showed that in the cassava value chain, increased income and employment can be generated through development of the chain especially at the stages of production, processing and industrial utilization. The implication is that increased generation of employment which is required for growth lies with increased industrial processing and utilisation of cassava for expanded production of non-food and non-traditional industrial products of cassava that are competitive to penetrate export markets. In this way, opportunities to generate increased income and employment will be enormous and diversified. Policy recommendations towards development of the cassava chain included efficient investment in infrastructure in the rural sector.

Keywords: Cassava, Value- Chain, Income, Employment, Labour, Actors

Introduction

Over the past one decade, Nigerian government had initiated a plethora of policies and programmes which was intended to reposition agriculture to its pride of place. However, various efforts for promoting investment and generating employment in the agricultural sector have not yielded appreciable dividends. Population in poverty and related statistics such as unemployment and income inequality in Nigeria is quite unacceptably high. According to National Bureau of Statistics (NBS), in 2012, Nigeria has unemployment of 23.9 per cent broken down to 17.1 per cent in the rural areas and 25.6 per cent in the urban centres.

Cassava production in Nigeria is increasing at 3per cent every year but Nigeria continues to import starch, flour, sweeteners that can be made from cassava. In Nigeria, the demand for industrial cassava based products such as glucose and dextrose and starch is rising. For instance, about 121,000 metric tonnes of glucose and dextrose was imported in 2008, which was about three times more than imports in 2002 (Ayodele et al., 2011). The bulk of this demand was met by importation arising from inadequate local production of starch and

glucose syrup. This paradox is due to inadequacy in cassava production, processing and marketing. Cassava is produced largely in a subsistence level in the country. To fully exploit cassava's immense potential, especially as a replacement for imported raw materials and as an export commodity, there is a need to change the production technology and trading pattern in the country using a value-chain development approach. Nigerian cassava-based industrial products are just a fraction of imports, and the growth potential is huge. Productivity and income of various participants in the cassava value chain are inadequate for them to generate increased employment.

The sub-sector is characterized by long chains of pre-modern intermediate processes which have generated successions of low value additions. In the presence of near substitutes, this adversely affects the market for final goods that are derived from the value chain with the result of weak demand for the product and low capacity to generate employment. This feeds back adversely on farm production. In addition, high input prices in post-farm production process due to market imperfections or infrastructural deficiencies have led to increase in the price of the final product thereby rendering the product non-competitive. There are three channels by which cassava and its by-products reach the end markets. These included small scale production for traditional food; medium scale production for improved food products and large scale production for industrial products. The first channel dominates the industry, at least 80 per cent going for traditional food, nationally, with only 10per cent passing through the third channel into the industrially processed products (Ayodele *et al.*, 2011). Opportunities exist for increased production of the non traditional non-food industrial products of cassava provided they are cheaper than imports.

Agricultural transformation agenda (ATA) of the present civilian administration is seen as a major tool to unlock the employment potentials for generating higher growth that have remained unexploited in the agriculture commodity value chains. According to Federal Ministry of Agriculture and Rural Development, the transformation action plan of the government of Nigeria, in 2012, focused on key aspects of value chains which included provision of improved inputs like seed and fertilizer, increased productivity as well as establishment of staple crop processing zones. Regarding cassava, the transformation seeks to create a new generation of cassava farmers, oriented towards commercial production and farming as a business, and to link them up to reliable demand, either from processors or a guaranteed minimum price scheme of the government. The overarching strategy of the cassava transformation is to turn the cassava sector in Nigeria into a major player in local and international starch, sweeteners, ethanol, high quality cassava flour, and dried chips industries by adopting improved production and processing technologies, and organizing producers and processors into efficient value-added chains. It is expected to address reduction in post-harvest losses, improve linkages with industries as well as access to financial services and markets. Expected impacts of cassava transformation agenda included strong value added chains of starch, high quality cassava flour, sweeteners, dried chips, high quality garri, and fuel ethanol in Nigeria, a doubling of average cassava productivity from 12 to 25 tonnes per hectare in target clusters by 2014, generation of one million jobs in the rural areas of Nigeria over the next four years of the programme, an increase in income of 1.8 million participating farm families by US$450 every year and establishing strong market institutions for long term sustainability of the cassava sub-sector.

More importantly, the ATA targets rural communities particularly women, youth and farmers associations, as well as improving rural institutions and infrastructure. It sets out to create over 3.5 million jobs from rice, cassava, sorghum, cocoa and cotton value chains, with many more jobs from other value chains. The programme aims to provide over N300 billion of additional income for farmers. Over N60 billion is expected to be injected into the economy from the substitution of 20 per cent of bread wheat flour with cassava flour. The initiative is expected to enhance production of key food staples by 20 million tonnes. These consist of two metric tonnes for rice, 17metric tonnes for cassava and one metric tonnes for sorghum respectively. The ATA action plan focuses on some priority agricultural commodities namely; rice, cassava, sorghum, cocoa, cotton, maize, oil palm, dairy, beef, leather, poultry and fisheries. The operations of the agricultural transformation agenda are based

on prioritisation of commodity value chains along comparative advantage in the six geo political zones of the country. Also, it entails reform in the input supply sector in which direct government involvement in the procurement, supply and distribution of fertilizer and seeds to farmers will be stopped.

Admittedly, the employment and income effects of the transformation agenda and many other reform initiatives implemented in the agricultural sector in the past can be a major factor for promoting value chain improvement for development and nutritional improvement. Evidently, government is less able to act as employer of last resort than in the past, thus increasing productive employment through increased private sector participation is fundamental to the achievement of individual and national goals such as satisfaction of basic needs, taming of poverty and realisation of transformation agenda. Moreover, the informal sector is known to have a high labour absorptive capacity as well as the potential to contribute to alleviation of poverty and unemployment in developing countries (Akintoye, 2008).

The purpose of the paper is to analyze the income and employment distribution across the cassava value chain actors from farm producers to marketers and processors. The research questions that constituted the major challenge being resolved here included how can the income and employment effects be stimulated? How can the capacity of chain actors be improved so as to follow and assimilate technology and market developments towards generating increased employment? The remaining sections of the paper are organized as follows. Section two presented theoretical issue and review of literature. Section three discussed research methodology. Section four presented empirical results, while section five presented policy implications and conclusions.

Theoretical Framework and Review of Literature

Value chain analysis and development approach has been widely applied to pro-poor economic development and is well suitable for addressing employment for two reasons. First, it has economic viability and sustainability at its core because along efficient value chains, the rate and the scope of industrial growth can increase significantly (Ayodele *et al.*, 2011). Second, it is a strong qualitative diagnostic tool that is capable of identifying critical issues and blockages for specific targets groups and then generating robust and effective policies and development strategies. Value chain, then, is the theoretical framework applied to conceptualize the differential interaction of the poor small farmers with agricultural markets.

Value Chain concept provides the frame for capturing and theoretically link key issues in this paper. According to United Nations Industrial Development Orgganization (UNIDO, 2009), the concept of value chain is defined as the full range of activities which are required to bring a product or a service from conception through the intermediary phases of production (involving a combination of physical transformation and the input of various producer services), and delivery to final consumers and final disposal after use. A value chain exists when all of the actors in the chain operate in a way that maximises the generation of value along the chain. It can also be described as a series of sequential activities where at each step in the process, the product passing through this chain of activities gains some value. The farm and all the intermediary processes constitute the agricultural sector. By definition, agricultural income is the farmer's value added plus value added at all the nodes of the post-harvest activity until reaching the last intermediary who interfaces with the consumer.

Value chains develop rural-urban linkages through which agricultural production in the rural areas provide the growing cities with affordable and quality food and raw materials for the industry (Adrien, 2008). Value chain also provides potential benefits for both rural producers and urban consumers. Value chain promotion is an effective way of fostering rural-urban linkages for several reasons. The concept provides a useful analytical framework for market and sub-sector analysis and describes productive processes around a product from the provision of inputs to production, transportation, transformation, processing, marketing, trading, and retailing to final consumption (International Relief and Development, 2009)

Secondly, value chain emphasises that most goods are produced by a sequence of interlinked actors and activities. The approach

focuses on the analysis of the institutional arrangements that link the various economic players (vertical and horizontal integration, organisation and contracts). Thirdly, it highlights the importance of private sector development. It provides a holistic framework which can encompass a number of different development activities for the purpose of fostering agricultural growth (UNIDO, 2009). Hence, agricultural value chains link urban consumption with rural production. Urban-driven demand, emergence of modern consumption patterns or new trends in international trade, impacts on rural areas along value chains and spills over to marketing and production systems. These rural-urban linkages bear challenges but also mutual benefits for producers and consumers and can be entry points for development through income and employment generation and poverty reduction. When high rates of agricultural growth through development of agricultural value chain lead to sustained increase in productive capacity, employment opportunities and rising productivity are generated (Ponsian, 2012). These in turn allow for a progressive absorption and integration of the unemployed and the underemployed into expanding economic activities with higher levels of productivity. In the process, the poor may be able to achieve higher productivity and increase their incomes in their existing occupations, or shift to new occupations involving higher skills or better technology.

Empirically, literatures on employment generation from agricultural commodity value chain for Nigeria have been very scarce. However references can be made on the few that could be accessed. One of such is a study on cassava by Oluwemimo (2010) in which he analyzed the economics of cassava processing by rural farm households in Oyo State of Nigeria. Using descriptive statistics, budgetary analysis and the Cobb Douglas regression technique, the study established the socio-economic and policy strategies required to stimulate rural enterprise. Regression analyses showed that age, experience and size of enterprise were significant determinants of the profitability of cassava processing enterprises while age, experience, level of education and initial capital outlay were significant determinants of the size of enterprise. The study suggested that policy efforts should be geared towards accessing processors with locally fabricated machines while policy, research and extension regarding food processing at the rural farm-gate should be tailored to meet the needs and constraints of women.

Awoyinka (2009) investigated effectiveness of cassava marketing policy and its contribution to agriculture sector development in Nigeria. The study observed that policy design have potential contributions to agricultural development in Nigeria but the policy framework failed to incorporate strategies for combating perennial constraints to effective and efficient cassava marketing in Nigeria. Hence, sustainable policy issues and options for cassava marketing require different strategies for both domestic and international markets and different strategies for minimizing the problems confronting cassava marketing in Nigeria. The author concluded that considerable scope lies in the establishment and operation of collective storage and marketing facilities through co-operative. This would enable farmers take advantage of improved technology possible at the larger collective bargaining position in the market through the professional traders. Also, extension approach can make very useful contribution to marketing in which dissemination of regular, accurate and detailed market information by the extension services will be of immense help to the farmer in planning his marketing. The authot thus suggested that the extension staffs first have to be trained in the whole field of the scientific collection and assessment of agricultural data while it is necessary to make government institutions more professional in their market-oriented functions.

In Vietnam, Nguven (2005) carried out a study in which about 80 per cent of cassava produced was meant for starch production and 70 per cent of which were exported. Value chain approach was used in the research with the aim of having clear picture of the value chain, relative position of different actors, institutions governing their operations and benefits. The study examined governance, transaction and transportation costs and profit margin in the cassava value chain. It also examined the participation of the poor in the cassava value chain in the country. Constraints observed in the value chain were presence of many players of actors in the value chain which resulted from small size of cassava production and starch processing. Other constraints included environmental problems

such as soil erosion, difficulties in securing land title and waste management. In the face of these constraints, value chain in the country was characterized by low level of upgrading in both production and processing. Efficiency was not achieved and farmers received lower prices than market price. Other problems were high cost of labour which made many producers to shift from cassava to the production of higher valued crops.

Farmers got small share of the profit where there were many players in the market chain while traders received the largest share of the profit. The study observed that cassava value chain in the country was characterized by high participation of the poor, created employment opportunities through development of the value chain, and has benefitted the livestock sector through emergence of by-product value chain. Governance mechanisms in cassava value chain were still underdeveloped. This is seen from the fact that value chain participants operated in an uncoordinated and unorganized manner.

From the above review, previous studies have neither characterized nor analyzed the distribution of employment generation across the various levels of cassava value chain in Nigeria with a view to identify areas of high employment potentials along the value chain for further exploitation. This is imperative toward contributing to policy measures that would fast-track achievement of the goals of the agricultural transformation agenda of the present civilian administration in the country. This is a major gap that the research paper has filled up.

Methodology

The Scope

Given the strategic importance of cassava in the attainment of food security in Nigeria and the renewed focus on the crop in the transformation agenda of the current administration, the scope of this study was limited to this crop. This is because cassava is an important food and cash crop in Nigeria and also one of the strategic crops in the agricultural transformation agenda in view of its roles in achieving food and nutrition security in the country. The relative tolerance of the crop to poor soil condition and other climatic challenges make it to be widely grown in all the agro-ecological zones though its cultivation in commercial quantities is concentrated in the southern and middle belt regions. It is against this backdrop that the data collection for this study was limited to four geo-political zones where the crop is currently been cultivated in commercial quantities. These are; the south-east, south-west, south –south and the north-central geo-political zones. The data collection covered the various actors along the value chain i.e. from producer (farmers) to the end users covering their activities up till the last production season before the year of survey (2012).

Nature and Sources of Data

The study adopted the multi-stage stratified random sampling procedure. The first stage was the purposive selection of the four geo-political zones as stated above. The second stage was a random selection of two states from each of the geo-political zone. From each state, a random selection of one local government was made from each of the three senatorial districts while two communities were again randomly chosen from each local government area. A random selection of 10 cassava farmers was made from the list of farmers in these communities. The list of farmers was obtained from the respective state Agricultural Development Programme (ADP). Thus, a total of 240 representative farmers were drawn across the selected states in the four geo-political zones. In addition to farmers' survey, at least a sample of 5 cassava tuber traders, 5 cassava processors and 5 cassava products sellers were drawn from each local government in each state, while at least two case studies of industrial users of cassava products was made from each state. The distribution of samples of actors selected per stage in the value chain is shown by Table 3.2.1. Structured questionnaires were used to collect primary data from the selected samples.

Table 3.2.1: Sample of Actors Selected Per Stage in the Value Chain

Geo-political zone	No. of states sampled per zone	Total no. of famers sampled per state	No. of Wholesalers /Assemblers per state	No. of processors per state	No. product Retailers per state	No. of industrial end users per state
North Central	2	60	5	5	5	2
South East	2	60	5	5	5	2
South West	2	60	5	5	5	2
South South	2	60	5	5	5	2
Total	**8**	**240**	**20**	**20**	**20**	**8**

Source: Field Survey, 2012

Method of Analysis

In this study, return to entrepreneurship in cassava industry was measured from the point of view of the enterprise profitability. In order words, the analysis was limited to investment profitability. This is because profitability ratios are crucial to all investment analysis. Profitability ratios are typically based on earnings that accrued to participants.

The estimated ratio is mathematically expressed as:

$$\text{Gross Profit} = \pi = PiQ_i - \sum_{i=1}^{n} TC$$

Where π is Gross profit in Naira per enterprise
P_i = Price per unit of output in Naira
Qi = Output of individual Enterprise in Kg
TC = Total Cost of Production in Naira

Value Added Analysis

Value added is an economic term that defines the difference between the value of goods and the cost of materials or supplies that are used in producing them. It is a measure of economic activity which eliminates the duplication inherent in the sales value figure which results from the use of products of some establishments as materials or services by others. Value added is thus defined as the gross receipts of a firm minus the cost of goods and services purchased from other firms. It is measured as the difference between the value of all goods and services produced and the value of those purchased non-labour inputs which have been used in the production process. This type of measure avoids double counting, since what each establishment has purchased from other establishments is deducted from the value of its own production. Inputs to be considered may include materials and supplies, fuel, electricity, contract work, repairs, maintenance and transportation as well as other industrial services. The value at which these inputs were purchased is deducted from total revenue from production in order to obtain the establishment's value added. Hence, value added represents the value a particular agent has added during the accounting period. It represents the income earned from the sale of a commodity minus the cost of intermediate inputs. The value added at each stage of the value chain was determined by removing the cost of raw materials and intermediate goods from the gross value of the output.

Mathematically, Value Added = Value of Output-Value of Intermediate Inputs. Intermediate inputs refer to the factors of production that are completely consumed during the accounting period.

Value added is expressed as:

$$\text{VA} = PiQ_i - \sum_{i=1}^{n} r_i X_{i\,\mathrm{i}}$$

Where
PQ =value of output
rX = cost of raw materials and intermediate goods.

The above equations were estimated for farmers, processors as well traders including the exporters in the cassava value chain. The quantitative analysis was extended to cover the costs and returns that accrue to each of the value chain participant. Thus, the main analytical templates are designed to calculate total variable costs, investment costs, gross margin and gross profit on per actor basis.

Empirical Results and Discussion

Producers (Farmers)

Table 4.1.1 showed the status of the cassava farmers by employment status and income. Arising from the table, a total of 66 farmers were self-employed and engaged

Table 4.1.1: Percentage Distribution of Farmers by Employment Status and Income

Items	Decreased, Less than N200/day		Little above N300/day		Increased well above N400/day		Total	
Employment Status	Freq.	%	Freq.	%	Freq.	%	Freq	%
Employer Farmer (All inclusive)	4	12.9	32	37.2	10	11.6	46	22.7
Self-employed (Farmer-Cassava only)	2	6.5	24	27.9	40	46.5	66	32.5
Self-employed Tree crop plus cassava	14	45.2	22	25.6	32	37.2	68	33.5
Self-employed (Others)	10	32.3	4	4.7			14	6.9
Employee wages & salaries (Farm level permanent)	1	3.2	2	2.3	3	3.5	6	3.0
Employee Wages & Salaries (Farm level temporary)			1	1.2			1	0.5
Employee Wages & Salaries (Agro industry)			1	1.2	1	1.2	2	1.0
Total	**31**	**100.0**	**86**	**100.0**	**86**	**100.0**	**203**	**100**

Source: Field Survey, 2012

in sole cropping of cassava. This represented about 33 per cent of the total farm enterprise that responded. In the last one year, 40 out of this same class of farmers, representing 47 per cent, had their income increased well above N400 per day. In the same vein, the table showed that there were 68 self-employed mixed croppers who were planting tree crops and cassava. Out of the total, in this class of farmers, about 32 representing 37 percent had their income in the last one year increased well above N400/day. The implication of this scenario is that increment in hectrage of the cassava and agro forestry farming in the states covered, all things being equal, would bring more income to the farmers. This would in turn generate employment opportunities on the farm through hiring of more labour to complement the household family labour.

Processors

Value addition at the processors level involves converting raw cassava to end products. Processors used both locally fabricated and imported machines to effect the product transformation. Table 4.2.1 showed the employment generation profile of the processors by sex during a one year period. Total employment generated was 633, made up of 464 male and 169 female workers of various occupational categories. The females had about 27 percent of the total employment.

Table 4.2.1: Distribution of Processors by Category of Workers Engaged and by Sex

S/No	Employment type	Number of Male workers	Number of Female Workers	Total	% of Female to Total
1	Casual Factory workers	144	34	178	19.1
2	Administrative workers	45	2	47	4.3
3	Technical workers	26			
4	Management	50			
5	Skilled Production Workers	61	25	86	29.1
6	Unskilled Production Workers	72	58	130	44.6
7	Casual Production Workers	66	50	116	43.1
Total		**464**	**169**	**633**	**26.7**

Source: Field survey, 2012

Exporters

The number of workers engaged by the exporting firms is presented in Table 4.3.1. From the table, a total number of 781 jobs made up of 410 male and 371 female workers were generated across board by the exporters. The female gender had a share of about 48 per cent of the total employment.

Table 4.3.1: Distribution of Exporters by the Type of Employment and Sex

S/No	Employment Type	Number of Male workers	Number of Female Workers	Total	% of Female to Total
1	Seasonal/Temporary	80	95	175	54.3
2	Permanent Workers	97	50	147	34.0
3	Part-time workers	53	58	111	52.3
4	Totals for workers	180	168	348	48.3
Total		**410**	**371**	**781**	**47.5**

Source: Field survey, 2012

Wholesalers

Most wholesalers of cassava and its products buy their stock in bulk and sell to the retailers in small quantities. Hence, their scale of operations is expected to generate more job opportunities compared to the retailers. In the process, a total of 144 jobs of various categories of workers were generated. A total of 54 female workers were employed, representing about 38 per cent of the overall employment (Table 4.4.1). The bulk of this employment was seasonal and unsustainable because of unfavourable economic environment in the country.

Table 4.4.1: Distribution of Wholesalers by Type of Employment and by Sex

S/No	Employment Type	Number of Male workers	Number of Female Workers	Total	% of Female to Total
1	Seasonal/Temporary	61	42	103	40.8
2	Permanent Workers	20	12	32	37.5
3	Part-time workers	9	-	-	-
Total		**90**	**54**	**144**	**37.5**

Source: Field survey, 2012

Retailers

Table 4.5.1 showed the activities of the retailers in the cassava value-chain. Owing to the scale of their business operation as mostly road side traders, the cassava retailers were able to generate a total of 90 jobs during the period. Seventy-two (72) females were engaged during the period as against eighteen (18) for the Males. The female folk represented about 80 per cent of the total employment generated.

Table 4.5.1: Distribution of Retailers by Type of Employment and by Sex

S/No	Employment Type	Number of Female workers	Number of Male Workers	Total	% of Male to Total
1	Seasonal/Temporary	50	12	62	19.4
2	Permanent Workers	8	3	11	27.3
3	Part-time workers	8			
4	Others	6	3	8	33.3
Total		72	18	90	20.0

Source: Field survey, 2012

Employment Generation at the Various Levels of Cassava Value Chain

Understanding how employment is distributed along cassava value chain provides the necessary start to determining opportunities for employment generation. The distribution of employment and access to employment by different classes can be a pointer to identifying employment opportunities. The distribution of employment should recognise that individual actor participated in a number of different value chains at the same time. For example, a cassava farmer may be involved in several agricultural crops and several handicraft activities as a means of income diversification. In the same way, a trader might be involved in trading multiple agricultural products at the same time or at different times depending on the season.

Consequently, the results in Table 4.6.1 and 4.6.2 summarized the distribution of labour employment at the various levels of the cassava value chain. Importantly, Table 4.6.1 showed that an average medium scale exporter was the highest employer of labour in the value chain. Mandays of labour employed by this category of actors represented about 22 percent of total mandays employed per actor across the various stages of the value chain. The next important employer of labour was small scale exporter. Mandays of labour employed by an average small scale exporter represented about 16 per cent of total mandays employed per actor across the different levels of the chain.

Table 4.6.1: Percentage Distribution of Labour Employment per Actor across the Various Stages of the Cassava Value Chain

Actor at Various Stages of Cassava Value Chain	Mandays of Labour Employed Per Actor at each Stage	% of Total Mandays of labour employed per actor across the stages of the value chain.	Ranking of Employment Generating Capacity
Farmer	47.57	0.18	15
Large Scale Processor	240	0.91	14
Medium Scale Processor	314.2	1.20	12
Small Scale Processor	275	1.05	13
Large Scale Industrial Users	648	2.47	10
Medium Scale Industrial Users	2664	10.13	4
Small Scale Industrial Users	384	1.46	11
Wholesale	1632.4	6.21	8
Retail	2203.1	8.38	6
Large Scale exporter	2190	8.33	7
Medium Scale Exporter	5716.9	21.75	1
Small Scale Exporter	4032	15.34	2
Large Scale importers	2430	9.24	5

of inputs			
Medium Scale Importer of inputs	2739.4	10.42	3
Small scale Importer of inputs	770	2.93	9
Aggregate	26,286.57	100.00	

Source: Field Survey, 2012

This was followed by an average medium scale importer of inputs (10.42 per cent), medium scale industrial user (10.13) while an average farmer was the lowest employer of labour (0.18per cent). These results indicated that labour employment in the value chain was more intense at the distributive trade stage than at the production, processing and industrial utilization stages. The results imply that new employment opportunities can be generated through development of the chain at the production, processing and industrial utilization stages.

Table 4.6.2: Total Man days of Labour Employed by all Actors at each Stage of the Cassava Value Chain

Different Stages in the Value chain	Total Mandays of Labour employed
Production Stage: Farmers	11,417
Processing Stage: Processors	11,159.8
Large Scale Processor	240
Medium Scale Processor	5969.8
Small Scale Processor	4950
Industrial Utilization Stage: Industrial users	22,128
Large Scale	1944
Medium Scale	18648
Small Scale	1536
Trading Stage	167,113
Domestic Wholesale Trading	29,383.2
Domestic Retail Trading	48,468.2
Foreign market: Export Stage	68,085.2
Large Scale	2,190
Medium Scale	45,735.2
Small Scale	20,160
Import of inputs stage	21,176.4
Large Scale	2,430
Medium Scale	16,436.4
Small Scale	2,310
Total	211,818

Source: Field Survey, 2012.

Effectiveness of Actors at the Various Levels of the Value Chain

In the cassava value chain, as expected, the total cost was on the increase in the value chain from the farm production stage to the export stage as demonstrated by Table 4.7.1. At the farm production stage, the costs consisted largely of variable cost that represented about 95 percent of total production costs. After the production stage, total costs are inclusive of the price paid for cassava products by the processor, industrial users, and the traders who are categorised into wholesalers, retailers and foreign export traders. The analysis keeps track of the build-up of financial costs at every stage of the value chain and this revealed the contribution of the various cost items. At the production stage, transport cost was the single largest component (26.40 percent of the variable cost and this was followed by tractor use (19.88 per cent), planting materials (10.56 per cent), storage (9.01 per cent), labour (8.87 per cent), pesticides (7.71 per cent) and fertilizer (6.7 per cent).

Table 4.7.1: Annual Total Cost of Production and Annual Gross Profit across the Various Actors in the Cassava Value Chain

Actors in the Chain	Annual Total Cost of operation per Actor in Naira	Annual Gross Profits per Actor in Naira	Value Added Per Actor in Naira	Percentage Share of Income that Accrued per Actor
Farmers	3,878,157.7	148,240.35	327,171.45	0.03
Large Scale Processor	7,136,433	111,996,900	112,536,233.33	21.40
Medium Scale Processor	8,524,114.1	217,369,727	218,504,825.53	41.53
Small Scale Processor	11,946,116	-724,581	3,612,593.73	-0.14
Medium Scale Industrial User	19,713,697.4	57,566,915	58,281,086.5	11.0
Small Scale Industrial user	8,107,194.3	28,281,694.60	28,693,708.9	5.40
Wholesale Domestic trader	23,580,499.20	86,554,489.4	86,897,768.2	16.54
Retail Domestic Trader	8,375,028.39	5,431,940.81	5,862,252.51	1.04
Foreign Trade Exporter	24,866,733.7	16,802,023.4	18,479,190.1	3.21

Source: Field Survey, 2012

At the processing stage, for the large scale processor, the bulk of the cost (92 percent) was variable cost. For this category of processor, the most important component of the variable cost was labour (94 per cent of variable cost). At the medium scale processing stage, the single most important cost component was also hired labour, with the cost representing 80 percent of the variable cost. At the small scale processing stage, the single most important cost component was also hired labour, representing 80.26 per cent of total variable cost. The total variable cost represented about 64 per cent of total cost. The next important total cost component at the small scale processing stage was interest paid on loans representing about 24 per cent followed by depreciation representing about 12 per cent.

At the stage of industrial use, there were two scale of operation for which the data were sufficient enough to track the total cost of operation. These are the medium scale and small scale industrial users. At the medium scale industrial consumption stage, variable cost constituted the bulk of the total cost which represented about 96 per cent. The most important single component of the variable cost was the purchase of raw materials representing about 54 per cent, followed by labour which represented about 33 per cent. At the small scale industrial consumption stage, variable cost also constituted the bulk of total cost which was about 95 per cent. Of the variable cost, raw material purchase was the most important component representing about 36 per cent, followed by hired labour at 32 per cent. Moreover, duty taxes are an important component of total cost to the small scale industrial user.

At the wholesale trading stage, variable costs constituted about 99 per cent of the financial costs. The single most important cost component was purchase of cassava products with the cost representing 71 percent of the variable cost. The cost of goods and services was the next important variable cost component and it represented about 21per cent of variable cost. Furthermore, labour cost was the next important to goods and services representing about 8 per cent of the variable cost. At the retail trading stage, variable cost also constituted the bulk of the total cost representing 95 per cent. The most important component of the variable cost was purchase of cassava products which represented about 61per cent followed by cost of goods and services (27 per cent) and cost of labour (12 per cent). At the export stage, total variable cost was the most

important component of total cost representing 93 per cent. Purchase of cassava products(cassava pellets) constituted the single most important component of total cost representing 53 percent of total cost followed by labour representing 33 per cent of total cost.

Profitability of operation of the actors at the different levels of the cassava value chain is a measure of efficiency as shown in Table4.7.1. With regard to profitability of the cassava enterprises, the results showed that gross profit was positive at all the stages with the exception of the small scale processor. In the value chain, gross profit was the highest for medium scale processor. More importantly, the gross profit was the lowest for farmers (production stage) when compared with all other actors.

The results showed that the actors who were actively engaged in the cassava value chain were numerous with the increasing awareness of the good prospects of cassava sales. As earlier stated, cassava products were marketed through an intricate network of producers, traders, and consumers. Traders operated at wholesale or retail levels as well as at the foreign export trade and tend to be linked to consumers and companies for industrial uses.

Furthermore, the percentage share of total income generated in the value chain reveal the stage in which the actor received the peanut in which further development could lead to new employment generation. Concerning distribution of the total income generated in the value chain, the medium scale processor had the lion share that represented 42 percent of total income generated at the various levels of the value chain. This was followed by the large scale processor with 21.4 percent. The domestic wholesale trader followed behind them with 16.54 percent of total income generated. Medium Scale industrial user was the next important income earner with 11 per cent of total income. The farmer who originated the process of the value chain trailed behind all the actors with just only 0.03 percent of the income generated in the value chain. The retailer came closely behind the exporter, but both have a low share of 1.04 percent and 3.21 percent respectively. The results revealed the earning of the farmer was very low if we take into consideration the type of life and family system they practice with more than one wife with so many children around him. Hence to bail the farmer out from being perpetually trapped in low income level a lot needs to be done to enhance their poor earning on the farm.

Policy Implications and Conclusion

Results of the survey analysis showed that employment distributions in the value chain were more intense at the level of the distributive trade than at the levels of production, processing and industrial utilization. The results, therefore, confirmed that increased employment and income could be generated at the stages of production, processing and industrial utilization through development of the chain. The implication is that increased employment and income lies in the development of the chain through expanded and competitive production of non-food and non-traditional industrial products of cassava. The expansion of the non-traditional industrial products of cassava through improved processing and industrial exploitation of cassava will foster growth in the cassava production, processing and industrial utilization. This would lead to provision of diversified alternative products and sales outlets in the medium to long-term which in turn would ensure import substitution for industrial products of cassava such as starch and glucose on which huge amount of money are being spent for importation.

Continued import substitution for industrial products of cassava coupled with the effective implementation of the 20 per cent substitution of wheat flour with cassava flour in bread making will open up opportunities for expansion in domestic production and markets for cassava tubers. If only there are effective linkages of farm production with the industrial processors and the cassava-based industry, the expansion in production at the farmers' level will necessarily be absorbed by the new expanded industry for the production of the non-traditional and non-food industrial products of cassava. In this way, new jobs would be created thereby leading to increased employment generation for the actors throughout the various stages of the cassava value chain.

Recommendations

On the basis of the findings that emerged from the study, the following recommendations are being offered towards development of the

cassava value chain for increased employment generation in Nigeria.

Efficient Investment in Infrastructure

Infrastructure plays a critical role in ensuring efficient operations in the cassava value chain. At the production, processing and trading logistics stage in particular, transportation costs represented important cost component and it constituted the single most important cost at the farm production stage. The high cost of transportation is due mainly to incessant increases in the prices of petroleum products and poor conditions of the road in the country. There is need for the government to expedite action on the rehabilitation of the railway system, improve the conditions of existing roads, ensure regular maintenance of the roads and put a stop to the arbitrary and incessant increase in fuel prices. These initiatives will lead to improved physical access to markets and reduction in transaction costs in the value chain. Thus there are potentials for increased profitability of the cassava enterprises through efficient delivery of infrastructure in the rural areas. This is the major drive for improved private investment in the chain. Particularly, there are opportunities for developing the processing and the industrial utilization stages through making infrastructures available and efficient.

Adequate Generation and Flow of Information

The government can engender output expansion through better flow of information and access to market, which would in turn, lead to increased private investment, increased income, and increased employment generation.

Small Scale Actors in the Chain Should Organize Themselves into Effective and Commercialized Cooperative Groups

The small scale operators should be organized into cooperatives because small scale operation has a deleterious effect on the cassava chain in view of the uneconomic collection of products in small shipments from numerous and dispersed growers. Invariably, small scale actors frequently reap the least in the income distribution. On this basis, the unit cost of transporting small shipments to the destination is naturally higher than that of large shipments which could only materialize through higher output farming and medium scale processing. In addition, performance of the chain is also negatively affected by the poor road infrastructure. Most of the small farms are not served by paved roads and consequently road freight vehicles cannot provide service on a door-to-door basis, especially during the rainy season. In the process, the transit time is longer than it should have been, thus jeopardizing the short shelf life of the root. Observed high cost of transportation jeopardizes the commercial viability at the production stage as well as at the processing operation and extension of the cassava chain to greater value added particularly by the small scale processor. Further, the chain is impeded by a host of factors such as high interest rate, poor and costly public utilities, and random disruption of utility supply that leads to temporary stoppages in plant operation with the consequence of lost output and product spoilage and high labour cost.

Promoting Value Added Enterprises through Public Private Partnership

In view of the limited financial capacity of the Nigerian private sector and reluctance to invest in agribusiness, the public sector, especially at the state and local government level, should work out a partnership arrangement in which processing plants for cassava will be established by the state and local government while the private-sector partner would be involved at the beginning, and expected to operate and manage the plants on the basis of agreed concession.

Credit Delivery to Smallholder Farmers, Small Scale Processors and Small Scale Industrial Users

The Federal Government has worked out a single digit interest rate at 8 percent for agricultural loans as a matter of policy. The gap between this rate and the lending rate by commercial banks should be bridged by the government under an arrangement involving the Central Bank of Nigerian.

Nigeria Cassava Growers Association Should be Provided with Large Contiguous Land per Local Government Area (LGA)

Local authorities could assist corporate bodies and cooperatives in acquiring large parcels of agricultural land for cassava-industrial development.

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