**THE ANALYSIS OF FEDERAL GOVERNMENT EFFORT TOWARDS CASSAVA PRODUCTION**

**(A CASE STUDY OF NKANU EAST LGA ENUGU STATE)**

**ABSTRACT**

The purpose of this study was to find out the analysis of Federal Government effort towards cassava production in pursuance of this study, researcher objectives and research questions were formulated. Both primary and secondary data were collected and the data were them presented, analyzed, interpreted using texual, graphic and tabular modes of data presentation. The population used in this study consist of 150 farmers in Nkanu East. Though 100 questionnaire were returned of the 150, the survey research method in federal government. However, cassava is the most widely cultivate crop in the Southern parts of the country cassava production was reported to be increasing among villages where the cassava, Yam, rice, beans, or peas were the most important crops, it is also grown by most every household, Nigeria is currently the largest producer of cassava in the world with an annual production of over 34 million tones of tuberous roots. Cassava has also increased in importance in the middle belt in recent years. I n all over fourth fifths of the cultivatable land area is suitable for cassava growing. Furthermore, the federal government should be more sincere in the policy making which is standing tool for the progress if the project.

**CHAPTER ONE**

**INTRODUCTION**

**1.1 BACKGROUND OF THE STUDY**

Cassava is one of the most important crops in Nigeria. It is the most widely cultivated crop in the Southern part of the country in terms of area devoted to it and number of farmers growing it. Indeed, it is growth by almost every household, cassava has also increased in important in the middle belt in recent years, in all places, cassava has become very popular as a good and cash crop and is fast replacing yam and other traditional staples of the area. In all over fourth fifth of the cultivable land area is suitable for cassava growing.

Cassava (Manihot Esculenta Crantz) was introduction into central African from South America in the Sixteeth century by the early Portuguese explorers (Jones 1959), it was probably the emancipated slaves who introduced the cassava crop into Southern Nigeria as they returned to the country from South America with the Islands of Scio-Tonne and Fernando Po A. E. that time there were Portuguese colonies of Nigeria shores (Ekandem) cassava, however, did not become important in the country until the end of the nineteenth century when processing techniques were introduced, as many more slaves returned home. Cassava is important not only as a good group but even more so as a major source of income for rural households, Nigeria is currently the largest producer of cassava in the world with an annual production of over 34 million tones of tuberous roots. Cassava is largely consumed in many processed forms in Nigeria, its use in the industry and liverstock feed, it well known but is gradually increasing, especially as important substitution becomes prominent in the industrial sector of the economy.

As a cash crop, cassava generates each income for the largest number of households of comparison with other staples. It is produced with relevant purchased inputs as frequently as and in some cases more of total production, probably larger than of most staples, is planted annually for sale.

As a food corp, cassava has some inherent characteristic which make it attractive, especially to the cassava processing industries in Nigeria. First, it is rich in carbohydrate especially starch and consequently has a multiplicity of end uses, secondly, it is available all year round, making it preferable to other more seasonable crops such as grains, pees and beans and other crops for food security. Compared to grains, cassava is more tolerant of low soil fertility and more resistance to drought, pest and disease furthermore, its roots are storable in they ground for months after the mature. These attributes combined with other socio economic consideration are therefore what the federal government (IFAD) has recognized in the crop as lending itself to a commodity based approach to poverty alleviation (FAD/IC, 1995). The socio economic importance of cassava and the accidental introduction of cassava mealybug which ravaged most cassava fields in the major producing areas led to the federal governments direct intervention in a way of rendering effort to the subsector, in the implementation to the IFAD assisted cassava multiplication project (CMP) between 1987 and 1996. In the early 1980s Udemili South of Anambra State Nkanu East drusticaly the combined effects of pests disease (Mosaic virus, cassava bacteria bright) Cassava Production Fell (Mealybug and Green Spider Mite), thereby posing a threat to national food security. In response, IFAD initiated the CMP as a parallel financed part of the World Bank – assisted MSADP –L. The overall objective of the CMP was to multiple, promotes and distribute improve varieties to cassava processing industries so as to improve productivity and income.

1.2 STATEMENT OF THE PROBLEM

Government intervention and the efforts on non government organization in the cassava subsector have led to a number of measures that support the production, processing and marketing of cassava, dating back to the 1970s, these include government programme such as the National Accelerated Food Production Programme (NAFPPO), and Operation Feed the Nation (OFN), the Agricultural Development Projects (ADP), the development of the National Agricultural Research Systems and their close collaboration with the International institute of tropical Agriculture (IITA) and other International Agricultural research centres and large scale planting material multiplication and distribution facilitated by the IFAD assisted Cassava Multiplication Programme (CMP) and activities of oil companies and church organizations through these efforts, appreciable program has been made in genetic improvement, agronomic practices, root storage and in the development of processing technology and rural infrastructure concerted efforts have also been made to introduce improved practices to farmers. Thus, improved varieties now occupy approximately 0.75 percent of cassava land area and several labour intensive operation in processing notably grating, dewatering and milling, have mechanized. This has had a great effect on cassava land area expansion and production growth. Despite the rapid growth in cassava production, the cassava subsector in Nigeria is soil constrained by a number of factors, namely pest and diseases agronomic problems, shortages of planting materials, inconsistent policy measures, poor market access, limited diversification of processing options, inefficient extension delivery system and inadequate access to improve processing technology. Consequently, future intervention strategies should include the following;

- Development, rapid multiplication and dissemination of improve varies to enhance the availability and diversity of improved planting materials.

- Development and extension of improved agronomic practice for cassava production.

- Deliberate efforts to supports the development of cassava processing prototypes and identification of application and useful technologies and incentive for local entrepreneurs to fabricate them. This will sara labor and improve the efficiency of processing, raise the quality and enhance marketability of products. The design of such machines should be gender, sensitive, beaning in mind the cardinal role of women in processing.

- Strengthening of Extension: Farmers linkage with research to facilitate the ongoing spread of cultivars, management practice and processing techniques. This should lead to the mobilization of farmers through emphasis on a participatory development approach, family or group based extension and seed multiplication activities involving due recognition of the role of women in production, processing and marketing and assistance that would enable all farmers to take advantages of development programmes as far as possible, adequate and sustained research funding which must be timely released.

- Development of new cassava products and packaging techniques for existing and new products.

- Promotion of industrial uses of cassava and diversification of processing options to encourage increased cassava production and enhanced rural household incomes.

- Establishment of a sound macro economic policy that would promote sustained cassava development.

- Investment in rural infrastructure (especially feeder roads and water supply) to promote cassava production, processing and marketing and

- Greater involvement of the private sector and non-governmental organization in the use of researcher and technology in cassava production, processing and marketing in the development of infrastructural facilities.

1.3 OBJECTIVE OF THE STUDY

The general objective of this research is to analyze the effort of federation government towards cassava production using cassava processing industries in Nkanu East of Enugu state a reference point therefore, the specific objective are as follows:

- To determine the economic importance of cassava

- To determine the role of government in cassava production in Nigeria.

- To assess means of improving cassava production in Nigeria

- To find out further intervention for production, processing and storage of cassava and

- To make recommendation based on the findings of the study.

1.4 RESEARCH QUESTIONS

1. What are the trends in cassava production and utilization between 2001 and 2010 at the national level?

2. What are the major interventions of efforts of federal government toward cassava production?

3. How can we analyze the investment in cassava research or development, including production, processing and marketing of the crops?

4. What is the success and failures (or limitations) or the federal government interventions or efforts towards.

5. What is the success and failures (or limitations of the federal government interventions or efforts towards cassava production?

1.5 RESEARCH HYPOTHESIS

H1: The major interventions or efforts of the federal government towards cassava production have yielded positive result.

H0: The investments or an effort of the federal government towards cassava production has yielded negative result.

H2: The investment in cassava research or development has improved the production, processing and marketing of the crop.

H0: The investment in cassava research or development has not improved the production processing and marketing or the crop.

H3: There is investment in infrastructure and service to promote development (roads, storage facilities etc) and processing infrastructure.

H0: There is no investment in infrastructure and service to promote development of the crop both in service infrastructure (roads, storage facilities etc) and processing infrastructure

H4: There are the successes in federal government intervention or efforts towards cassava production.

H0: There are failures in federal government interventions or efforts towards cassava production.

1.6 SIGNIFICANCE OF THE STUDY

The importance of the study cannot be over emphasized consequently it will be of benefit which includes the following:

- Development, rapid multiplication and dissemination of improved varieties to enhance the availability and diversity of improved planting materials.

- Deliberate efforts to supports the development of cassava processing protypes and identification of applicable and useful technologies and incentives for local entrepreneurs to fabricate them. This will sava labour and improve the efficiency of processing, raised the quality and enhance marketability of products. The design of such machine should be gender sensitive, bearing in mind the cardinal role of women in processing.

- Strengthening of extensive – farmers linkage with research of facilitate the ongoing spread of cultivars, management practice and processing techniques. This should lead to the mobilization of farmers through emphasis on a participatory development approach, family or group based extension and seed multiplication activities involving due recognition of the role of women in production, processing and marketing and assistance that would enable all farmers to take advantages of development programms as far as possible, adequate and sustained research funding which must be timely released.

- Development of new cassava products and packaging techniques for existing and new products.

- Promotion of industrial uses of cassava and diversification of processing, option to encourage increased cassava production and enhance rural household income.

- Establishment of a sound macro economic policy that would promote sustains cassava development.

1.8 DEFINITION OF TERMS

- Cassava: It is a type of floor made from the thick roots of a tropical plan and it is the most important crops in Nigeria.

- Federal Government: A system of government in which the individual states of a country should have control over the affairs of plants.

- Crops: A plant that is grown in large quantitative, especially as food, cassava has always been an important crop on the land.

- Cultivated: Land used to grow crops or plans that are also wild grown on a farm etc in order to be sold.

- Industries: A production of goods from raw materials, especially in factories heavy/light industries.

CHAPTER TWO

LITERATURE REVIEW

Processing of crops into forms convenient and acceptable for use is as old as human history. The various methods of processing food crops came up as a result of necessity; mainly because some food crops cannot be consumed the way they are harvested nor be kept long. The dictionary of agriculture defined processing as one of the marketing services which deal with the conversion of produce into a more finished condition before sale or consumption (Somani and Tikka, 1994). For the purpose of this study, related literatures are reviewed under the following sub-headings:

(i) Importance of Processing

(ii) Cassava products

(iii) Cassava utilization

(iv) Cassava processing techniques

(v) Gender roles in cassava processing

(vi) Constraints in cassava processing

(vii) Theoretical framework

(viii) Review of empirical studies

2.1 Importance of Processing

Harvesting is the final stage in the process of crop production and marks the beginning of the process of making the produce useful to individuals and the society.

There are benefits associated with large diversity of processing techniques developed by the rural dwellers.

Processing permits the productive use crop residues and wastes (Bliek, Alders and Bayer 1993). Similar findings were reported by other researchers for instance use of millet stalks for mat making, roof thatching, fence making and even as piths for toys by children in Niger (Lamara and Feil, 1993; Hopskin and Reardon, 1989). Increase in the value of crop residues have been reported in Nigeria as most crop residues are reserved for livestock. This according to Speirs and Olsen (1992) is due to the gradual loss of grazing ground.

The use of crops that require elaborate processing but have other advantages have been made possible. Long storage of farm products to provide a more balanced and diversified food supply through the period of scarcity have been observed (Bliek et al., 1993). Processing is strategic in expanding markets for perishables (Abott, 1988). For instance cassava processed into other products stores longer. According to Williams (1979), it is a powerful engine of development as it allows for stability in the availability of food crops. Improvement in the nutritive value of farm products have been observed. It improves acceptability, palatability and digestibility of farm produces (Imo, 1990). This is confirms by Onabolu's (1989) observation that fermentation enhance riboflavin synthesis. Other benefits include increase in the market value of crops by refining and preserving them until market prices are higher.

Post-harvest biodegradation and eventual losses have been reduced by processing (Chinsman and Fiagan, 1987; Akomas, 1989). Losses in this instance means any change in the availability, edibility, wholesomeness or quality of food that prevent it from being consumed by people (Bourne, 1977). Appert (1987) reported that losses may be quantitative: that which can be measured and evaluated; or qualitative: that which cannot be measured but renders the crop unfit for consumption. Qualitative losses are subject to the consumers taste and the local traders' judgement about the appearance, taste, shape, smell, size, flavour and other impurities. The various processing methods have resulted in the reduction of pesticides residues in and on crops. Iu a study uuiiuucted by Amelia et al. (1990), chlorpyrifos used in storing corn and rice was greatly reduced as a result of parboiling the rice and soaking the corn. Reduction and removal of toxic substances in crops to a level that is no longer lethal to the consumers have been observed. Hemagglutinin present in soybeans was eliminated through processing (Coursey, 1973).

**2.2 Cassava Products**

Cassava (Manihot esculenta crantz) is one of the most important staple food crops grown in tropical Africa. It represents the primary root crop of the Nigerian rural women farmers and accounts for over 50 percent of carbohydrate intake when processed into various foods products (FAO, 1989). There are about seventeen forms into which cassava may be processed in Africa(Hahn,1989; Gebremeskel,1989) and the forms into which cassava is processed and consumed is said to be dependent on cultural food habits, tastes and preferences the people. Some cassava products in Africa include Chikwange (Central Africa), Ntuka (Zaire), Gari (West Africa), Attieke, Plakali ,Konkonde, (Ivory Coast); Fufu (Nigeria,Ghana and Zaire) These variety of products has made cassava to be either a primary or secondary staple through the forest and transition zones of Africa (IITA, 2005).

**Cassava pellets**

This is obtained in two ways, fresh cassava roots are peeled, washed ,sliced and sun-dried and stored until when needed. Secondly, the peeled fresh roots are chopped and soaked in water for about 2-3 days to ferment and soften. The soften roots are dewatered, sundried and stored.

Gari

This is the most popular cassava product in West Africa. It is obtained by grating peeled and washed fresh cassava roots into a pulp which is dewatered by pressing using a screw jack or using heavy stones. It is left for 2-3 days to ferment, the fermented pulp is then toasted in a pan over fire.

**Fufu**

This is obtained by boiling peeled fresh cassava roots and pounding in Ghana. In Nigeria, the peeled are soaked in water to soften for a day or two. The soften roots is filtered using a colander, water is then pressed out of the filtrate which is steamed and pounded (akpu).

**Starch**

Grated cassava pulp is put into a basket covered with a piece of cloth over a pan or bucket. Water is poured over the basket and starch is washed out through the cloth into pan.This is repeated until all the starch is removed by rinsing. It is left overnight and water is poured off in the morning after which is sundried (Asiedu,1987)

Another method is to put grated pulp in bags and pour enough water over it to soak the contents. The bags are then sqeezed and a white liquid is expressed, which is poured into buckets.This process is repeated until the liquid is clear, it is then left to settle and the supernatant can be poured off. Starch is washed and sun-dried (Asiedu,1987) and Kwatia (1986).

**2.3 Cassava Utilization**

Cassava is a very versatile crop with numerous uses. Each of its component is valuable (Ojekunle, 2010). In the Congo, Madagascar, Sierra Leone, Tanzania and Zambia, the cassava leaves are consumed as vegetables (Haggablade and Zulu, 2003). Cassava has numerous uses; the roots are processed for human and industrial consumption.

Apart from the chips and pellets for animal feed production and the native starch and flour, other products include modified starch, ethanol. monosodium glutamate (MSG), glucose, fructose, sorbitol, sago, citric acid, adhesives, syrups, microbial enzymes, sweeteners etc. In Nigeria, there is high market potential for these products (RMRDC, 2004). Garri, a roasted granule is the dominant product and is widely accepted in both rural and urban areas. It can be consumed with or without additives such as sugar, milk, fish, meat, stew and groundnuts.

Cassava has been criticized in many ways: that it is a women's crop, consumed only by poor households, depletes soil nutrients, lethal and nutritionally deficient food (White, 1990). These stigmas are half-truths. The collaborative study of cassava in Africa in her various studies has revealed that both men and women are involved in cassava production, processing and marketing. Soils that have been under continuous cultivation for at least ten years were found to be as fertile as soils of other crops. Cases of cyanide poisoning from the consumption of cassava are rare. According to Asiedu (1989), the cynogenic glucoside content are reduced or even eliminated by processing especially fermentation.

The level of carbohydrate in cassava is an advantage in Africa as cassava plays a major role in efforts to alleviate the African food crises. The challenges ahead therefore, is to improve on the processing in order to drive down the best to consumers, especially the poor (Nweke, 2004).

**2.4 Cassava Processing**

Although cassava can be left in the ground for some months (six months or more) Kwatia (1986), Etejere and Ramakrishna (1985), observed that there is need to process cassava roots within 2-3 days because of its toxicity and perishability. Onabolu (1988) remarked that only the sweet variety with low cyanide content can be consumed without elaborate processing. Cassava with high cyanide content requires 3-14 days but most variety produced in Nigeria requires less number of days (Karunwni and Ezumah, 1988). The forms into which cassava in processed has been shown to depend on cultural food habits, preferences, taste of the people, variety as well as age of cassava tubers at harvest (Hahn, 1989; Okorji et al., 1989).

Cassava processing activities are mostly done by women depending on the region. According to Karunwni and Ezumah (1988), 84 percent of the processors are women and that gari in many cases is the major product. They further stressed that cassava processing peak period is between November and March. This view is also supported by Ekpere et al. (1986). All the processing technologies has fermentation, grating and boiling as basic steps that notably reduces the HCN of the cassava roots. Whether it is farinha de mandioca from Brazil, gari from the West and Central Africa or attieke from the Ivory Coast, there is a clear uniformity existing in the techniques of preparation and almost identical nature of edible forms.

**2.4.1 Development in Cassava Processing Method**

Despite the fact that traditional cassava processing methods and techniques give end products that meet the consumer's quality demands, research on modern techniques/technologies are still on with the aim of increasing output both in small and large scale production, minimizing post-harvest losses, labour costs, improving sanitary conditions (Chinsman and Fiagan, 1987) as well as increasing farm income. In order to cater for a growing population, reduce the human costs of processing and minimize the drudgery associated with cassava processing, modern technologies for cassava processing have been developed for the most arduous and laborious operations such as peeling, grating, grinding the dry chips and pressing or dewatering of the grated cassava pulp. Mechanized peeling techniques have been studied and tested in Nigeria. A batch process abrasion peeling machine has been developed by Odigbo (1979) and at National Food Crops Research Institute (NRCRI) Umudike. Nwokedi (1983) reported mechanical cassava peeling efficiency of 80 percent. He also observed that the operation of the peeling machine requires manual cutting and trimming of the cassava roots.

Traditionally, it requires that the roots be peeled with knife and washed, with application of other necessary operations to arrive at the desired end products. These traditional operations have been criticized as grossly inadequate, inefficient, laborious, time consuming and only amenable to small scale operation (Odigbo, 1979; Okanigbe, 1979; Ekpere et al, 1986).

The gari production process has received more attention than any other processing method (Kwatia, 1986) may be because garification is the most sophisticated traditional process and product from cassava (Ngody, 1988) and gari is also the most popular form in which cassava is consumed in West Africa. There are a number of mechanized cassava graters in many Nigerian villages. The graters may be owned by men or women but operated by men to whom women processors bring their cassava for grating.

According to IITA's report (1988), time required to grate 140kg of cassava tubers can be reduced from six hours (6hrs) to 20 minutes. Okanigbe reported that it costs about 7 times more to process a ton of cassava by manual methods into gari than by mechanical method. One processing hour on a machine saves women twenty-one hours work each week (Ikpi et al., 1986). Dewatering machines are also available in the market. Traditionally, the grated cassava pulp are packed into bags and heavy stones and objects are placed on the bags for about 2-3 days during which period fermentation occurs (Kwatia, 1986). The mechanized versions employ the srrew-tyne or the hydraulic type press. Usually, the owner of the presses keep them side by side with the graters in the case where the owners of the mechanical graters cannot afford the "Jacks" (as the presses are called in the villages).

There are also continuous process gari frying machines. Despite the existence of metal oven equipped with chimneys and mechanical stiring systems, cassava processors are stuck with the traditional method of frying (tossing the dewatered pulp in an open pan), mainly because the frying machine are unaffordable. Women and children are responsible for almost all activities in cassava processing except for milling, grating and the presses that often involve the use of machines mainly operated by men. This is in line with COSCA's (1990) observation that mechanization of cassava processing activities increased men's participation in cassava processing activities.

**2.4.2 Common Processing Methods**

Processing of food into different food products may involve one or a combination of the following:

i) Grating: This involves the rubbing of the crops being processed against very rough and sharp surfaces. This produces pulp for further process as in the processing of cassava into gari (Akomas, 1989) and in the extraction of milk from coconut (Asiedu, 1989). Grating can also be accomplished mechanically. According to Kwatia (1986); Chinsman and Fiagan (1987), mechanical graters are the most significant development in the cassava - gari process.

ii) Soaking: This is the soaking crops into water 10 soucn it. li is done mostly in the processing of cassava into flakes (Onabolu, 1989). It is also used in the process of soybeans into flour, paste, cake, and maize into pap/gruel.

iii) Boiling: In this method, crops are cooked in water for some time as in the parboiling of rice for milling and yams for yam flour preparation (Kay, 1973); Ihekoronye and Ngody, 1985). Boiling is engaged in the processing of cassava into abacha.

iv) Peeling: Traditionally, this is accomplished by hand. It involves the removal of the outer covering of crops for further processes as in yams and cassava. This also can be accomplished mechanically (Nwokedi, 1983).

v) Roasting: This is a very common method in the cocoa/coffee processing and oil and butter from peanuts. It involves dry heating the crops until the desired colour and aroma is achieved. In Nigeria, yams, potatoes, cocoayams and cassava can be roasted and eaten with palm oil (Asiedu, 1989).

vi) Fermentation: Fermentation caught the attention of food scientists due to subtle changes that take place in the food crops. These changes are induced by microorganisms and they include increase in the vitamin content, improvement of protein digestibility, development of desirable colours and flavours and elimination of toxic substance (Dirar, 1989; Westby, 1990). This involves soaking in water or keeping the food crops in warm, wet state for some days averagely 1 - 3 days (Ugwu and Ay, 1990).

vii) Sundrying: This is the exposure of crops to sun to reduce the moisture contents to a level that is no longer detrimental to its storage. The process of drying removes and separates free water from solid matter (Appert, 1987). it is a key post-harvest operation and almost all processing operation are dependent on it (El-Shiaty, 1988).

Efforts have been made to circumvent sundrying by mechanical means. The former, however, still depends on solar intensity and is affected by seasonal variations while the later though relatively more effective in the technical sense is expensive for the farmer (Kwatia, 1986).

**2.5 Constraints in Cassava Processing**

Constraints in cassava processing in Nigeria could be economic, institutional, socio-cultural, engineering, biological, environmental and agronomic.

**2.5.1 Economic Constraints**

Various economic constraints limit the processing of cassava in Nigeria. According to Hahn (1988); Okorji et al. (1989), the constraints includes labour, capital, price fluctuations, marketing problems and processors' decisions and objectives.

**2.5.2 Socio-cultural Constraints**

Cassava is looked upon as food for the poor. On the social attachment of the crop, Adebayo (1996) reported that not many would like to be identified with the crop despite the statutory role it plays in the provision of energy in the households.

In a study by Nweke et al. (1992) on the demand for major food items in roots and tuber based food system, it was found that among the high expenditure households, elasticity of demand for cassava products combined was less than zero.

**2.6.3 Engineering Constraints**

The traditional processing techniques characterized by high energy demand, time consumption and low productivity poses a great problem. According to Ekpere et al. (1988) the traditional methods of processing consume a lot of energy and time.

**2.6.4 Biological Constraints**

Cassava roots are toxic and highly perishable. Cassava contains hydro cyanide (HCN) which is toxic to man and livestock if not properly processed. It is perishable, has poor storage potentials and deteriorate rapidly due to its high water content. The irregularity of cassava shapes also poses a challenge in the use of a peeling machine (Okanigbe, 1979).

**2.6.5 Environmental/Agronomic Constraints**

The climate differentials is a great challenge in cassava processing in the rainy season, sunshine and ambient temperatures are very low particularly in the humid area where cassava in mainly grown and utilized. Cassava roots are easily, harvested this period, water which is essential for cassava processing is available but the dry matter contents of cassava roots at this time is relatively low.

In the savannah zones, water becomes scarce, the soil becomes hard and harvesting becomes difficult and result in loses of cassava roots in the soil.

2.5.6 Institutional Constraints

Inadequate functional extension services/institutions coupled with poor infrastructural facilities (such as good roads network, dependable power supply and adequate water supply source and so on) have hindered the increased processing of cassava in Nigeria.

**2.6 Theoretical Framework**

The basic theory on which this work could be based is the perfect competition theory. Processing is part of the production process and cassava processors are producers of goods (cassava products) and operate under a competitive market structure.

Perfect Competition Model

This model is characterized by the following:

(a) Large numbers of sellers and buyers. Cassava processing industry has large members whose products are so small that it represents only a small fraction of the total market supply. As such no processor can influence the market price of the products,

(b) The Products are Homogenous

The cassava processing industry is a group of firms that process cassava into various products. The stages of production are the technical characteristics of the various products and its sale and delivery are identical. This assumption implies that processors are price takers. Their demand curve is infinitely elastic, an indication that the firm can sell any amount of output at the prevailing price. The variations in an individual firm output does not change the market price. And so the demand curve is the marginal revenue and average revenue curves.

**2.7 Review of Empirical Studies**

Kaine (1985) in his study on economic analysis of alternative cassava processing technology in Delta State, used descriptive statistics which is one of the standardized analytical tools. He found that 40 percent of the respondents process cassava for food for the household while 30 percent depended on cassava nrnressina as means of livelihood. He also found that 60 percent of the respondents used family and hired labour during process. The result further showed that 40 percent of the processors were within the bracket of 41 - 50 years and 85 percent were married. Literacy level was relatively high as 41 percent of the respondent had between 0 and 6 years of formal education. The mean household size was 7 persons and this constitute the main source of unpaid labour for processing.

Similarly, Ifediora (1993) in her study on an analysis of the role of women in cassava processing in Owerri Agriculture zone of Imo State also used descriptive statistics. The results showed that only 18 percent of the women processors depended on cassava processing as a means of livelihood, mean age of the respondents was 42 years and 95 percent of them were married. Literacy level was relatively low as 67 percent of the respondents had between 0 and 6 years of formal education. Average household size was 11 persons and this constituted the main source of unpaid labour for Cassava processing, only 20 percent used hired labour. Eighty five percent of respondents financed their processing enterprise through personal savings. The average capital owned per respondent is small, usually less than N1.600. Women contributed upwards of 80 percent in each processing operation.

Furthermore Ayaru, et al. (1993) in their study used descriptive statistics to found out that 100 percent of the processors were males whereas 73 percent of the marketers were females, only 20 percent of the cassava processed were supplied from the processors owned farms. For manual processing techniques, 70 percent of the respondents were hired labour. In terms of age, sex, education, occupation, marital status and experience, the results showed that adult people of mean age of 43 years were involved in gari processing, female do not invest in gari processing and 92 percent adult females patronized gari processors as customers. Literacy level showed that 40 percent of the respondents had a minimum of primary education. Only 30 percent processed gari as their primary occupations. 90 percent were married with a mean number of 6.7 household members and 68 percent had done this processing business for less than 10 years. Generally, males constituted only 33.6 percent out of the all respondents who engaged in gari processing, distribution and marketing.

With respect to profit in cassava processing, various economics analysis carried out by researchers have indicated that cassava processing can be profitable. For example, Kaine (1995), used net profit margin in his data analysis, by using 5,000kg of cassava tubers as computing quantity for estimating the costs and returns for one year's production of each product. The results of the net profit margin analysis showed a decreasing order of net revenue of ₦3,200.70, ₦1031.70 and ₦748 for abacha, akpu and gari/starch production, respectively. Generally the results showed that the return was encouragingly reasonable. He also used benefit - cost ratio to find out that for everyone naira invested in gari/starch, akpu and abacha production result to the sum of 3 kobo, 4 kobo and 9 kobo profit, respectively. He also estimated the economics of the different processing technology with partial budgeting technique. Through the estimation, Kaine (1995) found out that labour cost of 200 naira was incurred by using the traditional processing technology while a total amount of 300 naira would be lost by using modern technology.

Ifediora (1993) used cost - return analysis for calculating the profit from the various products discussed using 200kg of cassava tubers processed into each product. The net revenue for the cassava products was 3,466.14 naira for tapioca, 883.13 naira for akara-akpu, 421.44 naira for akpu while gari/starch gave 240.07 naira. From the net revenue to total cost ratios seems that tapioca production was more profitable, followed by akara-akpu, gari/starch in that order. She used benefit cost ratio for sensitivity analysis and the implication of benefit-cost ratio (BCR) is that for every one naira invested in gari/starch production, akpu, akara-akpu and tapioca result to 6 kobo, 20 kobo, 3 kobo and 85 kobo profits, respectively. Tapioca had the largest margin of safety while gari/starch had the least when their net revenues and costs were subjected to sensitivity analysis. The cassava products were more sensitive to decrease in prices of their outputs than increase in their cost when their net revenue and costs were subjected to sensitivity analysis. The relatively low profit obtained from gan/starch production as well as akpu was probably a reflection of small capacity of processing cassava tubers.

Similarly, Ayaru, et al. (1993) used cost-return analysis the profitability of gari processing and marketing in terms of large and small scale industry. The result showed that net revenue for large scale industry was higher than that of the small scale firms. Also cost per kilogram (kg) of cassava tubers was higher in small scale than large scale firms. Though revenue per kg was higher in large scale firms, this only demonstrate that grater quantity of cassava tubers were processed in the large scale firms. They discovered that as more quantities of cassava tubers were processed in the small scale firms, the total cost decreased, thereby increasing the net revenue. The gross revenue and total cost was also higher in the large scale firms than in the small scale firms. This implies that as more money was invested into the processing business in order to produce higher quantity of gari, more profit was made. Further, profit per hour of labour was also higher in the large scale firms than the small scale firms. This explains why it is more profitable to work in large scale than in small scale firms.

However, the profit margin per naira invested in processing business was higher in small scale than in large scale firms. This was due to the fact that large scale firms enjoyed economics of scale where by their profit increased with increase in the quantity of gari production at the least production cost.

Ibrahim (2009), in his study of the economic analysis of cassava in Kogi State found out that the cassava processing enterprise can be profitable. The mean output of flour and gari enterprises were 756.6kg and 737.9kg per month. On the average, both enterprises had an annual net income of ₦235,245 and ₦244,599 respectively. Even though there was a significant difference at 10 percent level of probability between the mean profits flour and gari, both enterprises were operating within the rational area of the profit function.

**CHAPTER THREE**

**RESEARCH METHODOLOGY**

**3.1 INTRODUCTION**

In this chapter, we described the research procedure for this study. A research methodology is a research process adopted or employed to systematically and scientifically present the results of a study to the research audience viz. a vis, the study beneficiaries.

**3.2 RESEARCH DESIGN**

Research designs are perceived to be an overall strategy adopted by the researcher whereby different components of the study are integrated in a logical manner to effectively address a research problem. In this study, the researcher employed the survey research design. This is due to the nature of the study whereby the opinion and views of people are sampled. According to Singleton & Straits, (2009), Survey research can use quantitative research strategies (e.g., using questionnaires with numerically rated items), qualitative research strategies (e.g., using open-ended questions), or both strategies (i.e., mixed methods). As it is often used to describe and explore human behaviour, surveys are therefore frequently used in social and psychological research.

**3.3 POPULATION OF THE STUDY**

According to Udoyen (2019), a study population is a group of elements or individuals as the case may be, who share similar characteristics. These similar features can include location, gender, age, sex or specific interest. The emphasis on study population is that it constitute of individuals or elements that are homogeneous in description.

This study was carried out an analysis of federal government effort towards cassava production. Selected small scale farmers in Nkanu East Lga Enugu State form the population of the study.

**3.4 SAMPLE SIZE DETERMINATION**

A study sample is simply a systematic selected part of a population that infers its result on the population. In essence, it is that part of a whole that represents the whole and its members share characteristics in like similitude (Udoyen, 2019). In this study, the researcher adopted the convenient sampling method to determine the sample size.

**3.5 SAMPLE SIZE SELECTION TECHNIQUE AND PROCEDURE**

According to Nwana (2005), sampling techniques are procedures adopted to systematically select the chosen sample in a specified away under controls. This research work adopted the convenience sampling technique in selecting the respondents from the total population.

In this study, the researcher adopted the convenient sampling method to determine the sample size. Out of all the entire population of small scale farmers in Nkanu East LGA Enugu State, the researcher conveniently selected 120 out of the overall population as the sample size for this study. According to Torty (2021), a sample of convenience is the terminology used to describe a sample in which elements have been selected from the target population on the basis of their accessibility or convenience to the researcher.

**3.6 RESEARCH INSTRUMENT AND ADMINISTRATION**

The research instrument used in this study is the questionnaire. A survey containing series of questions were administered to the enrolled participants. The questionnaire was divided into two sections, the first section enquired about the responses demographic or personal data while the second sections were in line with the study objectives, aimed at providing answers to the research questions. Participants were required to respond by placing a tick at the appropriate column. The questionnaire was personally administered by the researcher.

**3.7 METHOD OF DATA COLLECTION**

Two methods of data collection which are primary source and secondary source were used to collect data. The primary sources was the use of questionnaires, while the secondary sources include textbooks, internet, journals, published and unpublished articles and government publications.

**3.8 METHOD OF DATA ANALYSIS**

The responses were analysed using the frequency tables, which provided answers to the research questions. The hypothesis test was conducted using the pearson correlation statistical tool, SPSS v.23

**3.9 VALIDITY OF THE STUDY**

Validity referred here is the degree or extent to which an instrument actually measures what is intended to measure. An instrument is valid to the extent that is tailored to achieve the research objectives. The researcher constructed the questionnaire for the study and submitted to the project supervisor who used his intellectual knowledge to critically, analytically and logically examine the instruments relevance of the contents and statements and then made the instrument valid for the study.

**3.10 RELIABILITY OF THE STUDY**

The reliability of the research instrument was determined. The Pearson Correlation Coefficient was used to determine the reliability of the instrument. A co-efficient value of 0.68 indicated that the research instrument was relatively reliable. According to (Taber, 2017) the range of a reasonable reliability is between 0.67 and 0.87.

**3.11 ETHICAL CONSIDERATION**

he study was approved by the Project Committee of the Department. Informed consent was obtained from all study participants before they were enrolled in the study. Permission was sought from the relevant authorities to carry out the study. Date to visit the place of study for questionnaire distribution was put in place in advance.

**CHAPTER FOUR**

**DATA PRESENTATION AND ANALYSIS**

This chapter presents the analysis of data derived through the questionnaire and key informant interview administered on the respondents in the study area. The analysis and interpretation were derived from the findings of the study. The data analysis depicts the simple frequency and percentage of the respondents as well as interpretation of the information gathered. A total of hundred and twenty (120) questionnaires were administered to respondents of which 100 were returned. The analysis of this study is based on the number returned.

**4.1 DATA PRESENTATION**

**Table 4.1: Demographic data of respondents**

|  |  |  |
| --- | --- | --- |
| **Demographic information** | **Frequency** | **percent** |
| Gender  Male |  |  |
| 60 | 60% |
| Female | 40 | 40% |
| Religion |  |  |
| Christian | 100 | 100% |
| Muslim | 00 | 00% |
| **Age** |  |  |
| 18-25 | 00 | 00% |
| 26-35 | 15 | 15% |
| 36-40 | 29 | 29% |
| 41 + | 56 | 56% |
| **Family Economic Status** |  |  |
| Very High | 24 | 24% |
| High | 32 | 32% |
| Very Low | 21 | 21% |
| Low | 23 | 23% |

**Source: Field Survey, 2021**

**ANSWERING RESEARCH QUESTIONS**

**Question 1:** are there major interventions of efforts of federal government toward cassava production?

**Table 4.3:**Respondent on question 1

|  |  |  |
| --- | --- | --- |
| **Options** | **Frequency** | **Percentage** |
| Yes | 60 | 60 |
| No | 19 | 19 |
| Undecided | 21 | 21 |
| **Total** | **100** | **100** |

**Source: Field Survey, 2021**

From the responses obtained as expressed in the table above, 60 respondents constituting 60% said yes. 19 respondents constituting 19% said no. While the remain 21 respondents constituting 21% were undecided.

**Question 3:** can we analyze the investment in cassava research or development, including production, processing and marketing of the crops?

**Table 4.4:**Respondent on question 3

|  |  |  |
| --- | --- | --- |
| **Options** | **Frequency** | **Percentage** |
| Yes | 56 | 56 |
| No | 21 | 21 |
| Undecided | 23 | 23 |
| **Total** | **100** | **100** |

**Source: Field Survey, 2021**

From the responses obtained as expressed in the table above, 56 respondents constituting 56% said yes. 21 respondents constituting 21% said no. While the remain 23 respondents constituting 23% were undecided.

**Question 4: Are there** success and failures (or limitations) or the federal government interventions or efforts towards.?

**Table 4.5:**Respondent on question 4

|  |  |  |
| --- | --- | --- |
| **Options** | **Frequency** | **Percentage** |
| High | 61 | 61 |
| Low | 17 | 17 |
| Undecided | 22 | 22 |
| **Total** | **100** | **100** |

**Source: Field Survey, 2021**

From the responses obtained as expressed in the table above, 61 respondents constituting 61% said high. 17 respondents constituting 17% said low. While the remain 22 respondents constituting 22% were undecided.

**Question 5:** Are ther**e** success and failures (or limitations of the federal government interventions or efforts towards cassava production?

**Table 4.6:**Respondent on question 5

|  |  |  |
| --- | --- | --- |
| **Options** | **Frequency** | **Percentage** |
| Yes | 60 | 60 |
| No | 20 | 20 |
| Undecided | 20 | 20 |
| **Total** | **100** | **100** |

**Source: Field Survey, 2021**

From the responses obtained as expressed in the table above, 60 respondents constituting 60% said yes. 20 respondents constituting 20% said no. While the remain 20 respondents constituting 20% were undecided.

**TESTING OF HYPOTHESIS**

H1: The major interventions or efforts of the federal government towards cassava production have yielded positive result.

H0: The investments or an effort of the federal government towards cassava production has yielded negative result.

H2: The investment in cassava research or development has improved the production, processing and marketing of the crop.

H0: The investment in cassava research or development has not improved the production processing and marketing or the crop.

H3: There is investment in infrastructure and service to promote development (roads, storage facilities etc) and processing infrastructure.

H0: There is no investment in infrastructure and service to promote development of the crop both in service infrastructure (roads, storage facilities etc) and processing infrastructure

H4: There are the successes in federal government intervention or efforts towards cassava production.

H0: There are failures in federal government interventions or efforts towards cassava production..

**Hypothesis one**

The major interventions or efforts of the federal government towards cassava production have yielded positive result

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Options** | **Fo** | **Fe** | **Fo - Fe** | **(Fo - Fe)2** | **(Fo˗-Fe)2/Fe** |
| Yes | 60 | 33.33 | 32.67 | 1,067.3289 | 32.023 |
| No | 19 | 33.33 | -14.33 | -205.3489 | -6.161 |
| Undecided | 21 | 33.33 | -12.33 | -152.0289 | -4.561 |
| **Total** | **100** |  |  |  | **21.3** |

**Source: Extract from Contingency Table**

X2 = ∑ (fo – fe)2/fe = 21.3

Fe= 60+19+21 = 33.33

3

Degree of freedom = (r-1) (c-1)

(3-1) (2-1)

(2) (1)

= 2

At 0.05 significant level and at a calculated degree of freedom, the critical table value is 5.991.

**Findings**

The calculated X2 = 21.3 and is greater than the table value of X2 at 0.05 significant level which is 5.991.

**Decision**

Since the X2 calculated value is greater than the critical table value that is 21.3 is greater than 5.991, the alternate hypothesis which states that The major interventions or efforts of the federal government towards cassava production have yielded positive result is accepted and the null hypothesis which states that The investments or an effort of the federal government towards cassava production has yielded negative result is rejected.

**Hypothesis Three**

**children refer to the mass media as sources of acquiring societal norms**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Options** | **Fo** | **Fe** | **Fo - Fe** | **(Fo - Fe)2** | **(Fo˗-Fe)2/Fe** |
| Yes | 56 | 33.33 | 22.67 | 513.9289 | 18.23 |
| No | 21 | 33.33 | -12.33 | -152.0289 | -4.561 |
| Undecided | 23 | 33.33 | -10.33 | -106.7089 | -3.201 |
| **Total** | **100** |  |  |  | **11.63** |

**Source: Extract from Contingency Table**

X2 = ∑ (fo – fe)2/fe = 11.63

Fe= 56+21+23 = 33.33

3

Degree of freedom = (r-1) (c-1)

(3-1) (2-1)

(2) (1)

= 2

At 0.05 significant level and at a calculated degree of freedom, the critical table value is 5.991.

**Findings**

The calculated X2 = 11.63 and is greater than the table value of X2 at 0.05 significant level which is 5.991.

**Decision**

Since the X2 calculated value is greater than the critical table value that is 11.63 is greater than 5.991, the alternate hypothesis which states that The investment in cassava research or development has improved the production, processing and marketing of the crop. is accepted and the null hypothesis which states that The investment in cassava research or development has not improved the production processing and marketing or the crop is rejected.

**Hypothesis three**

**There is investment in infrastructure and service to promote development (roads, storage facilities etc) and processing infrastructure**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Options** | **Fo** | **Fe** | **Fo - Fe** | **(Fo - Fe)2** | **(Fo˗-Fe)2/Fe** |
| High | 61 | 33.33 | 27.67 | 765.6289 | 22.971 |
| Low | 17 | 33.33 | -16.33 | -266.6689 | -8.0 |
| Undecided | 22 | 33.33 | -11.33 | -128.3689 | -3.85 |
| **Total** | **100** |  |  |  | **11.12** |

**Source: Extract from Contingency Table**

X2 = ∑ (fo – fe)2/fe = 11.12

Fe= 61+17+22 = 33.33

3

Degree of freedom = (r-1) (c-1)

(3-1) (2-1)

(2) (1)

= 2

At 0.05 significant level and at a calculated degree of freedom, the critical table value is 5.991.

**Findings**

The calculated X2 = 11.12 and is greater than the table value of X2 at 0.05 significant level which is 5.991.

**Decision**

Since the X2 calculated value is greater than the critical table value that is 11.12 is greater than 5.991, the alternate hypothesis which states that There is investment in infrastructure and service to promote development (roads, storage facilities etc) and processing infrastructure is accepted and the null hypothesis which states that There is no investment in infrastructure and service to promote development of the crop both in service infrastructure (roads, storage facilities etc) and processing infrastructure is rejected.

**Hypothesis four**

**There are the successes in federal government intervention or efforts towards cassava production.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Options** | **Fo** | **Fe** | **Fo - Fe** | **(Fo - Fe)2** | **(Fo˗-Fe)2/Fe** |
| Yes | 60 | 33.33 | 26.67 | 711.2889 | 21.134 |
| No | 20 | 33.33 | -13.33 | -177.6889 | -5.33 |
| Undecided | 20 | 33.33 | -13.33 | -177.6889 | -5.33 |
| **Total** | **100** |  |  |  | **10.47** |

**Source: Extract from Contingency Table**

X2 = ∑ (fo – fe)2/fe = 10.47

Fe= 60+22+20 = 33.33

3

Degree of freedom = (r-1) (c-1)

(3-1) (2-1)

(2) (1)

= 2

At 0.05 significant level and at a calculated degree of freedom, the critical table value is 5.991.

**Findings**

The calculated X2 = 10.47 and is greater than the table value of X2 at 0.05 significant level which is 5.991.

**Decision**

Since the X2 calculated value is greater than the critical table value that is 10.47 is greater than 5.991, the alternate hypothesis which states that There are the successes in federal government intervention or efforts towards cassava production is accepted and the null hypothesis which states that there are failures in federal government interventions or efforts towards cassava production is rejected.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

The existence of cassava as a crop for addressing poverty alleviation, food security, job creation and enhancing rural income cannot be overemphasized in Nigeria with the adequate use of appropriate tools for cassava production. There are prospects for high revenue generation and profitability if tuber yields and productivity are increased, and hitherto, scale of operation expanded to meet global competitiveness. Hence, mechanization of agriculture will therefore increase the agricultural production in Enugu State. Therefore, use of the improved technologies should be encourage in other to increase the agricultural productivity of the farmers and income without increasing rural unemployment. However, the findings of this study has revealed that:

1. The adoption of improved cassava production enterprises in zone C and D of Agricultural Zones of Enugu State (Malete and Igbaja) engaged fairly literate farmers (71.25%) of both genders;
2. The improved cassava technologies operated mostly on a small scale, ranging between 2 and 7 hectares;

c. Most farmers were in the active productive age bracket between 40 and 50 years;

d.Improved cassava production enterprises are profitable, though the revenue generated and income margins are of average value and;

e. Improved cassava production enterprises are faced with some constraints such as lack of credit facilities, high cost of hired machineries and maintenance, high cost of transportation, inadequate extension services, and inadequate infrastructures, poor pricing and marketing of the products.

Based on the findings from the study, it is recommended that:

1.Farmers should be encouraged to access micro-credit in order to increase their scale of production. The fiscal policy should address high interest rate; reduce complexity and stringent conditionality’s for accessing loans;

2. Government should boost extension delivery in order to increase uptake and utilization of high yielding varieties of cassava cuttings (stem).

3. Promotion of improved cassava production enterprises and other farm inputs like agro-chemicals, stems (cuttings) and fertilizer should be made available to farmers at affordable prices. For instance, under the present Agriculture Promotion Policy (APP), the Government could bear up to 30 percent subsidy for the critical inputs and hence encouraged to implement to the latter the proposed inputs procurement and distribution arrangement under the programme;

4. Government should put in place sustainable buy-back policy that will encourage cassava production and price stabilization; also re-establishment of select commodity market board/ committee to look into price regulation (i.e. pricing) and finally policy to adopt;

5. Government and other donor partners should make massive investment in subsidizing improved cassava production technologies/equipment in order to encourage diversification in processing, package, storage, marketing and value chain options in the downstream sector;

6. Farmers should be encouraged to form themselves into viable Cooperative Groups or Associations in order to facilitate access to farm inputs and soft loans from government and other commercial banks.

7. Finally, provision of basic infrastructures like electricity, water, basic health facilities, accessible roads and filling stations will not only improve the standard of living of rural farmers and their counterparts i.e. tractor operators, but will also help them to adopt appropriate machine that use diesel and solar energy.

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**APPENDIX**

**QUESTIONNAIRE**

PLEASE TICK [√] YOUR MOST PREFERRED CHOICE AND AVOID TICKING TWICE ON A QUESTION

**SECTION A**

**PERSONAL INFORMATION**

**Gender**

Male [ ]

Female [ ]

**Age**

18-25 [ ]

20-30 [ ]

31-40 [ ]

41 and above [ ]

**Educational level**

WAEC [ ]

BSC/HND [ ]

MSC/PGDE [ ]

PHD [ ]

Others………………………………………………(please indicate)

**Marital Status**

Single [ ]

Married [ ]

Separated [ ]

Widowed [ ]

**Section B**

**Question 1:** are there major interventions of efforts of federal government toward cassava production?

|  |  |
| --- | --- |
| **Options** | **PLEASE TICK** |
| Yes |  |
| No |  |
| Undecided |  |

**Question 3:** can we analyze the investment in cassava research or development, including production, processing and marketing of the crops?

|  |  |
| --- | --- |
| **Options** | **PLEASE TICK** |
| Yes |  |
| No |  |
| Undecided |  |

**Question 4: Are there** success and failures (or limitations) or the federal government interventions or efforts towards.?

|  |  |
| --- | --- |
| **Options** | **PLEASE TICK** |
| High |  |
| Low |  |
| Undecided |  |

**Question 5:** Are ther**e** success and failures (or limitations of the federal government interventions or efforts towards cassava production?

|  |  |
| --- | --- |
| **Options** | **PLEASE TICK** |
| Yes |  |
| No |  |
| Undecided |  |