

**ECONOMIC ANALYSIS OF PLANTAIN (*Musa paradisiaca*)  
MARKETING IN FEDERAL CAPITAL TERRITORY  
(FCT) ABUJA, NIGERIA**

**BY**

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**FEBRUARY, 2016**

### **DECLARATION**

I hereby declare that this dissertation titled “**Economic Analysis of Plantain (*Musa paradisiaca*) Marketing in Federal Capital Territory (FCT) Abuja**” has been written by me and it is a record of my research work. No part of this dissertation has been presented in any previous application for another degree or diploma in this or any institution. All borrowed information have been duly acknowledged in the text and a list of references provided.

\_\_\_\_\_  
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### CERTIFICATION

This dissertation titled “**Economic Analysis of Plantain (*Musa paradisiaca*) Marketing in Federal Capital Territory (FCT) Abuja**” by Justina Sunday UDOSEN meets the regulations governing the award of the degree of Master of Science in Agricultural Economics of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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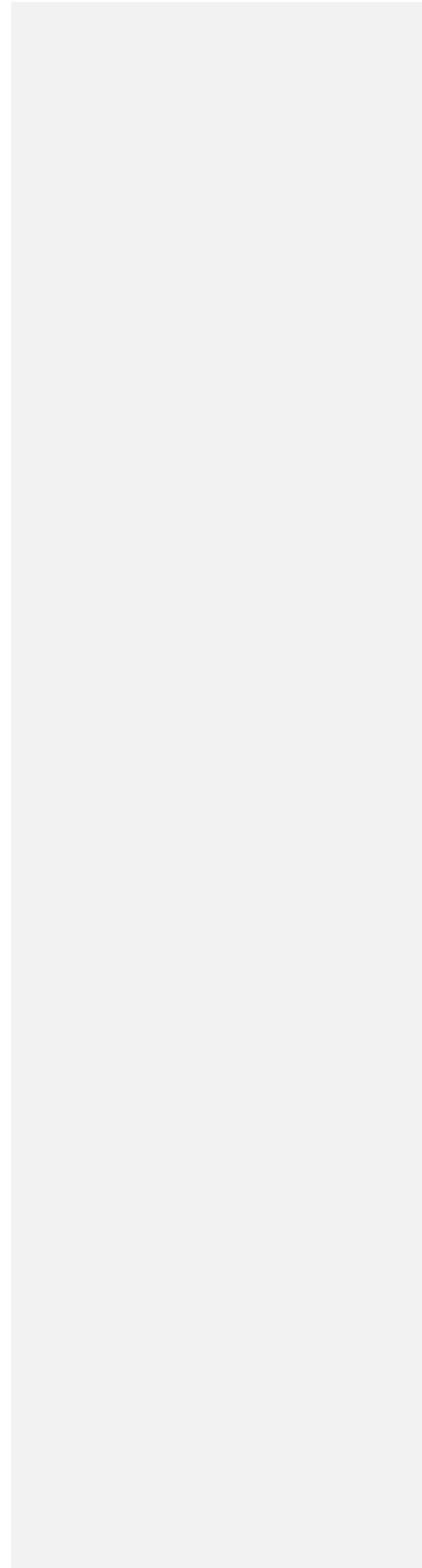


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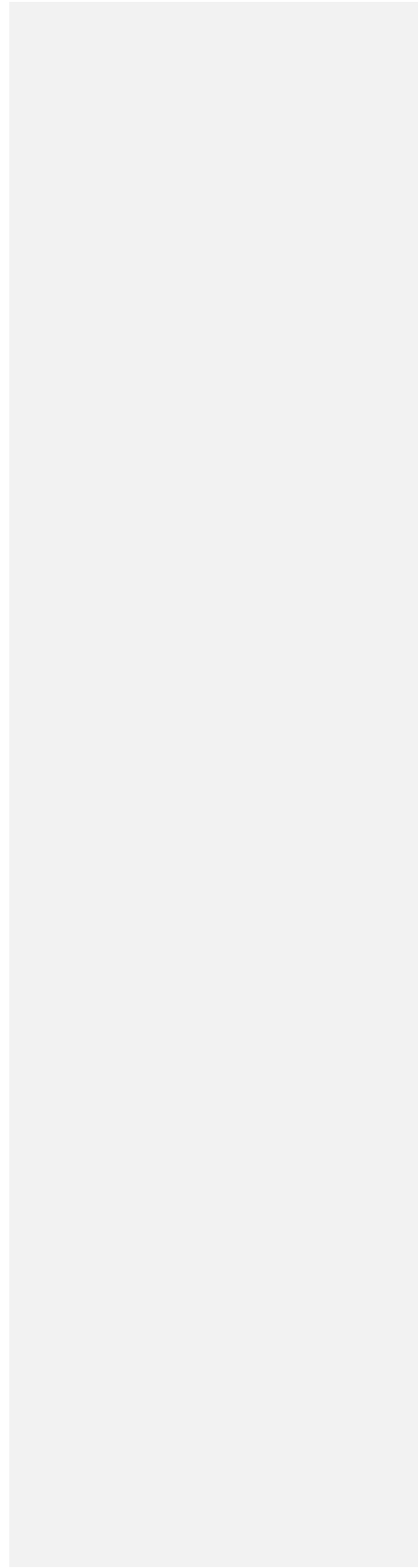
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## ABSTRACT

The broad objective of this study was to examine the structure, performance and efficiency of plantain marketing system in FCT Abuja and to determine its profitability. Data for this study were collected using well-structured questionnaire. Three Area Councils and 20 markets were purposively selected for the study using systematic random sampling. The 120 plantain traders sampled comprised of wholesalers and retailers that has a point of selling plantain in the selected markets. Data collected were analyzed using descriptive statistics, the Gini-coefficient, marketing efficiency ratio, marketing margins and return on capital invested. The results revealed plantain market to be characterized by many plantain sellers and buyers thus reflecting a pure competitive market structure. There were no restrictions to entry into or exit from plantain trading and there was easy flow of market information among the traders. The result of the calculated Gini-coefficient was 0.38 which indicate low concentration of the volume of plantain trading in few hands and an even distribution of the market share among the plantain traders. The marketing efficiency was calculated to be 234% and 196% for the retail and wholesale plantain traders indicating an efficient market. The return per capital invested showed that for every N1.00 invested, the retail trader realizes 55k while the wholesale trader realises 22k as profit. The marketing margin was calculated to be 44% and 33% for the retail and wholesale traders respectively. These findings reveal a pure to near perfect market structure, high efficiency ratio and the good profit margins which are indications of good performance in market. Analysis of the socioeconomic data equally revealed that over 90% of the plantain traders had formal education and all respondents were within the active or productive age, with a mean age of 39.3. Plantain wholesalers are dominated by male traders while female traders dominated the retail trade. Most of the traders source their capital for plantain business from personal and family savings. The major challenges facing plantain traders are high cost of transportation, problem of deterioration in quality/spoilage, seasonal price fluctuations, lack of sufficient capital for most of the traders and lack of standard means of grading and valuing plantain by quality and quantity. The study has been able to determine plantain marketing to be competitive, efficient and profitable in FCT Abuja. It has therefore recommended that more Actors come into the value chain to boost production, processing and marketing while all levels of government should address the transportation challenges associated with agricultural produce marketing.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background

Plantain marketing involves all activities and services associated with the movement of produce from farmers' (producers) farms to the consumers. Plantain production is mostly on small scale and the place of production/collection is in fragments scattered around villages and towns where they are produced. The role of marketing involves assembling of plantain bunches in piecemeal by village collectors from the different places of production to the markets in the towns and cities. Just like many agricultural produce, plantain is bulky, highly perishable and seasonal in supply. These physical characteristics of plantain no doubt present some challenges to its marketing. Cost of transporting plantain from the far-away places of production in the southern ecological belts (Edo, Delta, Ondo, and Cross River) to FCT Abuja for example may have some costs implication on what the a consumer will have to pay for in Federal Capital Territory (FCT) Abuja.

A study to ascertain the performance of plantain marketing in Abuja, in view of the above situation was considered relevant. Similar research studies carried out in Akinyele, Oyo State by Adetunji and Adesina, (2008) and Kaduna Metropolis in Kaduna state by Ariyo *et al.*, (2013) revealed that the above natural characteristics of plantain has implication on plantain marketing. The Demand for plantain and its products has continue to rise as a result of its food/nutritional value and the health benefits. The consumption of plantain cuts across social, age, ethnic, religious and geographical barriers. Plantain is commonly eaten as fried ripe plantain (dodo), boiled as green plantain and eaten with palm oil or stew or roasted '*Boli*' and eaten as snack, or

as porridge. Plantain has a high marketing prospect in most of the major towns and cities where its consumption and demand is on the increase (FDA, 2005)

Plantain originated from South East Asia and Western Pacific region (John and Marchal, 1995). It belongs to the family of Musaceae, and they are of two types; *Musa acuminata* (genome AA) and *Musa balbisiana* (genome BB). Four types of plantain are common in Nigeria and these are categorised based on their bunch characteristics. The common types are: Horn type, French type, False type and French-horn type.

Plantain is an important staple food crop for many people in developing countries (Akalumbe, 1994). It is ranked among the ten major staple food crops in the world (FDA Extension Bulletin on Plantain and Banana Development). Globally, in terms of gross value of production, plantain, rice, wheat, and maize are among the four most important food crops (FDA, 2005). Nigeria is the leading producer of plantain in West Africa with an estimated annual production of over three million metric tonnes (FDA, 2005). Annual consumption of plantain per capita in Nigeria is 8.5kg (FDA, 2005). In west and central Africa, about 70 million people are estimated to derive more than a quarter of their food energy requirement from plantain and banana thus making it one of the most important sources of food energy throughout Africa humid forest zone (FDA, 2005). Plantain is considered to be important in the national and household food security in all the producing countries (Ortiz, 1997).

Plantain is a rich source of carbohydrates (with about 30mg/100 cal.), dietary minerals such as iron (24mg/kg), potassium (9.5/mg/kg), calcium (7.15mg/kg); vitamins such as vitamin A, Ascorbic acid, thiamine, riboflavin & niacin; and crude proteins are found (FDA Extension Bulletin on Plantain and Banana Development 2005). Plantain's

sodium content is 351mg/kg; this is considered low in dietary terms hence it is frequently recommended for low sodium diet (Stover and Simmonds, 1987). Plantain is highly valuable in the management of diabetes, tonsillitis and stomach ulcer. The peels of plantain fruits, stalks and leaves serves as livestock feeds for small ruminants in (backyard sheep/goats keepings). Plantain has attractive export potentials in the international market and a wide local market that is largely unsatisfied. The crop also lends itself to a number of industrial uses such as in the pharmaceutical and food industries. The whole or composite flour are used as base for syrup preparation, it serves a suitable ingredient in preparation of baby food. The fruits are also employed as raw materials for production of liquor and non-alcoholic wines. The peels of the fruits can be processed into local cosmetic soaps such as *Ose dudu*. The stems of plantain are good source of fibres for industrial ropes, fancy hats, mat and other decorative items..

Plantain is the cheapest staple food crop in terms of production costs per hectare as compared to other food crops like maize and cassava. It produces fruits all year round, thus playing the role of 'the hunger-gap' between crop harvests. It gives high economic returns, reaches maturity and pays off its cost of establishment within a year. It is an important source of income for the resource-poor rural farmers. Plantain provides household food security and gainful employment to both rural and urban dwellers. Plantain production is environment-friendly being useful in combating soil erosion and as inter-crop in mixed farming (FDA, 2005) system. Plantain has been identified as a veritable strategy for alleviation of poverty and income generation hence its production as an enterprise has been advocated for both rural and urban dwellers as an area for exploit on gainful employment.

Some efforts have been made towards tapping the economic potentials of plantain production through the boosting of its production to meet its ever growing local and international demand. The establishment of plantain development programme of the Federal Department of Agriculture, Ibadan, Oyo State, is an example of such efforts. In order to encourage plantain and banana production both on small and large scale, the following plantain and banana enterprise are being advocated by the programme:

- i. Establishment of nursery/small plot plantain and banana sucker production
- ii. Establishment of small-holder plantain and banana farm
- iii. Establishment of homestead/backyard plantain and banana garden
- iv. Cottage/domestic processing of plantain and banana.

The aspect of marketing to complement plantain development programme has not been given the expected attention. This is why this research study becomes necessary to ensure the sustainability of increased plantain production.

## **1.2 Problem Statement**

Previous studies on plantain shows that the business of plantain marketing is profitable Folayan and Bifarin (2011). Ariyo *et al.* (2013) identified high transportation cost, rapid deterioration in quality/spoilage and seasonal price fluctuations as major challenges to plantain business in their research studies on Profitability analysis of plantain marketing in Kaduna Metropolis. Most of the plantain traded and consumed in Federal Capital



Territory (FCT) Abuja is produced in the Southern ecological belts and transported to Abuja. This translates to high transportation and marketing costs for the plantain. Plantain, as it is the characteristics of many agricultural commodities, is bulky, highly perishable and seasonal, these physical features of plantain present some challenges to its marketing.

The need for a research study on efficiency of Plantain marketing, performance and profitability in Abuja became necessary because, being a fast growing urban city as Nigeria' capital, it has a high market potentials for Plantain. A combination of efficient marketing system with good agricultural practices arising from adoption of improved production technologies by farmers in the producing states will no doubt lead to increased production output and supply of plantain to the Territory. In order to understand plantain marketing situation in Federal Capital Territory (FCT) Abuja and to achieve good performance and efficiency in its marketing, this research study seeks to address the following research questions:

- i. What are the socio-economic characteristics of plantain marketers in Abuja?
- ii. How is the organisational structure of plantain market in the study area?
- iii. How is the performance of plantain market in the study area?
- iv. How efficient is plantain marketing?
- v. How profitable is plantain marketing?
- vi. What are the constraints to efficient plantain marketing?

### **1.3 Objectives of the Study**

The broad objective of this study was to carry out an economic analysis of plantain marketing in some urban and semi-urban areas of Federal Capital Territory, Abuja.

The specific objectives were to:

- i) describe the socio-economic characteristics of plantain marketers in FCT, Abuja;
- ii) determine the structure of plantain market;
- iii) determine the performance of plantain market;
- v) analyse the efficiency of plantain marketing;
- vi) determine the profitability of plantain marketing; and
- vii) identify the challenges militating against plantain marketing in Abuja.

### **1.4 Justification of the study**

Plantain constitutes an important source of carbohydrate intake for thousands of households in the Federal Capital Territory. Plantain is also rich in crude protein and important minerals like iron, calcium and potassium as well as in vitamins. Plantain has a characteristic of being low in sodium content and this is a desirable quality for its health implication. The green unripe plantain for example is recommended for people with diabetic problem as a good substitute for other staple foods like cassava, yam and rice. Large quantities of plantain and plantain products are traded and consumed even though the bulk of the plantain are produced outside Federal Capital Territory (FCT). Plantain marketing in Abuja has high market prospects for plantain farmers.

Although plantain is one of the major staple food commodities traded in FCT, so far few studies have been carried out in the aspect of marketing of this important food commodity in Federal Capital Territory (FCT), Abuja.

Olorunda, (1996) in his study, noted that apart from the seasonal increases in the price of plantain, one of the problems limiting expansion in plantain production in West and Central Africa include high post-harvest losses owing to its highly perishable characteristics. Eronmwon *et al.* (2014), in their research study on; structure, conduct and performance of Plantain marketing in Edo state, Nigeria revealed a situation of inequality in the share of the volume of trade among plantain traders which signifies high concentration of the business in a few hands among the plantain traders in the study area in Edo state. Other factors such as bulkiness and high transportation costs constitute a major challenge to plantain marketing. The above challenges in plantain marketing could be the case in other places like FCT hence the need for a similar study in order to guide against these challenges. Efficient marketing is an important aspect of plantain production in addition to adoption of new technologies as these two factors combine to determine expansion in plantain production and supply. A research study of the efficiency, performance and profitability of plantain marketing in FCT that would translate to production and supply to meet the growing market demand cannot therefore be over emphasised. Consequently, the constraints to plantain marketing would be identified and solutions proffered.

### **1.5 Research Hypothesis**

The following hypotheses were tested in the study:

- i. Plantain Marketing is not efficient in the study area.
- ii. Plantain Marketing is not profitable in the study area.

## **CHAPTER TWO**

## **LITERATURE REVIEW**

### **2.1 Market and Marketing Concepts**

Market has been considered by different Authors by looking at it from different perspectives. Eronmwon et al, (2014) for example, explained the concept of Market as an area within which demand and supply meets to establish a price. He further gave other definitions of market as: the place where buyers and sellers meet each other; a place where exchange takes place; a place where values are established and therefore prices are agreed upon by the parties concerned.

Olukosi and Isibor, (1990) on the other hand defined Market as a group of buyers and sellers that possess facilities for trading with one another. He explained further that although the definitions of market involves time and place, market is not necessarily a centre, place or area but rather that market exists where communication links occur between the buyers and sellers either through letter writing, fax or telex messages, or phone calls.

Today, GSM, e-mails and internet marketing services has made market and marketing activities even easier. The question of face to face contact between buyers and sellers is no longer as important. Generally, we have two types of markets, local or domestic markets and international or world markets.

Market Concept means the existence of;

- i) Goods for sale and
- ii) Buyers to buy.

The transaction could be done at the level of physical contact or through any other means of communication that is convenient for both parties and the products in question. Marketing is the basis for production and economic wellbeing of a nation (Alex, 1990).

## **2.2 Theoretical Issues On: Agricultural Marketing**

Majority of agricultural markets in African countries are inefficient and poorly integrated and agricultural marketing efficiency in Nigeria is dismally low (Onyuma *et al*, 2006; Philips *et al*, 2008). Reasons attributed to the above inefficient and poor integrated marketing system include high transport costs due to poor road conditions, limiting access to inputs, credit and output markets thus reducing the transmission of key market information (Adeoye *et al*, 2011). According to Adeoye *et al*, increase in population which is at a considerably higher rate than increase in food production has continued to widen the gap between domestic food supply and demand.

Olukosi and Isitor (2005) gave a comprehensive definition of agricultural marketing as all those physical, economic and legal services/activities which are necessary to make farm produce available to the consumers in the form, quality and quantity desired by consumers, at the time and at the price consumers are willing and able to pay and take possession of the good. Abbott and Makeham (1979) likewise defined agricultural marketing as all those business activities associated with the flow of agricultural produce (goods and services) from point of production to point of consumption. These activities/services include; assembling, transport, sorting, cleaning, grading, storage, packaging, farm-gate processing, sourcing for suppliers and buyers, financing warehousing of produce from the time of initial purchase from producers until time of

disposal of goods to consumers; taking up and holding until the produce outlet is found, adapting to consumers' tastes, advertisement of farm produce, packaging activities and all other operations involved in getting the produce from producer to the consumers.

According to Adekanye (1988), the need for agricultural marketing arises with the production of surplus. The concept of marketable surplus as cited by Adekanye can be defined as the amount of produce available for sales after the needs of the producer's consumption is met. The importance of agricultural marketing is further appreciated when the characteristics of agricultural produce are considered. These include Bulkiness, seasonality, perishability, small quantities from scattered farms and the non-consumable nature of some agricultural products. Adegeye and Ditto (1985) wrote that most agricultural produce are seasonal whereas their demand is stable throughout the year. Consequently, there is inter-seasonal price variation. They emphasized that the bulky nature of agricultural produce like plantain influences the transportation modes and cost resulting in the spatial price variation. According to Abbot and Makeham, (2009), agricultural commodity prices have experienced unprecedented fluctuations and continuous increases since 2002 until mid-2008. These Authors argued that food commodity price fluctuations and increases have brought about price volatility, food inflation, poverty and hunger. Couple with inadequate market price transmission, high food prices has increased the levels of food deprivation leading to food insecurity for many people and thereby putting pressure on achieving the Millennium Development Goal (MDG) on hunger by the year 2015 (FAO 2008). Ladele and Ayoola (1997) in their study on food commodity marketing and its role in food security in Nigeria concluded that an efficient food marketing system would reduce post-harvest losses and ensure adequate returns to farmers. Environmental

factors, such as high temperature, relative humidity and air composition are responsible for the short shelf-life of most agricultural produce resulting in a large proportion of the produce being wasted (Olorunda and Ogugua, 1978; Chukwu, 1997; Ajayi and Mbah, 2003).

There are some of the challenges facing plantain marketing, which are further compounded by inadequate storage systems, insufficient distribution and lack of ripening techniques (Olorunda *et al.*, 1978; Chukwu, 1997; Ajayi and Mbah, 2003).

### **2.3 Plantain Marketing**

Plantain is a basic food product contributing to the food security of millions of people in the developing world and constitutes a source of employment and income generation for the rural populace (Nkendah and Nzouessin, 2006). Plantain is grown in 52 countries with World production at 33million metric tonnes (FAO, 2006). Eight African countries are named among the top ten World producers of plantain. Nigeria's production output was 2.103million metric tonnes in 2004 (FAO 2006; FAOSTAT, 2007). With the recent interest in the establishment of plantain farms, as evident by the increase in cultivation/harvested areas, the Nigeria's productivity will be trippled in the next few years. It is believed that the country will for a long time be one of the top producers of plantain around the world (Akinyemi and Mankinde, 2010).

Plantain marketing involves the movement of plantain produce from the farms to the markets and this important activity is usually undertaken by middlemen who buy from farmers or traders and assemble the plantain bunches from the villages where they are produced. This is because productions which are mostly on small scales are also in

fragments. Just like other agricultural commodities, plantain marketing is faced with the challenge of bulkiness, high transportation costs seasonality and rapid ease of perishability due to its short shelf life. The perishability nature of plantain makes its value addition and processing a vital link in the marketing process. Plantain has found a number of uses ranging from fried chips to plantain flour into which the pulp can be processed to secure it from deterioration and wastage. According to Adetunji and Adesiyani (2008), past efforts on plantain development was focussed on increased production technology without a corresponding increase in its marketing. Mellor (1992) drew attention to this situation when he noted that issues of marketing had been totally neglected in the literature of economic development of plantain and the obvious wastage the situation could cause if not addressed. Njoku and Nweke (1996) later in their writing supported the foregoing and came up with the view that the marketing condition of plantain changed because the aspect of marketing was neglected. Frison and Sharrock (1998) stressed the importance of integrating the expression of marketing function with the expression of production. Akalumbe (1994) observed that marketing and post-harvest handling system of plantain in the Southern Nigeria was an important area requiring attention. This agreed with Njoku and Nweke (1995) who was of the view that good infrastructural facilities for improvement in plantain marketing system will further help plantain development programme. Dankyi *et al*, (2007) also in his report revealed that farmers are aware of the various production technologies, however low farm-gate pricing with traders determining prices has been a major hindrance to production and marketing. It is therefore obvious that increased production without corresponding well developed and efficient marketing system will amount to wastage of resources (Adetunji and Adesina, 2008).



In view of the foregoing facts, it could be deduced that if marketing system of plantain is well understood, production could be expanded to ease the food security situation in Nigeria.

#### **2.4 Market Structure**

Market structure is defined as those characteristics of the organisation of a market which seem to influence strategically the nature of competition and pricing behaviour within the market (Olukosi *et al.*, 2007). Market structure therefore considers the following important factors: number and relative size of buyers and sellers, the degree of product differentiation, the status of knowledge about costs, prices and market conditions among the participants in the market and the ease of entry into or exit out of the market by additional participants.

Market structure has been evaluated by different Authors. Kohl and Uhl (1980), listed three kinds of concentration indices for evaluating market structure; viz the Gini coefficient (GC), Lorenz curve and the market concentration ratio. Oladejo and Sanusi, (2008) in his analysis of market structure of plantain marketing in Owo and Ose Local government Areas of Ondo State, Nigeria used the Herfindahl index. Systematic sampling technique was used in the selection of 110 plantain marketers in the study area. The study revealed the Herfindahl index of 0.3 implying that plantain market tend towards pure market competition. While the Gini coefficient gives the concentration ratio, the Lorenz curve give a graphical picture of the Gini-coefficient by plotting the cumulative distribution of market shares against the corresponding traders' population groups. The Gini coefficient is mathematically derived with the following equation:

$$GC = 1 - \frac{\sum_{K=1}^n (X_K - X_{(K-1)}) (Y_K + Y_{(K-1)})}{2 \sum_{K=1}^n X_K Y_K}$$

Where

G.C. = Gini coefficient

$\Sigma$  = Summation of

X= Cumulative proportion of plantain sellers

Y= Cumulative proportion of Total sales or market shares.

Ashiko (2014) employed the Gini coefficient and the Lorenz curve as index of inequality in the volume of trade across traders of storable major staple food commodities.

## **2.5 Market Conduct**

Market conduct relates to the behaviour of firms or decisions that firms make with respect to their pricing and output policy and other competitive tactics (Olukosi *et al*, 2005). Ashiko (2014) in his studies referred to market conduct as the pattern of behaviour that traders and firm follow in adapting to or adjusting to the market in which they sell or buy. According to the above Authors, the most important factors used in assessing market conduct are:

- (a) Methods of determining price output
- (b) Sale promotion policy
- (c) Product policy
- (d) Presence or absence of exclusionary tactics directed against established rivals.
- (e) Research and development.

Market conduct is heavily influenced by the market structure

## 2.6 Market Performance

The basic purpose of analysing a market is to determine how well the system is performing necessary marketing functions and how this performance can be improved upon (Ntuokwa, 2001).

Market Performance as defined by different Authors is the appraisal of how much the interactions of buyers and sellers in a market stimulates results that are consistent with social purposes (Olukosi *et al.*, 2005). It is the strategic end result of market adjustments engaged in by buyers and sellers, i.e. the appraisal of the extent to which the interactions of buyers and sellers in a market stimulate results that are consistent with social purposes (Olukosi *et al.*, 2005). The concept of market performance is related to or a reflection of the market structure and conduct (Olukosi and Isibor, 1990). The relationship starts with market structure which determines the market conduct and in turn, both determines the market performance. If the market structure in an industry is tending towards monopoly rather than pure competition, the market performance will be poor. According to Abbot and Makeham (2009) market performance reveals how successfully marketers' aims are accomplished. It is an assessment of how well the process of marketing is carried out such as level of profit, capacity utilization of firms, costs of sales and promotion, and the character of products sold. The subjective nature of market performance however makes it rather difficult to precisely assess market performance except in general terms.

Efficiency in marketing which measures the ratio of output to inputs is considered to be the most important measure of market performance (Kohl and Uhl, 1990). According to Ashiko (2014), marketing margins or price spread is another commonly used method of

market system performance. The magnitude of marketing margin is affected by the marketing functions or length of marketing channels the produce goes through.

## **2.7 Marketing Margins**

According to Olukosi *et al* (2007), marketing margin is the difference in amount paid by the consumers and that which is received by the producer, it is the outcome of the demand for, and the supply of all the services involved.

The definition of Kohls (1965) reiterated the above by defining marketing margin as the difference between the amount consumers pay for the final product and the amount producers receive. Marketing margin therefore includes all the costs of: moving the produce from the point of production to the point of consumption, any processing undertaken on the produce, all handlings done at every level in the marketing process. The amount of money realised as the marketing margin is a function of the various services performed on the produce before it gets to the ultimate consumer because some farm produce such as tomato, fish, plantain etc are more highly perishable than others; the seasonality and bulkiness of the produce are features in agricultural produce which affect the marketing margins. The marketing margin that eventually gets to the farmer (expressed as percentage of the retail food price or farmers' percentage share of the consumers' naira is calculated after deducting the various costs of marketing. In a situation where this percentage is big, the farmers though happy, are seen as the cause of rising costs of food commodities. On the other hand, when the percentage is small the middlemen are seen to be getting rich on the sweat of the farmers and are seen to be responsible for the increasing costs of food commodities. Abbott and Makeham (1979) another Author in his writing defined marketing margin as the difference in the price

paid by consumer and that paid by the producer. It is often used as one of the instruments for evaluating or assessing performance in marketing.

Marketing Margin is calculated mathematically as:

$$\text{Marketing Margin} = \frac{\text{Selling price} - \text{supply price}}{\text{Selling Price}} \times 100$$

Wohlgnant (2001) reviewed a study on marketing margin and the development of empirical models. Apart from the variables that come in when using a structural model that looks at the farm, retail and input market equilibria. Wohlgnant also discussed other possible explanatory variables that had been included in the studies that used reduced-form models instead of a complete structural model. From his study, he reviewed the primary factors that were commonly included in the analysis of reduced-form models as retail price, demand shifters like population and income, and marketing input costs.

## **2.8 Marketing Efficiency**

Agricultural production problems can be overcome through the introduction of new technology coupled with efficient marketing systems (Adetunji and Adesina, 2008). Marketing efficiency is a measure of the ratio of output to input or the maximization of the ratio of output to input in marketing (Olukosi *et al*, 2005). Marketing efficiency is the most frequently used measure of market performance because it is derived from calculating the quantity of output or value of output per unit of inputs (marketing services) employed in the marketing process (Olukosi and Erhabor, 2012). This is why gross income analysis which deals with averages is most often considered appropriate for computing efficiency. Efficiency of market depends on the number of traders, the level of competition among them as well as on the amount and cost of information at their disposal. The author above explained that efficiency refers to the extent and speed

of price transmission between spatially separated markets. The goal of market integration analysis is to determine marketing efficiency and this is built on the premise that if a pair of markets is integrated, a price change in one of them will be reflected in the other. The demand for and the price of a given unit of plantain in a market would have a dominant effect on the plantain trade and by extension, price formulation in other plantain trading markets. This would be an indicator for marketing efficiency since price differences between the given markets would reflect only transportation costs including normal profit. The more integrated a market is the more efficient it is.

Economic integration results in more efficient use of resources, increase in trade, increased productivity and overall production (Ismet *et al.*, 1998). Marketing efficiency can also be assessed by investigating the spatial integration of producing and consuming plantain markets in a given environment. This is because such information provides a probable means of enhancing the efficiency of plantain marketing system in that environment. An efficient farm marketing system is an important means of raising the income levels of farmers and for promoting the economic development of a country.

Haji and Haji, (2008) conducted an empirical research study on economic efficiency and marketing performance of vegetable production in the eastern and central part of Ethiopia; measured marketing efficiency by assessing marketing performance of vegetable in Ethiopia. Another study was carried out on market structure and efficiency analysis of vegetable production and marketing in Sindh, Pakistan by looking at the relationships across the marketing chains that are involved in the selected vegetables that were studied by investigating marketing margins distribution of costs and the net returns to the functionaries.

## **2.9 Marketing Channels**

The channels of distribution of a produce is the path through which it passes from its raw state to its finished form (Olukosi and Isitor, 1990). Consequently, the longer the channel of distribution, the higher the selling price (Ojiugo, 1984). This in a way affects the spatial price variations. Market channel according to (Kohl and Uhl, 1985) is defined as the sequence of intermediaries through which goods pass from the producers to the consumers thus the process is a form of movement, series of actions and events that takes place in the marketing sequence. The participants in this distribution channel can be from 2 two to six.

## **2.10 Marketing Functions**

According to Olukosi and Isibor (1990), marketing function can be defined as specialised services that have to be performed in the process of moving a product from the producers to the consumers.

Kohl (1961), classified marketing function into three major groups. These are:

- Exchange functions
- Physical functions and
- Facilitating functions

## **2.11 Exchange Functions**

The exchange function involves the act of buying and selling. This is the process of goods transfer from hand to hand thereby creating possession utility. The buying and selling function is performed with a judgement of value usually expressed in prices placed on the goods and services involved.

According to Alex (1990), the buying function in marketing involves a number of activities. These include:

- Determination of the kind of goods.
- Determination of the quality of goods.
- Determination of the quantity of goods.
- Selecting proper services of supply and buying policies and practices.

Selling function on the other hand involves; advertising and other promotional activities to influence or create demand. This is called merchandising (Olukosi and Isibor, 1990)

## **2.12 Physical Functions**

Physical function was defined by Olukosi *et. al.*, (2005) as those services that add form, time and place utility to the commodity. The physical function includes storage, transportation and processing. They are those activities involving handling, movement and physical change in the natural form of actual commodity. These activities create time, place and form utility to the product.

According to Olukosi *et. al.*, (2005), processing add form utility to the produce for instance, transforming plantain into plantain flour or plantain chips. Storage adds time utility to a product by holding it from production and distributing it to the market overtime as at when needed. The storage function occurs at all levels in the marketing channels of plantain.



Transportation adds place utility to a commodity. Transportation includes moving commodities from the farm to their various market destinations. Melor (1992), found that the relatively high cost of many perishable and bulky commodities like plantain is due to the spatial price variation. Anthonio (1987), considered a number of factors as influencing the unit transportation cost of bulky product like plantain to include quantity of the plantain, distance to be covered, road condition and season of the year. Writing in the same vein, Ojiugo (1984), stated that the long distance between the production and consumption area of plantain coupled with the poor condition of the roads further add to the negative effects on the market i.e. higher costs to the final consumers.

Obaze (2000), in her studies considered transportation cost to include payments for the use of transport facilities, opportunity cost of using factor inputs in transporting the food commodities rather than for other purposes and allowance for risk of loss.

The cumulative effect of the fore-going market functions, often translate to high costs of marketing and culminates in price differentials at the various markets.

### **2.13 Facilitating Functions**

The facilitating functions make possible the smooth performance of the exchange and physical functions. Olukosi and Isitor (1990), classified the facilitating functions as sorting and standardization; risk bearing and insurance, financing and market intelligence.

Sorting and grading are performed in the marketing of bulky products like plantain (Alex, 1990). He also explained that facilitating functions improve the performance of the marketing system by increasing the operational and price efficiency.

#### **2.14 Price Variation Analysis**

Agricultural production problems can be overcome through introducing new technologies and efficient marketing systems (Adetunji and Adesina, 2008). Obaze (2000) in her study of spatial price relationship stated that spatial price variations are determined largely by transfer cost between regions provided competitive conditions prevail. They stated that prices differ depending on whether production area is near or far away from the principal market area. Price differences between regions or markets cannot exceed transfer cost. The reason for this should be obvious any time the price difference is greater than transfer costs, buyers will purchase commodities from the low priced market and transfer them to the higher priced market thereby raising prices in the former and reducing them in the latter.

Lapido and Adesina (1979) in their contribution said that in countries such as Nigeria where agriculture is predominant, the movement of agricultural prices can have ramifying effect on the economy.

Various studies point to the above findings, and in one of such studies, it was argued that prices explain to a large extent the skewness of a nation's income distribution especially as regards the rural sector. Obaze (2000), in her report of previous studies buttressed this by showing empirically how higher food prices paid by consumers are not being passed back to farmers in significant proportions. Thus understanding the

frequency and amplitude of food price variation is very important in farm production decision making.

Whetham and Currie, (1972), asserted that there might be considerable differences in price of common food such as plantain between adjacent markets. Obaze (2000), identified three form of price movements: inter-market price disparities, differences which can be linked with the problem of inadequate storage facilities and poor market information respectively.

### **CHAPTER THREE**

#### **METHODOLOGY**

### 3.1 Study Area

The study area, Federal Capital Territory (FCT) Abuja, is comprised of six area councils; Abuja Municipal, Bwari, Kuje, Gwagwalada, Kwali and Abaji Area Councils. FCT is located in the North Central geopolitical zone of Nigeria. It has inter-state boundaries with [Nasarawa](#) and Benue to the North-east, [Niger State](#) to the Southwest, [Kaduna State](#) to the North-west and Kogi to the South-east. The major towns in FCT include Abuja the capital city of Nigeria, Gwagwalada, Abaji, Gwarinpa, Nyanyan, Karu, Kubwa, Bwari, Dutse, Kuje, Kwali, Lugbe, Kado, Life camp, etc.

The Federal Capital Territory covers an area of 7,315 square kilometres. It lies between latitude 8°25' and 9°20' North of the equator and longitude 6°45' and 7°39' East of the Greenwich Meridian. It has a population of 1,405,201 ([2006 census figures](#)) and a population density of 190 people per square kilometre. It accounts for 1.3% of Nigeria's total population. The National Population Commission's year 2015 population projection for FCT Abuja is 1,814,048. According to an online report, the huge influx of people into FCT in the past few years has led to rapid growth in population to the tune of 2,245,000 by 2012 making FCT the fourth largest urban area after Lagos, Kano and Ibadan. (WECSI. Abuja, 2014).

The early settlers of the Federal Capital Territory were the Kwa-speaking people of Nigeria's middle belt region.

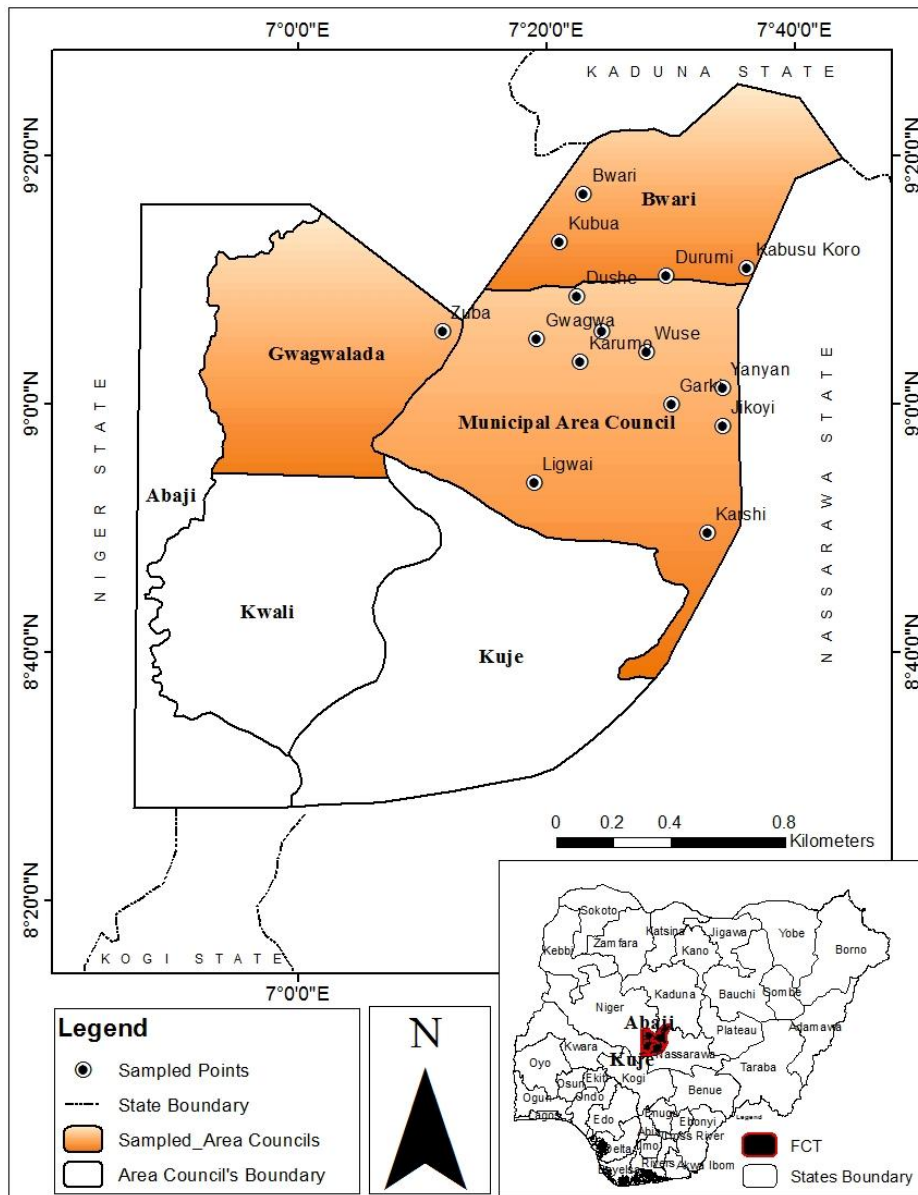
The main ethnic groups in the Federal Capital Territory are the Gbagyi, Koro, Gade, Bassa, Gwandara and Ganagana. Nine languages are spoken in Federal Capital

Territory. The Gbagyi people form the largest ethnic group and the Gbagyi language is the most widespread.

Economic activity in the Federal Capital Territory is centred on agriculture. The area is predominantly savannah with sparse guinea forests in its southern parts. Major crops grown in the area include maize, sorghum, millet, rice, yams, cassava, bananas, groundnuts, cowpeas, soybean, sesame and ginger. The commercial rearing of cattle, sheep, and goats is also an important economic activity. The women engage in fire wood sales, pottery and petty trading in farm produce. Being the Federal capital city of Nigeria, Federal Capital Territory (FCT) enjoys food commodity trade with many states in Nigeria where most of the food commodities are transported by road to satisfy the demand of the teeming population of consumers in area.

The main minerals found in the Federal Capital Territory (FCT) are marble, tin, mica, tantalite, clay, iron ore, gold, lead and talc.

Figure 1, is a map showing the locations of the sampled markets in Abuja area.



**Figure 3.1: Map of Federal Capital Territory Abuja Showing Location of the Sampled Markets**

### 3.2 Sampling Technique and Sample Size

FCT has six area councils namely: Abuja, Bwari, Gwagwalada, Kuje, Kwali and Abaji. Plantain markets for this study were purposively sampled from three out of the six area councils namely: Abuja Municipal, Bwari and Gwagwalada Area Councils. These Area Councils have urban and semi-urban population settlements with markets where plantain traders that has selling point or shop location for their plantain business could be found. The size of the sampled traders in the markets was influenced by the available no of traders that had selling point or shop location where he or she sells plantain. Plantain traders that hawk plantain around in the markets or along the roads were not sampled.

### **3.3 Data Collection**

Systematic random sampling technique was used to select 120 plantain traders made up of wholesalers and retailers from three Area Councils of Federal Capital Territory (FCT). The structured questionnaire were administered by trained enumerators to obtain data for this study. Most of the traders who sell plantain on wholesale i.e. in dozens and tens of dozen bunches of plantain are located in the Zuba fruit depot, and out of the twelve questionnaires administered to the wholesale plantain traders, two were scantily filled and so were discarded while ten were used. Data collected were based on the prevailing price of plantain at the time of the market survey and that was in the month of May which happened to be off-season period of plantain supply. Among the information collected were socio-economic characteristics of plantain traders, scale or volume of plantain traded, source of plantain, seasons of plantain with regard to its implication on prices, existence of organised plantain traders' cooperative or union, source of finance for business, the types of variable marketing costs, how profitable is plantain business and the challenges or constraints to plantain marketing in FCT.

Tables 3.1 and 3.2 respectively shows the distribution of plantain wholesale and retail traders in the 20 purposively selected markets.

Table 3.1: Distribution of Plantain Retail Traders in the Sampled Markets

<b>Markets</b>	<b>Retail Traders</b>
Garki	6
Wuse	7
Utako	7
Area II	6
Area I	7
Durumi	5
Kabusa	5
Lugbe	5
Nyanyan	5
Karu	5
Jikwoyi	5
Karshi	9
Gwarinpa	5
Kubwa	5
Bwari	5
Dutse	5
Karmo	5
Gwagwa	5
Dei-Dei	5
Zuba (Wholesale Market)	3
<b>Total</b>	<b>110</b>

Table 3.2 Distribution of Plantain Wholesalers in the Sampled Markets

<b>Markets</b>	<b>Wholesale Traders</b>
Zuba	7



Garki	1
Utako	1
Nyanyan	1
<b>Total</b>	<b>10</b>

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### 3.4 Analytical Techniques

The following analytical tools were employed to solve objectives 1 to 6:

The socio-economic characteristic of plantain traders that is, Objective 1 was solved using descriptive statistics, frequency, percentages and Tables.

#### 3.4.1 Gini-coefficient

The structure of plantain market, objective 2 was solved by using the Gini coefficient to determine the concentration of the different categories of plantain traders in the market and their share of the trade volume among the plantain traders.

Mathematically, the Gini coefficient is represented as:

$$GC = 1 - \sum_{K=1}^n (X_K - X_{(K-1)}) (Y_K + Y_{(K-1)})$$

$X_K$  = is the cumulated proportion of the proportion of plantain sellers, for  $K = 0, \dots, n$ , with  $X_0 = 0$  and  $X_n = 1$

$Y_K$  = is the cumulated proportion of revenue or total sales, for  $K = 0, \dots, n$ , with  $Y_0 = 0$  and  $Y_n = 1$

Where:

G = Gini coefficient

$\Sigma$  = summation

Y = Cumulative market share or proportion of total sales of plantain sellers

X = Cumulative proportion or population of plantain sellers.

Note that in GC formula above, while first bracket relates to frequency, the second bracket has to do with additions of the cumulative frequencies.

This implies that the lower the Gini-coefficient, the lower the level of concentration and consequently more efficiency in the market structure. Conversely, the higher the Gini-coefficient, the higher the concentration the less efficient the market structure is.

### **3.4.2 Performance of plantain market**

The plantain market performance which is objective three was explained from the outcome of the market structure and conduct, the marketing efficiency ratio and the profit margin. The result of a pure or near perfect competition in the market structure, a high efficiency ratio and a good profit margin is an indication of a good performance in market. The subjective nature of market performance however makes it rather difficult to precisely assess market performance except in general terms.

### **3.4.3 Efficiency of plantain marketing**

The Efficiency of Plantain Marketing (ME) which is objective four was determined by calculating the Ratio of Value Added to the Plantain Produce, to the Costs of Marketing Services expressed in percentage, as depicted below.

$$\text{Market Efficiency (ME)} = \frac{\text{Value Added through Marketing}}{\text{Costs of marketing services}} \times \frac{100}{1}$$

Where:

Value added through Marketing = Retail price or the price consumers pay (i.e. the producers price plus costs of value added to get the plantain to the ultimate consumers).

Costs of Marketing services = Costs of transport, wheel-barrow services and other marketing charges or the 10% commission paid to Commissioned Agents by the retailers or consumers.

Expressed in monetary term as:

$$\text{Marketing Efficiency (ME)} = \frac{\text{Value of Output}}{\text{Value of Inputs}}$$

The higher the ratio or percentage, the more efficient the market is considered to be.

#### 3.4.4 Marketing margin

The Marketing margin is a measure of profit function in business and it is represented

mathematically as:  $MM = \frac{\text{Selling price} - \text{Supply price}}{\text{Selling price}} \times 100$

Comment [u1]:

Analysis of costs and margins of marketing agents in the different channels or price spread is considered a useful means of measuring the market system performance. The size of the marketing margin is affected by the number of marketing chains or the marketing functions performed on the produce. For this study, the marketing functions that significantly affected plantain marketing were transportation costs due partly to its bulkiness, long distance from point of production to place of marketing and the fluctuations in plantain price arising from the seasonality in its production and supply.

#### 3.4.5 Profitability of plantain marketing

Previous studies on plantain show that plantain business or marketing is profitable (Folayan and Bifani (2011)). The profitability of plantain marketing which is objective five was determined using the Return per Capital Invested and Marketing Margin analysis. This is the difference between the retail or consumer price (CP) and the farm-gate or supply price (SP). It is calculated mathematically as:

$$MM = \frac{\text{Selling price} - \text{Supply price}}{\text{Selling price}} \times 100$$

Where:

MM = Marketing Margin

CP = Consumer or Selling Price (N)

SP = Farm-gate or Supply Price (N)

VC = Variable Costs

In this research study, the Variable Costs (VC) were comprised of transportation costs, wheel-barrow services and the 10% commission paid by retailers to the commissioned Agents on any bulk purchases made (1 dozen and above bunches of plantain) at the Plantain wholesale market. Other marketing costs, that is, costs of loading and off-loading, labour, market/Local Government revenues, ground rent or *lada* and the remuneration of the Commissioned Agents are often built into the 10% commission paid for all bulk purchase made at the Zuba fruit depot. Fixed costs (warehousing) were considered to be negligible.

Plantain in the wholesale market are first sorted, packed in dozens and categorized in order of sizes into grades A, B, C, D, and E. During the market survey, these were weighed in dozens to ascertain their weights and the following average weights were obtained; 1 doz. of Grade A plantain = 96kg; Grade B: 90kg; Grade C: 84kg; Grade D:

78kg and Grade E: 54kg. A J5 truck-load of plantain carries an average of 40 dozen bunches of plantain at an average weight of 3.22 tonnes. Other vehicles used for transporting plantain to the fruit deport in Abuja were categorized as 10-tyre-trailers, 8-tyre-trailers and 6-tyre-trucks. The cost of transportation is determined by size of truck/the volume of plantain it conveys, the distance from place of production/condition of the road, period/season and the prevailing transport situation at the time.

The J5 type of truck is however, the most commonly used and the standard means of assessing the volume and cost of plantain transportation. Objective six which is concerned with the constraints to plantain marketing in Federal Capital Territory (FCT) was answered using descriptive statistics, percentages and Tables.

**CHAPTER FOUR**  
**RESULTS AND DISCUSSION**

**4.1 Socio-Economic Characteristics of Plantain Traders**

**4.1.1 Age of traders**

The age of the respondents was analysed by using frequency, percentages and Tables. Plantain traders were more within the age bracket of 26-35 years, followed by those between 46-55 years and then ages 36-45 years as shown in table 4.1 below. The study revealed that almost all the plantain traders fell within the active age of 15-64 years; defined by FAO (1992) as economically productive population.

Table 4. 1 Age distribution of Traders

<b>Age</b>	<b>Frequency</b>	<b>Percentages</b>
15-25	11	9
26-35	36	30
35-45	27	22
46-55	30	25
56-65	8	7
No response	8	7
<b>Total</b>	<b>120</b>	<b>100</b>
Mean age	39.3	
Minimum age	15	
Maximum age	60	

**4.1.2 Sex of traders**

The result of the market survey revealed that female traders dominate plantain retail trading business (83%). Among the wholesalers however, the male traders were more than the female. The reason may be due to the volume of plantain (truck loads) the

wholesalers handle whereas the retailers sell less volume of plantain (in bunches). This does not however go in line with a similar study done in Kaduna Metropolis by Ariyo, *et al* (2013) where 64% of the plantain traders were male. His reason was attributed to the fact that some women in the study area were restricted to household activities by their religious stand.

#### 4.1.3 Level of education of traders

About 56 percent of the traders have secondary education; about 32 percent traders have primary education while 7.5% has tertiary education. The study has shown that majority of plantain traders in Federal Capital Territory (FCT) have formal education as it is reflected on table 4.2 below. This supports the study of Ariyo *et al.* (2013) whose findings revealed that over 87% of the plantain traders in Kaduna had formal education. The implication of the result is that plantain traders are enlightened, such would easily adapt to new innovations in marketing which will translate into more efficient performance in marketing.

Table 4.2 Level of education of plantain traders

<b>Response</b>	<b>No of Marketers</b>	<b>Percentages</b>
Tertiary education	9	7.5
Secondary education	67	55.84
Primary education	38	31.66
No formal education	6	5
<b>Total</b>	<b>120</b>	<b>100</b>

#### 4.1.4 Experience in plantain trading business

Table 4.3 describes the years of experience in plantain business. Plantain traders who came into the business in the past five years were 51%, this was closely followed by those that came into the business in the last six to ten years being 23%. The result revealed increase or steady growth in the number of plantain traders in Federal Capital Territory (FCT) in the last ten years. The growth may be due to favourable business conditions in plantain marketing or growth in demand as a result of growth in the population of FCT Abuja. A similar pattern of growth was observed in Kaduna state in the research study by Ariyo, *et al.* (2013).

Table 4.3 Years of experience in plantain Business

<b>Average No of Years</b>	<b>No of Marketers</b>	<b>Percentages</b>
1 – 5	61	51
6 – 10	28	23
11 – 15	10	8
16 – 20	13	11
21 – 25	5	4
26 and above	3	3
<b>Total</b>	<b>120</b>	<b>100</b>
Mean = 8		
Minimum = 1		
Maximum = 28		

#### 4.1.5 Scale or volume of business

The percentage of retail traders in plantain business was 91.7 while only 8.3% are involved at the wholesale scale. It shows that retail plantain traders in Federal Capital Territory (FCT) Abuja dominate the plantain business and most of the traders sell in bunches and clusters of plantain fingers. The picture this conveys is that of a pure



competitive market structure for the retailers. These traders buy plantain in dozens of bunches and sell as retailers to restaurant operators, food vendors, hoteliers, individual etc. average sales per day is half a dozen to three dozens. On the other hand, only 8.3% (wholesale) traders serve the over 90% retail traders. This situation does not conform to similar research study by Ashiko (2014) on analysis of interstate Marketing of Sweet Orange between Benue and Kano states where the orange wholesaler were much more than the retailers thus making the market structure pure oligopoly.

#### **4.1.6 Sundry lessons about traders and plantain business.**

This study revealed that most of the plantain retail traders sell a range of other food commodities in addition to plantain. These food commodities varies from plantain flour to dried plantain chips, bananas, garri, fufu, beans, rice, Irish and sweet potato, yam, smoked fish, stock-fish, pomo, fruits and vegetables, coconut, onions, snail, pepper, etc. The implication of plantain traders trading on multiple commodities in addition to Plantain has its challenges, and opportunities. While it affords the traders maximum use of their limited resources such as shop space, capital, costs of transportation and marketing services and minimizing of business risks, it tend to side-tract the concentration, specialization and growth in the business of plantain with regard to scale and business management. For example, such traders do not keep records of income and revenue account for the different commodities they sell as such it is difficult to assess the profits or losses incurred on each commodity being traded upon. Most of the wholesale traders on the other hand, practice sole plantain trading at the Zuba fruit market.

This survey equally revealed customer preference for some varieties of plantain their better pulp quality as was reported by most of the respondents. This has implication for production and producers.

Data from the market survey revealed that there was no significant difference in the price of ripe plantain and unripe plantain. Reasons for possible price difference depend on the quantity of ripe or unripe plantain that is available in the market at a given time in relation to the demand. While the ripe plantain is sweet and ready for use by those who fry and eat it as dodo, chips, and so on, the unripe plantain on the hand is preferred by many people for its health and nutritional benefits. To those with diabetes related conditions the unripe plantain which has crude protein with minerals like iron, calcium, potassium and its characteristic low sodium content makes a very a very good substitute for common staples like cassava, yam and rice. The ripe plantain pose greater challenge of perishability to retailers if it is not sold in good time leading to losses in income of the retailers, the green unripe plantain has no perishability challenges.

All but one retailer that responded to our survey could not afford to engage a sales girl on a salary of about N25, 000.00/month. On the other hand, all the plantain wholesalers that responded had Commissioned Agents with their boys whose remunerations are paid to assist in sorting, grading and packing the plantain bunches for sale in dozens according to size or physical condition. This gives the impression that the plantain wholesalers are more financially buoyant than the plantain retail traders.

Out of the three important marketing cost items borne by plantain traders, transportation ranked highest followed by the problem of perishability and then warehousing. A

number of factors are responsible for the burden of transportation costs; namely, bulkiness of plantain, distance between place of production and place of marketing and occasional hike in fuel price due to scarcity. Even within Abuja, the plantain depot is located far away from Abuja city centre where the markets are located so traders go to the fruit depot at Zuba almost on daily basis to buy plantain in piecemeal (few dozens) in an effort to avert the perishability challenge of unsold left-over stock. Perishability though a challenge, traders try to minimize it by stocking in piece-meal each day to avoid cases of unsold surplus. Plantain retail traders have no problem of warehousing. This is because most of them sell other food commodities in addition to plantain thus sharing the cost of shop rent among the commodities they sell.

#### **4.1.7 Sources of plantain and seasonality in supply**

Plantain farmers and merchants from Edo, Delta, Ondo, Cross River, Kogi States and Federal Capital Territory (FCT) supply the Zuba fruits market with truck-loads of plantain where the retailers from all over Federal Capital Territory (FCT) and neighboring states come to buy. Most of the plantain wholesalers and merchants act as village collectors and assemblers who are assisted to sell at the depot by the Commissioned Agents 'Delali'. The study revealed that plantain from Edo, Delta, Cross River and Ondo states attract higher prices than the Gwari plantain (from Kogi and Abuja) due to their pulp quality coupled with the high transportation costs. There is however no clear difference in the physical appearance of the Gwari plantain and the plantain from the rain forest ecological zone except if identified by an experienced plantain trader. It is at processing and eating that the difference becomes clear. Consumers ignorantly buy Gwari type of plantain only to find out later some difference in the pulp colour and quality. This study equally revealed that plantain production and

supply is seasonal, bulky and perishable all of which accounts for low marketing margin. The bulky nature of plantain translates into high transport cost; these characteristics pose some challenges which affect its market price. The peak season is between October to January and plantain is very cheap at this period; traders sell more as plantain becomes affordable to more consumers and as such traders derive more income from plantain business during this period. On the other hand, the lean or scarce period of supply is between May to July, market price is hiked; number of plantain consumers reduce while volume of trade and income generation to traders is also reduced.

#### **4.2. Structure of plantain market in Federal Capital Territory (FCT)**

The market survey revealed that there were many sellers and buyers; being an agricultural produce, plantain is a homogenous and standardized commodity, there were no restrictions to entry into or exit from the plantain business thus making it open to market participants to compete. There was also a good degree of exchange of market information on prices, seasonality of supply, transportation dynamics etc. among the traders. This might be due to the fact that most of the retailers and wholesalers had formal education and were enlightened. Most of the plantain traders obtained their goods from the same source (Zuba fruit depot for the retailers while the wholesalers got their supplies from the five major plantain producing states (Edo, Delta, Ondo, Cross River, Kogi, plus Abuja).

In order to determine the plantain traders' concentration in the market with regards to their share of the total volume of trade, the Gini-coefficient analytical tool was used. The Gini-coefficient was calculated to be 0.38 indicating equitable distribution of the

market share into the hands of plantain traders as shown on Table 4.4. The Gini-coefficient and the descriptive statistics, revealed that plantain market in FCT Abuja is a pure competitive market in structure. This result agrees with the findings of Eronmwon, *et. al.* (2014) in their studies on structure, conduct and performance of plantain marketing in Edo state, Nigeria and confirms the research studies of Oladejo and Sanusi (2008) conducted in Ose and Owo Local Government Areas of Ondo state.

Mathematically, the Gini coefficient formula is shown below:

$G = 1 - \frac{\sum_{K=1}^n (X_K - X_{(K-1)}) (Y_K + Y_{(K-1)})}{2n \sum_{K=1}^n X_K Y_K}$  and the calculation is on Table 4.4.

**Table 4.4: Concentration of different categories of retail traders in the market**

Plantain Trader	Proportion	cummulative Proportion ( $X_k$ )	Revenue	Market Share	Cummulative Market Share ( $Y_k$ )	$X_k - X_{k-1}$	$Y_k + Y_{k-1}$	$(X_k - X_{k-1})(Y_k + Y_{k-1})$
0	0	0	0	0	0	0	0	0
10	0.090909091	0.090909091	72,000	0.014778325	0.014778325	0.090909091	0.014778325	0.001343484
40	0.363636364	0.454545455	720,000	0.147783251	0.162561576	0.363636364	0.177339901	0.064487237
35	0.318181818	0.772727273	1,680,000	0.344827586	0.507389163	0.318181818	0.669950739	0.213166144
20	0.181818182	0.954545455	1,800,000	0.369458128	0.876847291	0.181818182	1.384236453	0.251679355
5	0.045454545	1	600,000	0.123152709	1	0.045454545	1.876847291	0.08531124
110	1		4,872,000	1		1	4.123152709	0.615987461
<b>Gini's Concentration Ratio =</b>								<b>0.384012539</b>

#### **4.2.1 Role of plantain traders' cooperative group in the conduct of plantain business**

Over 70% of the plantain traders did not belong to a functioning traders' cooperative group but about 30% belong to some traders' cooperative groups that are not so strong.

The Registered Commission Agents that work with the wholesale Suppliers (farmers/merchants) that supply fruit commodities to Zuba fruit depot have a strong and functional cooperative union. Plantain wholesale traders operate under this big umbrella of the 'Fruit Traders' Union' that oversees the conduct of plantain business in this market.

The plantain wholesale traders' union promotes the wellbeing of its members (Plantain wholesalers) in every respect by fostering cordial business relationship along the plantain value chain of suppliers, processors, transporters, retailers/consumers, finance agencies and the government authorities. They equally see to the physical condition of the market and support the local government in the physical development of the fruit market. The unions regulate and control the quality of plantain that is sold outside Nigeria from that depot and link plantain producers and suppliers to market outlets. It protect members from being exploited, ensure their adherence to good marketing practices, act as credit guarantors for them, organize capacity building programme/activities for them as well as assist those that have challenges.

However, the strict involvement of a limited number of Registered Commissioned Agents (about 25) in plantain wholesalers business transactions in the Zuba Fruit depot puts a kind of regulation and control on the free entering into plantain wholesalers' operations in that market. In relation to the large number of retailers and consumers that

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come to buy plantain in this market, this situation of plantain wholesalers in Zuba fruit depot portrays pure oligopoly in structure.

The survey revealed that plantain retailers in some of the markets enjoy some business protection through the activities of the market tax forces. They are put in place by the market authorities to restrict unauthorized traders that hawk their goods around to prevent them from selling in the market. This is because such hawkers intercept customers from the legitimate traders who pay exorbitant shop rent and other market maintenance fees from selling their wares, as such plantain retailers who are unable to sell their ripened plantain are forced to sell off their plantain at give-away prices (at no profit, at less than cost price in order not lose out completely). This is one of the challenges faced by the plantain retail traders and which is not the case with the wholesale plantain traders.

The benefits enjoyed by plantain traders who belong to the functioning plantain traders' cooperative groups are shown on the Table 4.5.

#### **4.3 Performance of plantain market in Federal Capital Territory (FCT) Abuja**

The performance of plantain market in Abuja was determined using the outcomes of the market structure, marketing efficiency ratio and the analysis of the profitability function of plantain marketing.

The competitive nature of the market structure of plantain business and the calculated Gini coefficient (0.38) showed low concentration of plantain business in the hands of few traders and an even distribution of the volume of market share among the various categories of plantain traders is an indication of good performance. The high efficiency



ratios of 234% and 196% (Viz. Tables 4.5 and 4.6) for retail and wholesale trade respectively shows that plantain market performance is good. The fact that the analysis of profitability of plantain business showed that for every N1 invested, 35k and 33k are realized respectively for retail and wholesale plantain business scale are proofs of the good performance of plantain marketing in FCT Abuja. Similar conclusion was drawn by Eronmwon *et.al.* (2014) in their studies in Benin, Edo state.

Table 4.5: Benefits of Plantain Traders' Cooperative Members.

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Protect the traders Help in time of fund constrain to	1	2.86
enable members	3	8.58
obtain funds to continue in business		
Prevents non-members not to sell in the market	2	5.72
Members help in bulk purchase on behalf of others	1	2.86
They settle misunderstanding among members	1	2.86
Nothing really/No benefit	20	57.15
Help to regulate price hike	3	8.58
Help to boost sales	1	2.86
Help in business training	1	2.86
They help members to solve their problem	1	2.86
Repair of the physical market	1	2.86
<b>Total</b>	<b>35</b>	<b>29.6</b>

#### 4.4 Marketing Efficiency of Plantain Marketing in FCT Abuja

Marketing efficiency was determined by calculating the ratio of the value added to the plantain produce, to the cost of marketing services to get it to the consumers and expressed in percentage. The higher the percentage, the more efficient the market is considered to be. The costs items in plantain wholesale and Retail marketing include;

transportation costs, cost of wheel-barrow services, 10% Commission paid to the Commissioned Agents to take care of other marketing costs such as loading/off loading, sorting/grading/packing services. An attempt was made to calculate the Plantain Marketing Efficiency from the information gotten from the market survey respondents. A plantain retailer from among the sampled traders and wholesaler from among the sampled traders were analyzed. The analysis is as shown on Tables 4.6 and 4.7. The cost of warehousing (shop rent) and Union membership fee were considered to be negligible. The retailer had a marketing efficiency (ME) ratio of 234% while the wholesaler had a ME ratio of 196%.

Table 4.6: Efficiency of Plantain Marketing-Retail scale:

<b>Marketing cost Items</b>	<b>Costs (₦)</b>
Purchase Cost of 100kg (1doz) of plantain by a retailer	22,000
Marketing Costs:	
10% commission	2,200
Cost of Transport	800
Wheel-barrow service	200
Warehousing (shop Rent)	Negligible
Selling Price of 100kg of plantain to consumers	29,500
Value Added to Plantain	7,500
Cost of Value Added	3,200
<b>Coefficient of Marketing Efficiency ME (%)</b>	<b>234%</b>

Table 4.7: Marketing Efficiency of Plantain Wholesale Trade:

<b>Marketing cost Items</b>	<b>Costs (₦)</b>
Average. Cost of 3.5Mt of Plantain (1 Truck Load)	250,000
Marketing Costs:	
10% Commission (this is borne by bulk buyers - retailers )	25,000
Transport cost	50,000
Loading/Off-loading	6,000
Value of Output (Price paid by the consumer)	360,000
Value Added to Plantain	110,000
Cost of Value Added	56,000
<b>Co-efficient of Marketing Efficiency ME (%)</b>	<b>196%</b>

#### 4.4 Profitability of Plantain Marketing in FCT Abuja

Cost and Return analysis was employed to achieve objective five of this study i.e. to determine the profitability of plantain marketing in Federal Capital Territory (FCT) Abuja. This is calculated using the formula below:

(i) Return Per Capital Invested (RPCI) This is given as Net Return or Net Income divided by Total Marketing costs  $RPCI = \frac{NR \text{ or } NI}{TMC}$

(ii) Marketing Margins analysis: This is calculated using the formula below:

$$MM = \frac{\text{Selling price} - \text{Supply price}}{\text{Selling price}} \times 100$$

Table 4.8: Profitability Analysis of Plantain Marketing (Wholesale Trader):

<b>Marketing Services</b>	<b>Marketing Costs (₦)</b>
Supply Cost of 3.5 Tones (1 Truck load) of Plantain	250,000
<b>Costs of marketing services</b>	
10% Commission ( <b>this is borne by bulk buyers - retailers</b> )	<b>25,000</b>
Transport cost	50,000
Wheelbarrow Service	3,000
Paid helpers to sort, pack & grade	3,000
Lada (ground rent)	600
Annual Union Membership Fee	negligible
Total Marketing Costs	56,600
<b>Total Cost of plantain</b>	<b>306,600</b>
<b>Selling Price of 1 truck load of Plantain (NR or NI)</b>	<b>375,000</b>
Profit (Net Revenue or Net Income – Total Cost of Plantain)	68,400
<b>Return per Capital Invested (RPCI)</b>	<b>22</b>
<b>Marketing Margin (%)</b>	<b>33</b>

Table 4.9: Profitability Analysis of Plantain Marketing (Retail Trader):

<b>Marketing Services</b>	<b>Marketing Costs (₦)</b>
Supply price of 90kg (1doz) of plantain	16,000
Marketing Costs:	
10% commission	1,600
Cost of Transport	600
Wheel-barrow service	200
Warehousing (shop Rent)	negligible
Total Marketing Costs	2400
<b>Total cost plantain</b>	<b>18,400</b>
<b>Selling Price, (NR or NI)</b>	<b>28,500</b>
Profit (Net Revenue or Net Income – Total Cost of Plantain)	10,100
<b>RPCI (Profit divided by Total cost)</b>	<b>0.55</b>
<b>Marketing Margin (MM)</b>	<b>0.44</b>

An attempt was made to calculate the marketing Margin (Profitability) of plantain marketing from the information gotten from the market survey respondents; plantain retailers and wholesaler. These were analyzed as shown on Tables 4.8 and 4.9 the results revealed that marketing of plantain is profitable in FCT Abuja as return per Naira invested gave a profit of 44k and 55k profit for wholesale and retail scale of plantain business, respectively. While the calculated marketing margin was 34k and 44k per Naira invested for the wholesale and retail respectively.

Fixed costs such as warehousing or shop rent were not included in the calculation they had negligible value.

#### **4.6 Constraints to Plantain Marketing in FCT Abuja**

- i. Transportation: The major challenge facing plantain traders being high costs of transportation constitute a good proportion of the marketing costs due to bad roads, long distance between place of production and place of marketing. This agrees with the findings of Ariyo *at al.* (2013) in their study on Profitability of plantain marketing in Kaduna metropolis that transportation costs ranked highest among the various marketing costs borne by traders.
- ii. The high perishability nature of plantain is another major challenge of plantain traders was equally supported by the findings of the above Authors.
- iii. Ware-housing was not considered a major constraint since most of the retailers handle manageable size stock of plantain in a bid to beat the challenge of Perishability. Other constraints include:
- iv. The plantain retailers have no active cooperative group that can organized the traders into a marketing cooperative in most of the markets. As such they are not able to enjoy some privileges such as access to funds or credit facility for lack of security, capacity building on modern marketing strategies, cold room for plantain storage in the market to minimize the problem perishability etc.
- v. Many of the plantain traders are not meticulous in keeping separate records of incomes and expenditures that can help them understand the profitability level of the plantain business. This was compounded by the fact that most of the retail traders sell other food commodities apart from plantain and in most cases cannot clearly

demarcate the incomes from plantain from that of other food commodities they sell. Most of the traders complained about insufficient capital to expand their plantain business but opted to make do with their small personal savings rather than take bank loans due to the high bank interest rate.

- vi. The plantain traders appealed to the government to provide better roads and institute policies that will improve the availability of fuel so as to reduce high costs of transportation.

Table 4.10: Factors Militating Against Plantain Marketing in FCT.

<b>Factors</b>	<b>Frequency</b>	<b>Percentage</b>
Transport costs	118	75.5
Losses due ease of spoilage (High Perishability)	32	20.6
Cost of Warehousing	6	3.8
<b>Total</b>	<b>156</b>	<b>100</b>

NOTE: Multiple Response Allowed

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Summary**

Federal Capital Territory, Abuja, the nation's capital is one of the rapidly growing urban cities in Nigeria with regard to infrastructure, business/commercial activities and population. The growing population of Federal Capital Territory (FCT), places the territory in a position of a good market prospect for various products and food commodities such as plantain, rice, yam, garri, beans etc.

This research study on Economic Analysis of Plantain Marketing in Abuja was carried out to ascertain plantain market structure, efficiency, performance and to determine the profitability of plantain business in Federal Capital Territory (FCT). The socio-economic characteristics of plantain traders and the various constraints militating against plantain marketing in Abuja were also assessed.

Twenty markets from three Area Councils in Abuja were purposively selected. Well-structured questionnaire were then administered by trained enumerators to plantain traders using systematic random sampling technique to collect data from 120 plantain traders that has point of selling plantain in the 20 markets based on the population of plantain traders in these markets.

The data collected were analyzed using descriptive statistics such as tables, frequency distribution and percentages for the socio-economic characteristics of plantain traders; the Gini-coefficient, marketing efficiency ratio, marketing margins and costs and



returns analysis were used to determine the structure, performance, efficiency and profitability of plantain business in Federal Capital Territory.

The socio-economic characteristics of the plantain traders in Federal Capital Territory revealed that over 95% of the plantain traders had formal education and all respondents were within the productive age bracket of 15-64 (FAO 1992). Plantain wholesalers were dominated by male traders while female traders dominated the retail trade. Most of the traders sourced their capital for plantain business from personal and family savings. More traders came into plantain business in the last five years (51%) and ten years (23%). Similar result was obtained in Kaduna state in the research study of Ariyo *at al.* (2013) on the Profitability analysis of plantain marketing in Kaduna Metropolis. The reason may be due to the growing population or due to good business environment. The major constraints to plantain marketing in Federal Capital Territory (FCT), Abuja were high costs of transportation (89%), problem of deterioration in quality/spoilage, seasonal price fluctuations (10%), lack of sufficient capital for most of the traders and lack of standard means of grading and valuing plantain quality and quantity.

The results indicated that plantain market was characterized by many retailers and buyers thus reflecting a pure competitive market structure. There were no restrictions to entry into or exit from plantain retail business and there was a good flow of market information among the traders. The result of the calculated Gini coefficient was 0.38 which indicated low concentration of the volume of plantain business in the hands of few traders or an even distribution of the volume of plantain business among the plantain traders. The plantain wholesale business was concentrated at the Zuba fruit depot Abuja. Here, plantain is sold mainly in bulk (dozens and tens of dozens of

plantain bunches) to the retailers and large scale consumers such as hotels and restaurant operators. There were no wholesale plantain traders among the respondents in sixteen of the twenty sampled markets but there was one wholesale plantain trader sampled in Garki, Utako and Nyanya markets respectively who operates some level of 'small scale' wholesale selling in these markets (i.e. 1 or more dozens of plantain bunches to retailers who cannot afford to go to the fruit market due to their limited business capital).

Although the number of plantain merchants and farmers who bring truck-loads of plantain to sell in the Zuba fruit depot were not restricted, but they must go by the rule of the Zuba fruit market, sell their wares with the help of the Registered Commissioned Agents. This to some extent, introduces some level of control in the free entry into the market by wholesalers. This tend to portray an oligopolistic trend in the market structure at the Zuba fruit market because the Commissioned Agents are limited in number when compared to the number of people who patronize the wholesalers.

The marketing efficiency was calculated to be 234% for the retail and 196% for the wholesale trade respectively. This reveals an efficient marketing system.

Marketing margins and Return per Capital Investment on plantain business was employed to determine the profitability of plantain business in FCT Abuja. The result revealed that plantain business is profitable in FCT, Abuja because for every N1.00 invested, the trader realizes 22k and 55k as profit for wholesale and retail trade respectively. The calculated marketing margin was 33k and 44k for wholesale and retail

traders. These results is an indication that plantain marketing in FCT Abuja is competitive, efficient and profitable which translates to a good market performance.

The major constraints or challenges facing plantain marketing is the high cost of transportation, problem of high perishability, lack of sufficient capital for most of the traders, seasonal price fluctuations and lack of standard measurement of money value of plantain.

## **5.2 Conclusion**

This research study has been able to determine that plantain marketing is competitive, efficient, profitable and in a state of good performance in Federal Capital Territory (FCT) Abuja. With regard to the fast growing population of Federal Capital Territory (FCT), the prospects of plantain marketing is high. It is therefore a good business opportunities for creating employment for many Nigerians to become actors in the plantain value chain (as inputs dealers, farmers, marketers, transporters and processors).

## **5.3 Recommendations**

Based on the findings of this research study, the following recommendations are made:

- i. More actors should come into the plantain value chain business as farmers for increase in production output, transporters and marketers.
- ii. The various levels of governments should give serious attention to the challenges posed by high costs of transportation by constructing access roads

network to link farm-gates in the rural areas to market locations in the urban centers.

- iii. Federal and State Ministries of Agriculture should promote plantain production to meet the increasing market demand for local consumption, plantain processing industries and export markets.
- iv. The Ministry of Trade and Investment should encourage value addition to plantain produce in order to avoid the challenge posed by its high rate of perishability.
- v. Investors should establish cool storage for plantain marketers to minimize the risk of deterioration in plantain in the markets at a moderate fee.
- vi. The government should put up favourable credit policies that would encourage plantain traders to take loans for their business expansion.

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#### **5.4 Contribution of the Study to Knowledge**

This study has been able to establish that Plantain business in Federal Capital Territory (FCT) Abuja is competitive, and efficient with an efficiency ratio of 234% and 196% for retail and wholesale scale of plantain business respectively. That plantain business in Abuja is profitable as N1.00 invested brings in a profit of 34k -55k as return on investment.

### **5.5 Suggestion for further studies**

For the purpose of further studies, Plantain processed products should be addressed as this will provide diversified market to plantain produce.

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**APPENDIX I: RESEARCH QUESTIONNAIRE ON PLANTAIN TRADERS**

Interviewer:..... Date of Interview:.....

Market/Place:.....

Time Started:.....Time Ended.....

**(A) BACKGROUND INFORMATION**

1 Name (optional):.....

2 Age:..... (3) Sex:.....

4 Highest educational level attained:  
(i) Tertiary institution (Specify).....  
(ii) Secondary school [ ]  
(iii) Primary School [ ]  
(iv) No formal education [ ]

5 How long have you been trading on plantain business?.....

6 Do you trade solely on plantain? Yes [ ] No [ ]

7 If no, what other food commodities do you trade on (specify).....

8 In what quantities do you trade on plantain  
(a) Wholesale i.e. in dozens or pick-up loads [ ]  
(b) Retail i.e. bunches or plantain finger clusters [ ]

**(B) STRUCTURE AND PERFORMANCE OF PLANTAIN MARKET**

9 From where do you buy your plantain for sale?  
(a) Directly from local farmers in where.....  
(b) From plantain bulk merchants in where.....  
(c) From plantain depot in the market in where.....

10 Do you have plantain traders' union in this market? Yes [ ] No [ ]

11 Are you a member and for how long have you been a member?.....

12 In what ways does your membership benefit your plantain business?  
.....  
.....

13 If not a member, give reasons why you are not a member of the plantain traders' union?.....

- 14 Is membership optional? Yes [ ] No [ ]
- 15 In what ways does your non-membership help or hinder your plantain business?  
 .....  
 .....
- 16 Do you have certain types of plantain that are better preferred by customers?  
 Yes [ ] No [ ]
- 17 If yes, specify.....
- 18 Is there much difference between the price paid for green and for ripe plantain?  
 Yes [ ] No [ ]  
 If yes why.....
- 19 When is the peak period of plantain supply to the market?.....  
 And when is the low period of supply to the market?.....
- 20 How does this affect plantain market price, the quantity of plantain traded and the profit you make?.....  
 (a) Peak supply period = fall in price, more quantity sold and more revenue profit realized  
 (b) Low supply period = rise in price, less quantity sold and less revenue profit realized  
 (c) Peak supply period = fall in price, more quantity sold but less revenue/profit realized  
 (d) Low supply period = rise in price, less quantity sold but more revenue/profit realized.
- 21 Among the cost items you incur in plantain marketing, which of the set of option(s) in order of being a challenge (as it is arranged below) most applies to your situation?  
 (a) Transportation costs, ware-housing costs and losses due to ease of spoilage  
 (b) Ware-housing costs, losses due to ease of spoilage and transportation costs  
 (c) Losses due to ease of spoilage, transportation costs, and ware-housing costs.  
 (d) Others (specify).....
22. Do you have paid sales boys or girls? Yes [ ] No [ ]
23. How do you pay them? (in cash) (on commission)
24. Time of resumption a.m..... and time of closing.....p.m in the market

**(C) FINANCE**

- 25 What is your source of finance for plantain trading?  
(a) Personal/family savings [ ]  
(b) Borrowed from local borrowers [ ]  
(c) Borrowed from micro-finance banks [ ]  
(d) From commercial banks [ ]
- 26 How does sourcing of funds favour/boost or limit/pose challenge to your plantain (explain)?.....
- 27 Do you think you could do better with more funds? Yes , How [ ] No [ ]  
If yes How.....
- 28 Costs, Returns and profitability of selling 1 dozen bunches of plantain Retail)  
1. Average cost of 1 dozen plantain =  
2. Average costs of transportation =  
3. Average costs of ware-housing/other expenses =  
4. Total costs incurred =  
5. Total amount sold =
29. Costs, returns and profitability of selling 1 pick-up load of plantain (wholesale)  
1. Average cost of 1 dozen plantain =  
2. Average costs of transportation =  
3. Average costs of ware-housing/other expenses =  
4. Total costs incurred =  
5. Total amount sold =
- 30 What are your challenges in this plantain business.....  
.....  
.....
- 31 What solutions would you suggest to these challenges?.....  
.....  
.....