

**ASSESSMENT OF THE EXTENSION SERVICE DELIVERY ON THE VALUE  
CHAIN OF PLANTAIN PRODUCTS IN EKITI STATE, NIGERIA**

**BY**

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**A PROJECT WORK SUBMITTED TO THE DEPARTMENT OF AGRICULTURAL  
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(B. AGRIC) DEGREE IN AGRICULTURAL ECONOMICS AND EXTENSION**

**DECLARATION**

I Temitope Damilola AYENI hereby declare that this project "Assessment of the Extension Service Delivery on the Value chain of Plantain Products in Ekiti State" has been written by me and it is a result of my own research work. It has not been presented before in any previous project presentations. All borrowed and used ideas have been rightfully acknowledged and referenced



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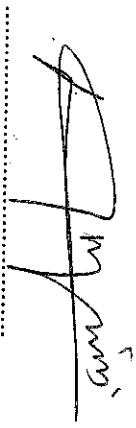
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**CERTIFICATION**

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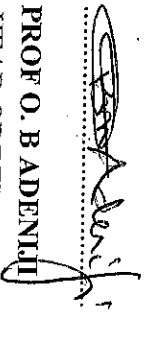
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## **DEDICATION**

This project work is dedicated to the all sufficient God for His endless love and for seeing me throughout my programme, my parent for their support, prayers and love throughout my entire programme.

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## ABSTRACT

This study assessed the extension service delivery on the value chain of plantain product in Ekiti State, Nigeria. It specifically examined the socio-economic characteristics of plantain farmers, marketers and consumers in the study area, the factors that determine the price of plantain in the study area, examined the factors that boost the demand for plantain product, analyze how the packaging of plantain product affects the marketing of its products and the constraints faced by the plantain farmers. Primary data for this study were collected through the use of a well structured questionnaire and interview process. A simple random sampling was used to select 70 respondents which include 30 producers (farmers), 20 marketers of plantain product and 20 consumers of plantain products. Data for the study was analyzed using descriptive statistics which includes cross tabulations, frequency tables, averages, percentages, mean and correlations. The results of analysis of socio-economic characteristics of respondents in the study area revealed that the mean age of the consumers of plantain product was 25.75; it was revealed that 75% of the respondents are single. Married women dominated plantain marketing with 95% of the respondents being female while only 5% of the respondents were male. Majority of the respondents 65% used open space as their selling points. In addition, the mean age of plantain farmers in the study area was 49.73; there is no adequate extension contact which brings about little or no knowledge about farm operations. This study also reveals that there are some certain problems faced by the farmers on the farm which in turn results to low productivity. The study therefore recommends that there should be effective extension workers supervision so that farmers can acquire adequate knowledge on the production of plantain through adequate training or organization of agricultural extension

## CHAPTER ONE

### 1.0 Background to the Study

Plantain originated in South India and moved to South East Africa, from where it spread to West and Central Africa. It is believed to be the oldest cultivated fruit in West and Central Africa. Plantain is grown as a staple food in 52 countries across the globe on about 12.5 million acres (FAOSTAT, 2004). It is among the foremost sources of carbohydrates in humid tropical Africa and contained 35% CHO, 0.2 to 0.5% fats, 1.2% protein, and 0.8% ash (International Institute for Banana and Plantain, 2008). In terms of gross value of production, plantain is one of the most important fruits in the developing world. Central Bank of Nigeria (2003) indicated that plantain is one of the major staple foods in Nigeria, it had the highest percentage increase in output over years 1999 to 2003, implying the existence of market potential and increased production in the country. Nigeria is the highest producer of plantain in West Africa with annual production of about 2.4 million metric tonnes mostly obtained from the southern states (IIBP, 2008). Plantain is produced in large quantities in Edo, Delta, Ogun, Ekiti, and Ondo State. Other producing states are River State, Cross River, Imo, Plateau, Kogi, Abia and Enugu.

Plantain is one of the major crops of smallholder farmers in Nigeria. It is produced both for food consumption in the households and for cash through its transformation into various products that are marketed. To improve the plantain value chain and for better impact on poverty and nutrition (i.e. to effectively deliver valuable plantain products to the market, and to customers). There is need to boost its production and tackle some of the shortcomings in

about 80% of Nigeria agricultural output. The crop is grown on homestead and recently in small plantation for the commercial market (IITA, 2010). As one of the major staple food in Nigeria, plantain products in the chefs of many Nigeria families include dodo (fried ripe pulp), chip (fried unripe pulp) and as plantain flour (Frison and Shamrock, 1998). There is a great potential for the processing of plantain. It could be processed to food/foodstuffs such as breakfast cereals, baby food, (soymusa), flour, chips and snacks food. Industrial products of plantain processing include wine/beer, syrups, vinegar, and biscuit, etc. (IIBP, 2008). It is normally processed into convenient form as dodo (fried ripe pulp), chips (fried unripe pulp) and flour. It can also be eaten raw (ripe pulp), as well as *Dodo Ikiye* (produced from over-ripped plantain). Plantain also has medicinal properties. It can be used to cure ailments like sore throat and tonsillitis, diarrhoea and vomiting (Frison and Shamrock, 1998). Soya Musa is used in treating Kwashiorkor. It is used to clear mucous, treat lung conditions and ease bladder infection. In addition, plantain has been found to be a powerful antitoxin used to neutralize poison (Frison and Shamrock, 1998). The availability of plantain fruits as raw material will thus stimulate the establishment of plantain processing industries which will ultimately help in achieving self-sufficiency in food production. Working in plantain related industry has the dynamic and educative effects of introducing modern technology and organizational skills into the traditional economy (Frison and Shamrock, 1998). It enhances development as the establishment of plantain and the subsequent establishment of plantain agro-industries projects in the rural areas will help to bring about a more balanced development which is one of the national industrial objective of promoting even-development and fair distribution of industries in all part of the country. There is no doubt

producing most of the crop (Yayock *et al.* 1988). Musa spp, a plant genus of extraordinary significance to in terms of cost per hectare, per tonne and per unit of food energy, plantains are the cheapest staple food to produce (IITA 1990). It serves as a useful crop for small scale farmers and co-exists easily with established farming systems (Edeogbon and Okoedo Okojie, 2011).

Value chain describe the full range of activities and participants involved in moving agricultural products from input suppliers to farmers' fields, and ultimately, to consumers (Miller and Jones, 2010). Its approach presents a good picture of the process of creating value. An agricultural value chain is considered as an economic unit of analysis of a particular commodity or group of related commodities that encompasses a meaningful grouping of economic activities that are linked vertically by market relationships (Getachew, 2012).

Agricultural Extension worker plays an important role in educating farmers on plantain production in the selected state in Nigeria. The delivery systems that matter most in dealing with farmers are the subject matter specialists who will help in assisting the extension agents in educating their fellow farmers. In view of the significant contributions of plantain to the economic development and food security of both rural and urban households in Nigeria, it is imperative to understand the extension network, linkages, flow, volume vis-à-vis value addition in Plantain.

### **1.1 Statement of the Problem**

Due to the nutritional importance of plantain, venturing into its enterprise holds promising

of plantain in the last 20 years has not been very efficient, as there are no established quality and quantity standards for plantain transportation and marketing (Adesope, *et al*, 2004).

The demand for plantain within the country is high, with supply struggling to meet demand (Ohimodu, 2004). This has hampered the status of this crop as a foreign exchange earner. As a result of the above, the study intends to answer the following relevant research questions:

- What are the socio-economic characteristics of plantain farmers, marketers and consumers in the study area?
- How the farmers get information on plantain production and effectiveness of the information in the study area?
- What are the major factors that boost the demand for plantain product in the study area?
- What are the roles of extension agents on plantain value addition in the study area

### **1.2 Objectives of the Study**

The major objective of this study is to assess the extension service delivery in the plantain value chain in Ekiti state. While the specific objectives are:

- To determine the role of agricultural extension workers in educating the farmers on plantain production in the study area.
- Ascertain the source of information on value addition of plantain and the effectiveness of the information
- To identify the major constraints in plantain production
- To determine how the packaging of plantain affects the marketing of its products



- Null hypothesis (H<sub>0</sub>): The extension service delivery of plantain value chain is not influenced by socio-economic characteristics of plantain farmers
- Alternate hypothesis (H<sub>a</sub>): The extension service delivery of plantain value chain is influenced by socio-economic characteristics of plantain farmers

#### **1.4 Justification for the Study**

The contributions of plantain (*Musa spp.*) to the income of rural households in major producing areas in Nigeria continue to increase in the last few years (Adesope *et al*, 2004). With the potential for industrial processing of plantain, which has recently been adopted, and the increased interest in production of plantain by small and large scale farms in the country, it is believed that Nigeria will continue to be one of the world's largest producers of plantain (IIBP, 2008). Plantains (*Musa spp.*) are plants producing fruits that remain starchy at maturity and need processing before consumption (IIBP, 2008). Plantain production in Africa is estimated at more than 50% of worldwide production (FAO, 1990). In comparison with the situation in the past three decades where plantain was regarded as food for the elite in the cities or food for birds in some villages, plantain products (chips, flour) are now common on the streets, even in the dry, non-plantain regions of Nigeria. Processing of plantain has turned into a big business, both in major cities and small towns in Nigeria.

#### **1.5 Plan of the Study**

The remaining part of this study includes Chapter two presents the review of the relevant literature for the study. Chapter three will contain the research methodology which includes

## CHAPTER TWO

### 2.0 Introduction

Plantain belongs to the family Musaceae and the genus *Musa*. They are tree-like perennial herbaceous plants 2 to 9m tall, with an underground rhizome or corm. The principal species are *Musa paradisiaca* (French plantain), *M. acuminata* (Gross, Michel and Cavendish) and *M. corniculata* (Horn plantain). The physical appearance of plantain is greenish in color (the outer covering pod), it is slightly curve in length and when ripped, has dark or yellowish color with dark patches. When plantain is peeled, the inner fruit is slightly yellowish and cannot be eaten raw except it is cooked or allowed to go through the process of ripening. It can be cooked, roasted, baked or fried depending on the mode applied for preparation and intended form to be eaten. Nearly all edible plantain cultivar are derived from two wild species, *M. acuminata* and *M. balbisiana* (Robinson, 1996).

These wild species are classified on the basis of the proportion of the genetic constitution contributed by each parental source (Robinson, 1996). Plantains are typical climacteric fruits in that they exhibit a well-defined preclimacteric phase after harvesting during which the fruit remains unripe, the basal respiration rate is low and ethylene production is almost undetectable. The respiratory climacteric commences spontaneously and there is a rapid and well-defined rise in respiratory rate which is closely synchronized with evolution of ethylene, with chlorophyll breakdown in the peel and with starch to sugar conversion and tissue softening in the pulp (Marriot and Lancaster, 1983; Ogazi, 1996).

can eventually contain about 25% of total sugars. As the banana ripens, the latex is also decomposed. Plantain has the stinging, bitter latex, so the peel is removed with a knife and the pulp is soaked in salt water for 5–10 min prior to cooking. Bananas are harvested unripe and green, because they can ripen and spoil very rapidly (Daniells *et al.*, 2001). The producing states include Ondo, Ogun, Osun, Oyo, Cross-river, Imo and Abia State (Wikipedia, 2007; Robinson, 1996; Ndubizu, 1995). In Nigeria, good quality banana/plantain is produced mainly during the month of October to February every year yet the demand for banana/plantain is all year round (Adewunmi *et al.*, 2009). As noted by Akiyemi *et al.* (2010), forest soils, good for cocoa, palm and rubber production, are also the main soil types in the plantain and banana producing regions of Nigeria. Plantain production is mainly in the Southern states of Nigeria, which include Akwa-Ibom, Cross River, Akwa-Ibom, Imo, Enugu, Rivers, Edo, Delta, Lagos, Ogun, Osun and Oyo states (Ogazi, 1996). Maturity standards for plantains are less precise than they are for bananas. Several different external and internal fruit characteristics can be used to determine plantain maturity. These include fruit diameter, age of the bunch, angularity of the fruit, length of the fruit, and peel color (Johnson *et al.*, 1998). The stage of maturity for harvest depends on the intended market destination (Johnson *et al.*, 1998). Locally marketed plantains can be harvested at a more advanced maturity stage compared to export market fruit. Export market destined fruit should be harvested the day before or the same day of shipment (Ogazi, 1996). Plantain maturity is related to the diameter of the fingers. This is determined by measuring the diameter of the fruit at its mid-point with a pair of calipers (Ogazi, 1996).

## **2.1 Extension and Agricultural Development in Nigeria**

There was a faulty start in Extension in Nigeria. During the colonial period (1880-1960) extension services were primarily oriented toward promoting the production of export crops.

Extension contact was minimal and consisted mostly of issuing improved seeds to export crop growers who later became officially known as progressive farmers. The role of the extension agents as field representatives of colonial government responsible for enforcing rules and regulations regarding agricultural practices such as land conservation received greater attention than providing agricultural advice and left a legacy of distrust for government extension agents. Also, there was little or no training for extension agents and, therefore, in many instances, peasant rationality was shown to be superior to the extension officers' knowledge so that these officers spent their time finding out and advising on what the peasants knew already (Akinbode, 1981). There is a general agreement among African research scholars including Richer and Baker (1982), Hart (1982) and Wallace (1983) that the colonial policies, approaches and attitudes have been directly or indirectly influencing agricultural development programs in the post Independence period. The legacy of the colonial extension system is deeply embedded in the structure of the present day extension system. After independence in 1960, the technique of extension shifted from coercion to persuasion but the tendency to concentrate on export commodities, to formulate extension advice with little regard for farmer circumstances, and to favor progressive farmers has continued to dominate extension in Nigeria. In the early 1960s, there were extension specialists for export crops such as cotton, cocoa, palm oil, and rubber and none for any of the local food crops. In other words, agricultural extension services did not pay attention to

of agriculture and food production, extension services in Nigeria have equally received little attention. The result has been that most extension services have been understaffed and the workers have been under-paid, ill-equipped, and under-trained and consequently, they have low status and low work motivation relative to workers in other sectors of government ministries. It is not surprising, therefore, to find many instances whereby peasant rationality is superior to the extension officers' knowledge. Extension is still slow and unglamorous in Nigeria today. Women extension agents are virtually nonexistent despite the equal or more involvement of rural women in agricultural activities, especially foodproduction, storage and preparations as compared with their male counterparts. Similarly, rural youths have been generally overlooked by extension, their significant role in agriculture and rural development notwithstanding. This situation sustains the long standing skepticism surrounding the effectiveness of extension services since the colonial period. Agricultural extension remains one of the most crucial means to reach farming households in the agricultural production communities. Agricultural extension has contributed significantly to agricultural and rural development in Nigeria. Extension services have become so important, that farmers are now willing to pay for services rendered (Chukwuone and Agu, 2005). Agricultural extension aims at providing farmers with necessary education, skills and technical information to enable them to make effective farm management decisions to enhance their daily practices. An effective extension service is therefore, an essential factor for accelerated development of agriculture.

## 2.2 Importance of Plantain in Nigeria

The demand for plantain within the country is high, with supply struggling to meet demand. This has hampered the status of this crop as a foreign exchange earner. It remains an important staple food, as well as the raw material for many products. It also serves as a source of revenue for many people and as raw material for industries producing value-added products in many parts of Nigeria. Plantain occupies a strategic role in rapid food production, being a perennial ratoon crop with a short gestation period. The crop ranked third among starchy staples after cassava (*Maihot esculenta*) and yam (*Dioscorea* spp.). It is a major source of carbohydrate for more than 50 million people. In Nigeria, all stages of the fruit (from immature to overripe) are used as a source of food in one form or the other. The immature fruits are peeled, sliced, dried and made into powder and consumed as 'plantain *fyfu*'. The mature fruits (ripe or unripe) are consumed boiled, steamed, baked, pounded, roasted, or sliced and fried into chips. Overripe plantains are processed into beer or spiced with chili pepper, fried with palm oil and served as snacks ('*dodo-ikire*'). Industrially, plantain fruits serve as composite in the making of baby food ('*Babena*' and '*Soyamusa*'), bread, biscuit and others (Ogazi, 1996; Akyeampong, 1999). Though fruits are produced all year round, the major harvest comes in the dry season (November to February), when most other starchy staples are unavailable or difficult to harvest. Thus, it plays an important role in bridging the hunger gap (Wilson, 1986) as well as assisting farmers in having cash at hand through sales of plantain. In Nigeria, plantain peels are used as feed for livestock, while the dried peels are used for soap production.

### **2.3 Distribution and Marketing of Plantain in Nigeria**

Akinyemi et al (2010) noted that plantain distribution is rather complex in Nigeria. In the first place, farmers whose farms are nearer to major roads harvest the crop at the mature green stage and display it at the roadside or move them to a nearby market, where small-scale wholesalers, retailers and consumers can purchase directly. On the other hand, trade collectors move around farms, collect the produce from farmers and transport it to the cities where they hand them over to wholesalers, who in turn pass it on to retailers/vendors for sale to consumers. Movement/ distribution to major cities and other non-producing regions is usually performed by the wholesalers. In Nigeria, like most other West African countries, plantain transportation is by road, usually in open or partially closed vehicles. Fruits are packed in bunches or hands, and stacked without any form of protection. Small-scale wholesalers and retailers transport fruits by bicycles, wheelbarrows, trucks, pick-ups and taxis. Wholesalers used to transport plantain to more distant markets using trains, Lorries and trailers in the 1980s but have been only using Lorries and trailers in the last few years.

Generally, postharvest distribution and marketing of plantain in the last 20 years has not been very efficient, as there are no established quality and quantity standards for plantain transportation and marketing (Adesope et al., 2004). Studies on plantain marketing have shown that plantain fruits are subjected to adverse conditions during handling and transportation. Rough handling, usually leading to splitting, vibration, abrasion and compression, coupled with late delivery, often affects plantain quality during distribution (Chukwu, 1997). Plantain distribution is rather complex in Nigeria. In the first place, farmers

wholesalers, which in turn pass it on to retailers/vendors for sale to consumers. Movement/distribution to major cities and other non-producing regions is usually performed by the wholesalers (Faturoti *et al*, 2007).

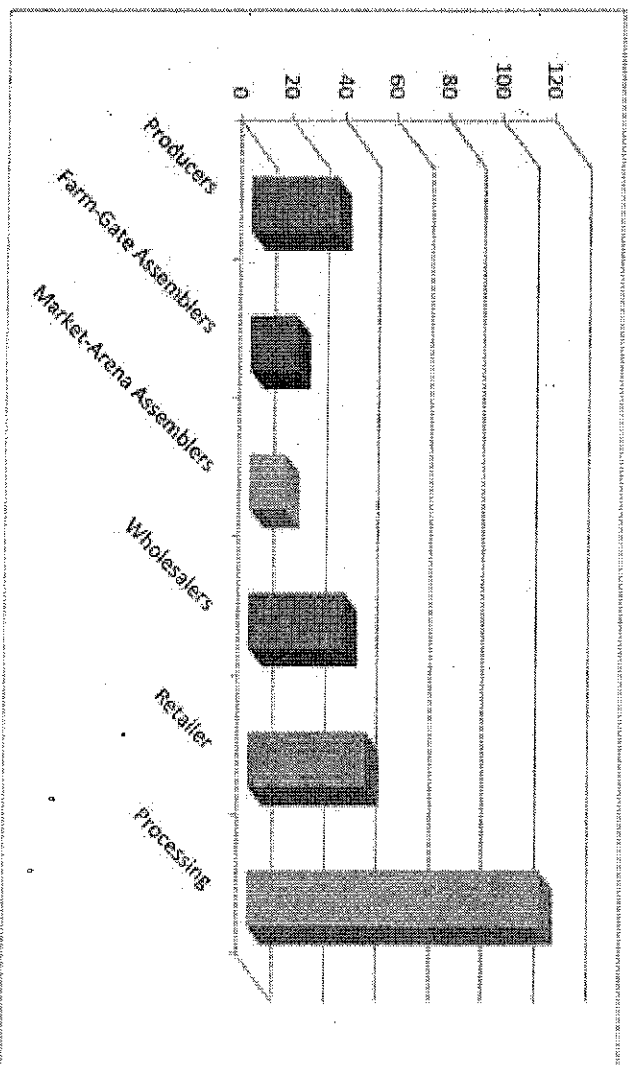
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#### **2.4 Value Addition along Plantain Value Chain**

In their study on Plantain Value Chain Mapping in Southwest Nigeria, Adeoye *et al* (2013), found the value added at producer level to be 33/kg with labour cost constituting the major component and representing 51.2%. According to them, different values are also added by the different actors in the Plantain marketing chain. At farm-gate assembling level, value added accumulated to 18/kg, Market-Arena assemblers (14/kg), Wholesalers (36.5/kg) and Retailers (45/kg). They noted that higher value added at Retail level was attributed to the fact that the



Figure 1: Value addition along plantain value chain



Source: Adapted from Adeoye et al (2013)

### 2.5 Value Chain

A value chain is a set of activities that a firm operating in a specific industry performs in order to deliver a valuable product or service for the market. In its simplest form, a supply chain is composed of a company and the suppliers and customers of that company. This is the basic group of participants that creates a simple supply chain. Extended supply chains contain three additional types of participants. First there is the supplier's supplier or the ultimate supplier at the beginning of an extended supply chain. Then there is the customer's customer or ultimate customer at the end of an extended supply chain. Finally there is a whole category

In any given supply chain there is some combination of companies who perform different functions. There are companies that are producers, companies that are distributors or wholesalers, companies that are retailers, and companies or individuals that are the customers who are the final consumers of a product. Supporting these four kinds of companies there are other companies that are service providers providing a range of needed services. In this post we'll look at the four main participants in every supply chain.

### **2.5.1 Producers**

Producers or manufacturers are organizations that make a product. This includes companies that are producers of raw materials and companies that are producers of finished goods. Producers of raw materials are organizations that mine for minerals, drill for oil and gas, and cut timber. It also includes organizations that farm the land, raise animals, or catch seafood. Producers of finished goods use the raw materials and sub-assemblies made by other producers to create their products.

### **2.5.2 Distributors**

Distributors are companies that take inventory in bulk from producers and deliver a bundle of related product lines to customers. Distributors are also known as wholesalers. They typically sell to other businesses and they sell products in larger quantities than an individual consumer would usually buy. Distributors buffer the producers from fluctuations in product demand by

stocking inventory and doing much of the sales work to find and retain customers. For the

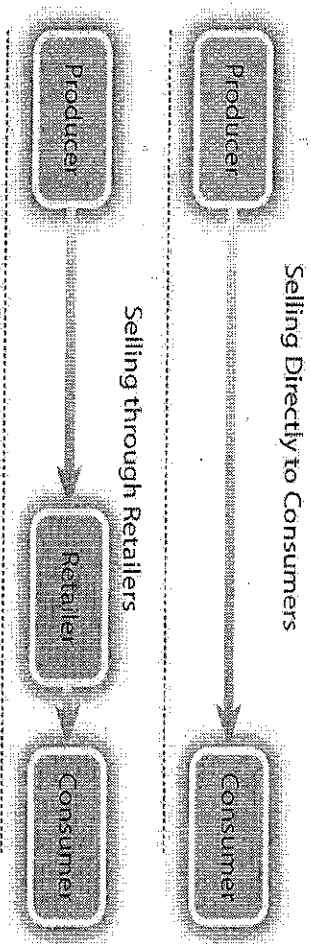
### 2.5.3 Retailers

Retailers stock inventory and sell in smaller quantities to the general public. This organization also closely tracks the preferences and demands of the customers that it sells to. It advertises to its customers and often uses some combination of price, product selection, service, and convenience as the primary draw to attract customers for the products it sells. Discount department stores attract customers using price and wide product selection. Upscale specialty stores offer a unique line of products and high levels of service. Fast food restaurants use convenience and low prices as their draw.

### 2.5.4 Customers

Customers or consumers are any organization that purchase and use a product. A customer organization may be an organization that purchases a product in order to incorporate it into another product that they in turn sell to other customers. Or a customer may be the final end user of a product who buys the product in order to consume it (Essentials of supply chain management, 4<sup>th</sup> edition. 2018).

Figure 2: Stages of product distribution



## 2.6 Cultural practices

There has been little or no change in the cultural practices of the crop. The inadequate knowledge of improved cultural practices of the crop by the farmers, inefficient extension services systems by the government, and skewness of specialization in areas of research are part of the reasons why yield potential of plantain is still low in Nigeria. Farmers still depend solely on rainfall without irrigation. The average national farmer/extension agent ratio, which is 2500:1 (NAERLS, 2005) also, contributed to poor movement of research results to end users

## 2.7 Various Plantain Products in Africa

### 2.7.1 Fried Plantains

Ripe or unripe plantain are peeled and cut into slices and fried in palm oil or other vegetable oil for 4 to 5 minutes at 160-180°C. Roasted fish, chicken or meat kebab is sometimes served. Fried ripe plantain or *aloko* in Côte d'Ivoire, *red-red* in Ghana and *dodo* in Nigeria is a meal well cherished by children and in restaurant (Adesope *et al*, 2004).

### 2.7.2 Plantain Pastry

Unripe plantain pulp after cooking in water or vapour is pounded in a wooden mortar to be transformed into a homogenous flexible pastry. Plantain fingers, generally of the horn or false horn type, are cooked in water with leafy vegetables (pumpkin leaves, amaranth leaves, etc.).

After cooking, the plantains are peeled and pounded hot in a mortar. Vegetables, which were beforehand washed in cold water and drained by hands are then added to the pastry as well as

### 2.7.3 Roasted Plantains

The entire pulps of unripe or half-ripe plantains are roasted on heated charcoal. About fifteen minutes is enough to prepare simultaneously 2 to 4 fingers of plantain depending on the customers. Women on the roadside generally sell this plantain which is consumed warm with other delicacies (roasted plums, avocado, roasted fish, meat kebab). The cooking and selling of roasted plantain constitutes a major commercial activity for some women in Cameroon, Côte d'Ivoire, Nigeria and other plantain producing countries (Adesope *et al*, 2004). Roasted plantain (*boli*) is a delicacy in Nigeria. The conventional method of processing this food is crude, stressful and unhygienic. In this work, an electric roaster capable of roasting twenty-one plantain fingers per batch was designed, fabricated and tested.

### 2.7.4 Plantain Chips

Plantain chips are the most popular plantain products in Nigeria (Olorunda, 1995). They are prepared by frying round slices of unripe or slightly ripe plantain pulp in vegetable oil. Best quality plantain chips have been obtained in Cameroon by frying round slices of pulp (2 mm thick) in refined palm oil between 160 and 170°C for 2 to 3 minutes (Baiyeri *et al*, 2004). These generally absorb less frying oil than chips from cooking banana and dessert banana. The anti-oxidising treatment (soaking in citric acid solution) which is indispensable to inhibit the action of polyphenoloxidase responsible for the browning of the pulp of dessert banana before frying is not necessary when making chips from plantains and certain cooking bananas (Baiyeri *et al*, 2004).

(Cameroon, Nigeria, Ghana, and Côte d'Ivoire) is principally a feminine activity, which has greatly developed these past years. They are generally eaten as snack food.

### **2.7.5 Plantain flour**

Plantain flour is used in preparing a staple food, loved by different tribes of Nigeria; it can be kneaded into dough usually called "Amala, by the Yoruba speaking tribe. The health benefit of plantain flour cannot be over emphasized. This makes this product a very good exportable product among semi-finished exportable product category in Nigeria. It is made of dried and pulverized sliced plantain. Therefore, the Major constituent used in making plantain flour is plantain. Plantain is rich in high fibre content, it has low sodium/fat content and relatively rich in protein (between 3.0 to 3.5%) compared to other fruits. It contains high level of ascorbic acid, carotene and some other vitamins valuable to the development of the body. Plantain flour consumption is especially for patients suffering from: Diabetes, coronary heart, Diseases, arteriosclerosis, angina pectoris, palpitation, and high cholesterol level, high blood pressure, obesity etc plantain has been listed as one of the major high fibre rich foods

## CHAPTER THREE

### 3.0 Research methodology

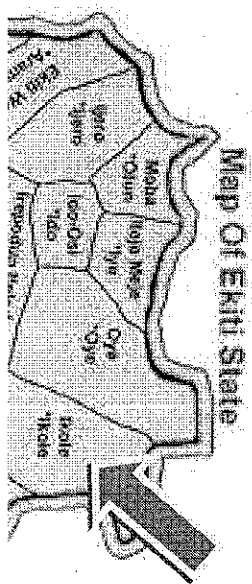
#### 3.1 Introduction

The chapter explain the details of the relevant and appropriate research method adopted for this study. Explanations are provided on how and where the research was carried out. Descriptive details of the location of study, the sampling techniques, the data collection methods and techniques of data analysis are all discussed in this chapter

#### 3.2 Description of the study Area

The study area for this project is Ekiti State which is located in the south-west part of Nigeria, which has 16 Local Governments Areas. Agriculture is the primary occupation of the people of the State employing over 60% of the total population (Ajayi, 2009). The state lies between the latitude  $7^{\circ}37'16''N$   $5^{\circ}13' 17E$  covering the land area of 2,453 square kilometres and having total population of 42,434,0 at the 2012 census. The state enjoys tropical climate with two distinct seasons, there are the raining season (April-October) and the dry season (November -March). The temperature ranges between  $21^{\circ}$  and  $28^{\circ}$  Celsius with high humidity. The target area for this study is Ikole

Figure 3: Map of Ekiti state



### **3.3 Sampling Techniques and sample size**

Simple random sampling was used to select a total number of 70 respondents from the study area which comprise of 20 consumers of plantain product, 30 plantain farmers and 20 marketers of plantain products who were interviewed with the use of structured questionnaires for the purpose of this study.

The target population are: Plantain farmers

Marketers of plantain product

Consumers of plantain product

### **3.4 Method of Data Collection**

Primary data were utilized for this study with the use of structured questionnaire and interview process. Primary data was collected from agents of the value chain including producers (farmers), marketers and consumers. Structured questionnaire was distributed to 30 plantain farmers to acquire information pointing out to the cultural practices, post harvest practices, access to adequate information in plantain production and 20 structures questionnaire was also be distributed to marketers of plantain product to acquire information on the factors that determine saleable products of plantain and factors that can reduced the marketing of plantain products. Also, 20 structured questionnaires were also distributed to consumers of plantain product in the study area to acquire information on the qualities that consumers of plantain are looking for. Socio-economic characteristics such as occupation, age, sex, education level, marital status of selected respondent must be taken into consideration. The data collected was aimed at investigating the various practices involve



### **3.5 Method of Data Analysis**

Analysis of quantitative data was conducted with respect to the objectives of the study using the Software package for statistical analysis (SPSS) version 16.0. Computation of frequencies and percentages to describe various matters related to plantain value chain will be presented in tables and figures to show the differences and opinions of respondent on which the discussion is based.

**3.6 Descriptive Statistics:** To facilitate the analysis of some items on the questionnaire, descriptive statistics was used to make cross tabulations, frequency tables to calculate averages, percentages and mean

### **3.7 Correlation and t-test analysis**

Correlation and t-test analysis were conducted to identify the relationship between the extension service delivery which is the dependent variable and independent variable which is the socio-economic characteristics of plantain farmers

### **3.8 Measurement of variables**

This study considered two sets of variables; dependent and independent variables.

The dependent variable which is extension service delivery on value chain of plantain product which describes:

### 3.8.1 Farmers

Age: Respondents' age was measure in actual years.

Marital status: Measured as single=1 married=2, divorced=3, widowed=4

Education: Measures according to the level of formal education attained either primary, secondary, tertiary institution, or no formal education

Sex: This was determined as male=1, female=2

Ethnicity: Yoruba=1, Igbo=2, hausa=3, egbira=4, igede=5

Religion: Christianity=1, Islam=2, traditional=3

Years of farm experience: this was measure in actual years of planting on the farm

Source of land: rent, leasehold or inheritance

Source of finance: personal savings, loan or cooperative

Constraints encounter on plantain production: wind, predators, climate change

Total quantity of plantain produced in bunches

Total farmland in hectares.

### 3.8.2 Marketers

Age: Respondents' age was measure in actual years.

Marital status: Measured as single=1 married=2, divorced=3, widowed=4

Education: Measures according to the level of formal education attained either primary, secondary, tertiary institution, or no formal education

Sex: This was determined as male=1, female=2

- Which of the plantain product they sell most: plantain chips, plantain dodo, plantain flour, unripe plantain, ripe plantain
- Standards used in grading plantain: quality, degree of ripeness, size
- Type of seller: wholesaler, retailer, wholesaler and retailer

### 3.8.3 Consumers

Age: Respondents' age was measure in actual years.

Marital status: Measured as single=1 married=2, divorced=3, widowed=4

Education: Measures according to the level of formal education attained either primary,

- secondary, tertiary institutions

Sex: This was determined as male=1, female=2

Ethnicity: Yoruba=1, Igbo=2 Hausa=3

Religion: Christianity=1, Islam=2, traditional=3

Effect on the consumption of plantain: yes=1, no=2

The product they consume most: plantain flour, plantain chips, plantain dodo, cooked unripped plantain, cooked ripe plantain

### 3.9 Summary

This chapter gave an outline of the research methodology of the study which comprises of the description of the study area, sampling techniques for the study, sample size, method of data

## CHAPTER FOUR

### 4.0 RESULTS AND DISCUSSION

- This chapter presents the descriptive analysis of the information and the primary data obtained during the field survey on the socio-economic characteristics of plantain farmers, marketers and consumers in the study area.

#### 4.1 CONSUMERS

Table 1 describes the socio-economic characteristics of the respondents in terms of gender, marital status, educational status, age and religion

- The mean age of the sampled plantain consumers was 25.75 years. Majority (55%) of the respondents falls between 20 to 30 years of age. While (25%) have their ages ranged between 10 to 20 years and (20%) were between 30-50 years of age. These findings imply that majority of the respondents' age category between 10 and 30 years of age were youth. Most consumers of plantain products are youth compare to the adults, which are fewer in numbers. Adult people consume plantain based on the type of the product, they consume mostly unripe plantain product. Majority (60%) of the respondents are female while the remaining (40%) are male. This implies that female dominate male in the consumption of plantain most especially when it plantain chips or dodo. The result of the marital status of the respondents showed that majority (75%) are single, (25%) are married. This is because respondents selected from the study area are dominated by students.

**Table 1: Distribution of respondent according to socio-economic characteristics**

Variable	Frequency	Percentage	Mean/std
<b>Sex distribution</b>			
Male	8	40	
Female	12	60	
Total	20	100	
<b>Age</b>			
10-20	5	25	25.75/7.504
21-30	11	55	
31-40	2	10	
41-50	2	10	
Total	20	100	
<b>Marital status</b>			
Singled	15	75	
Married	5	25	
Total	20	100	
<b>Level of education</b>			
Secondary	6	30	
Tertiary	14	70	
Total	20	100	

Source: Field survey, 2018

**Percentage distribution of respondents according to the packaging of plantain product**

From table 2 majority (45%) of the respondents indicated that the packaging of plantain chips is average, (35%) indicated that is bad while (20%) indicated that is very bad. Likewise

flour is very bad. This findings implies that majority of the respondents with the total of (150%) affirmed that the packaging of plantain product in the study area is average, the total number of respondents (90%) affirmed that it is bad while (55%) affirmed that the packaging of plantain product is very bad. This interprets that the packaging of plantain in the study area is not good enough which result in reduction in the consumption of plantain product

**Table2: Distribution of respondents according to the packaging of plantain product**

Variables	Frequency	Percentage
<b>Plantain chips</b>		
Average	9	45
Bad	7	35
Very bad	4	20
<b>Total</b>	<b>20</b>	<b>100</b>
<b>Plantain dodo</b>		
Average	8	40
Bad	7	35
Very bad	5	25
<b>Total</b>	<b>20</b>	<b>100</b>
<b>Plantain flour</b>		
Average	13	65
Bad	4	20
Very bad	3	15

### Factors that determine the consumption of plantain product

From table 3 majority of the respondents (90%) indicated that the taste of each product determines its consumption, (80%) indicated that packaging of plantain product, (75%) indicated that availability of plantain product, (80%) indicated that price of the plantain products also determine its consumption, (65%) indicated that the location where they sell the plantain products also determine its consumption. High percentage of the respondents affirmed that all these factors determine if plantain products are consumable or not.

The packaging of plantain products by the marketers' determines if people will buy it and the taste of any plantain products determines its consumption. For consumers to purchase any plantain product they will look at the price, availability and the location, which is the environment where they sell the product. All these factors are the major factors pin pointed by the respondents of consumers of plantain product in the study area.

**Table3: Distribution of respondents on the factors that determine the consumption of plantain product**

Factors	Frequency	Percentage
Packaging	16	80
Availability	15	75
Marketing strategy	15	17
Taste	19	95
Price	16	80

## 4.2 Marketers

### Socio economic characteristics of the marketers of Plantain product in the study area

From table.1 mean age of the sampled marketers of plantain product was 2.20 years. Majority (45%) fall between 31 and 40 years of age. While (25%) of the respondents falls between 20 and 30 years of age, (15%) falls between 41 and 50 years of age and (15%) were between 51 to 60 years of stage. This finding implies that, majority of the respondents' age category between 20 and 40 years of age were still in their adult age, most old people in the study area don't engage themselves in marketing of plantain products. Majority (95%) of the respondents are female while the remaining (5%) are male. This indicates that plantain product marketers in the study area are mostly females.

It was also revealed that, majority (85%) of the respondents were married, (10%) were single and (5%) were divorced. Data acquired from the findings also reveals that (60%) of the respondents had tertiary education, (10%) had secondary education while (30%) had no formal education. This interprets that some of the respondents are educated while almost average numbers of the respondent are not educated



**Table4: Distribution of respondent according to socio economic characteristics**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>	<b>Mean/std</b>
<b>Sex distribution</b>			
Male	1	5	
Female	19	95	
<b>Total</b>	<b>20</b>	<b>100</b>	
<b>Age</b>			
20-30	5	25	32.20/1.005
31-40	9	45	
41-50	3	15	
51-60	3	15	
<b>Total</b>	<b>20</b>	<b>100</b>	
<b>Marital status</b>			
Singled	2	10	
Married	17	85	
Divorced	1	5	
<b>Total</b>	<b>20</b>	<b>100</b>	
<b>Level of education</b>			
Secondary	2	10	
Tertiary	12	60	
No formal education	6	30	
<b>Total</b>	<b>20</b>	<b>100</b>	

**Source: Field survey, 2018**

**Socio-economic characteristics of respondent**

From table 2 majority (50%) of the respondents falls between 1 -5 years of experience in the marketing of plantain product, (35%) falls between 6-10 years of experience, (10%) falls

falls between 11-15 years of experience which implies that that they will have higher experience in the marketing of plantain product while only (5%) of the respondent has the highest years of experience in the marketing of plantain product in the study area.

Marketing has been linked with transportation. This is because the movement and distribution of commodities from one place to other involves the use of transportation means. From the same table (55%) of the respondents transport their plantain bunches or product with the use of commercial car or bus which is the best means of transportation while (45%) of the respondents always transport their plantain bunches or product with use of commercial motorcycle popularly known as *okada* which is not a good idea because if the plantain bunches are not well tied they might fall on the ground which can cause bruise on the plantain. This can reduce the quality of plantain. Also (60%) of the respondents spends 100naira per day, (20%) of the respondents usually spend 150naira per day, (10%) of the respondents usually spend 200naira per day while (10%) of the respondents usually spend 300naira per. This implies that sometimes the price they place on plantain bunches or plantain product depends on the amount of money they spent on transportation

**Table 5: Distribution of respondents according to socio-economics characteristics**

Variable	Frequency	Percentage
<b>Total</b>	20	100
<b>Marketing experience (years)</b>		
<10	10	50
6-10	7	35
11-15	2	10
21-25	1	5
<b>Total</b>	20	100
<b>Transportation cost</b>		
100	12	60
150	4	20
200	2	10
300	2	10
<b>Total</b>	20	100

Source: Field survey, 2018

**Where they get plantain from**

From table 3 (45%) of the respondents get plantain from farmers by bringing it to their market place which reduce the cost of transportation, (30%) of the respondents get plantain

from their own farm which also can reduce the cost of production and lead to increase in

purchase plantain because the wholesalers will place a high price on the plantain so they can make their own profit

**Table 6: Response on where they usually get plantain from**

Variable	Frequency	Percentage
Where they usually get plantain from		
From own farm	6	30
From farm gate	3	15
Farmers bring it to them	9	45
From wholesalers	2	10
<b>Total</b>	<b>20</b>	<b>100</b>

Source: Field survey, 2018

**Distribution of respondents according to the type of product they sell**

From table 4 (29.2%) of the respondents sells plantain chips, (16.7%) of the respondents sells plantain dodo, (29.2%) of the respondents sells plantain bunches, (20.8%) of the respondent sells roasted plantain while (4.2%) of the respondents sells plantain flour. This implies that plantain flour marketers are fewer in the study area which is the best plantain product to consume

**Table 7: Distribution of respondents according to the type of product they sell**

*Variable	Frequency	Percentage
Plantain chips	7	29.2
Plantain dodo	4	16.7
Plantain flour	1	4.2
Plantain bunch	7	29.2
Roasted plantain	5	20.8
<b>Total</b>	<b>24</b>	<b>100</b>

Source: Field survey, 2018 \* Multiple responses

#### Standard for grading

Table 5 reflects the distribution of respondents according to criteria used for grading their plantain for sale. A breakdown of the methods used by the respondents in the market showed that (60%) used size/quantity, (30%) used degree of ripeness while (10%) used the quality of the plantain as measures of standard in grading their plantain for different prices.

**Table 8: Distribution of respondents on the standard they use for grading**

Variable	Frequency	Percentage
Size/quality	17	85
Degree of ripeness	2	2

### Method used for ripening plantain

Table 6 reflects that majority (80%) of the respondents usually used nylon for the ripening of their plantain, (10%) of the respondents used *oro* (native name) for the ripening of their plantain while (10%) of the respondents usually used sun for the ripening of their plantain. This implies that high percentage of the respondents usually adopts the use of nylon which is the natural way of ripening plantain and the best method. It maintains the quality of plantain and it aid longevity. The use of *oro* is the second best method of ripening though it is the fastest method for ripening of plantain but do not stay longer, it can lead to wastage while the last method is also good but its still the same with the use of nylon after packing them from the sun some people still use nylon for further ripening.

Table 9: Distribution of respondent according to the method use for ripening of plantain

Variable	Frequency	Percentage
Sun	2	10
Oro (native name)	2	10
Nylon	16	80
Total	20	100

Source: Field survey, 2018

#### 4.3 Farmers

##### Characteristics of Plantain farmers in the study area

From table 1 the mean age of the sampled plantain farmers was 49.73 years. Where (3.3%) of the respondents falls between 20 and 30 years of age, (20%) of the respondent falls between 31 and 40 years of age while majority of the respondents (76.7%) falls between 41 and 70 years of age. This finding explains that old people majorly practiced plantain farming in the study area. Most of the youth in the study area engaged themselves in better jobs that can fetch enough income for them while others had migrated to the city in search for better standard of living. This results in low production of plantain in the study because most of the farmers are old and will not be able to work effectively on the farm. From the same table, majority (96.7%) of the respondents are male while the remaining (3.3%) are female. These findings indicate that, plantain farmers in the study area are male, with this fact it is obvious that male dominate female in farming activities in the study area. Data collected in table also revealed that, majority (86.7%) of the respondents were married, (10%) were married while (3.3%) were divorced. This prove that most of the plantain farmers were married which makes it easier for them to operate on the farm which explains that their family members can help on their respective farm to reduce cost of hiring workers or labourers. Also it was derived that about (26.7%) of the respondents had secondary education while (16.7%) of the respondents had tertiary education, (36.7%) of the respondent had primary education and (20%) of the respondents had no formal education. This implies that most of the plantain farmers are not well educated. Likewise majority (56.7%) of the respondent have their family

**Table 10: Distribution of respondent according to socio economic characteristics**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>	<b>Mean/std</b>
<b>Sex distribution</b>			
Male	29	96.7	
Female	1	33.3	
<b>Total</b>	<b>30</b>	<b>100</b>	
<b>Age</b>			
20-30	1	3.3	49.73/11.123
31-40	6	20.0	
41-50	8	26.7	
51-60	7	23.3	
<b>Total</b>	<b>30</b>	<b>100</b>	
<b>Marital status</b>			
Singled	3	10	
Married	27	86.7	
<b>Total</b>	<b>30</b>	<b>100</b>	
<b>Religion</b>			
Christianity	27	90	
Islam	3	10	
<b>Total</b>	<b>30</b>	<b>100</b>	
<b>Ethnicity</b>			
Yoruba	28	93.3	
Egbira	1	3.3	
Igede	1	3.3	
<b>Total</b>	<b>30</b>	<b>100</b>	
<b>Level of education</b>			
No formal education	6	20	
Primary education	11	36.7	
Secondary	8	26.7	
Tertiary	5	16.7	
<b>Total</b>	<b>30</b>	<b>100</b>	
<b>Household size</b>			
1-5	17	56.7	
6-10	11	36.7	
11-15	2	6.7	
<b>Total</b>	<b>30</b>	<b>100</b>	



### **Socio-economics characteristics of respondent**

From table 2 majority of the farmers (43.3%) of the respondents engage in trading, (36.7%) of the respondents engage in farming work, (3.3%) of the respondents engage in artisan, (3.3%) of the respondents are pensioner, (10%) of the respondents are civil servants while (3.3%) of the respondents are night watchman. Majority of the respondents (46.7%) have their farming experience between 10 and 20 years, (16.7%) of the respondents have their farming experience between 21 and 30 years, (23.3%) of the respondents has their farming experience between 5 and 9 years, (10%) of the respondents has their farming experience between 31 and 44 years while (3.3%) of the respondents has only one year experience in farming. Likewise, (56.7%) of the respondents acquire their land by inheritance, (40%) acquire their land by rent while (3.3%) acquire their land by leasehold. From the findings majority (93.3%) of the respondents source for capital from their personal savings while (6.2%) of the respondents source for income from the cooperative society

**Table 11: Distribution of respondents according to socio-economics characteristics**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Minor occupation</b>		
Night watchman	1	3.3
Pensioner	1	3.3
Trading	13	43.3
Handwork	1	3.3
Farming	11	36.7
Civil servant	3	10.0
<b>Total</b>	<b>30</b>	<b>100</b>
<b>Farming experience (years)</b>		
5-9	7	23.3
10-20	14	46.7
21-30	5	16.7
31-40	3	10.0
41-50	1	3.3
<b>Total</b>	<b>30</b>	<b>100</b>
<b>Land acquire</b>		
Rent	12	40.0
Inheritance	17	56.7
Leasehold	1	3.3
<b>Total</b>	<b>30</b>	<b>100</b>
<b>Source of capital</b>		
Personal savings	28	93.3

From table 3 most of the respondents (80%) hired labourers to work on their farm, (13.3%) of the respondents make use of their family members while (6.7%) of the respondents practices self labour. From the findings, the farm size of the majority (46%) of the farmers ranged between 1-2 hectares, while (33.3%) had farm size between 3-4 hectares, (10%) had farm size between 5-6 hectares while (10%) of the respondents had 0.5 hectare.

**Table 12: Distribution of respondents according to socio-economics characteristics**

Variable	Frequency	Percentage
<b>Source of labour</b>		
self labour	2	6.7
family labour	4	13.3
Hired	24	80.0
<b>Total</b>	<b>30</b>	<b>100</b>
<b>Farm size(hectares)</b>		
0.5	3	10
1-2	14	46.7
3-4	10	33.3
5-6	3	10
<b>Total</b>	<b>30</b>	<b>100</b>

**Annual income**

10000	2	6.7
20000	5	16.7
30000	1	3.3
50000	7	23.3
100000	7	23.3

### Extension contact

From table 4 majority (80%) of the respondents affirmed that they have no contact with the extension workers while (20%) of the respondents do have contact with them only once in a year

**Table 13: Distribution of respondents on time of extension contact**

Variable	Frequency	Percentage
Extension contact		
No contact	24	80.0
One in a year	6	20.0
Total	30	100

Source: Field survey, 2018

### Effectiveness of extension contact

From table 5 majority of the respondents (80%) has no extension contact, (10%) affirmed that their contact with extension agent is effective, (6.7) said it is rarely effective while (3.3%) concluded that it is not effective. This implies that there is no adequate impact of extension agents in the study area

**Table 14: distribution of respondents according to effectiveness of extension contact**

Variables	Frequency	Percentage
Very effective	-	-
Effective	3	10
Undecided	-	-
Rarely effective	2	6.7
Not effective	1	3.3
None	24	80
<b>Total</b>	<b>30</b>	<b>100</b>

Source: Field survey, 2018

**Accessibility to government loan**

From table 6 majority (96.7%) of the respondents affirmed that there is no access to government loan while (3.3%) affirmed that there is access to government loan. This implies that majority of the respondent that are farmers in the study area has no access to government loan

**Table 15: Distribution of respondent bases on accessibility to government loan**

Variable	Frequency	Percentage
No	27	90
Yes	3	10

### Constraints in plantain production

From table 7 respondents identified some of the major constraints faced in plantain production. Majority (36.7%) of the respondents claimed that climatic change is one of the major constraints in plantain production that is, for plantain to germinate well it needs adequate rainfall, it wont be able to thrive during dry season. Likewise (20%) of the respondents claimed, that wind blow is one of the problems faced in plantain production. This can bring about premature harvesting of plantain, which is not profitable. In addition, (16.7%) claimed that pest infestation is one of the problem faced, the major pest identified is *termites*. Likewise, (20%) of the respondents claimed that pouching is one of the problems faced in plantain production which is stealing and cutting the plantain from the tree. While (6.67%) of the respondents claimed that predators also affects the production of plantain.

**Table 16: Distribution of respondents based on the constraints in plantain production**

Constraints	Frequency	Percentage
Climatic change	11	36.7
Wind blow	6	20
Predators	2	6.67
Pest	5	16.7
Pouching	6	20
<b>Total</b>	<b>30</b>	<b>100</b>

Source: Field survey, 2018

#### 4.4 Testing of hypothesis

The result of correlation in table 8 revealed that there were positive and significant relationship between of extension service delivery (p<0.05, r=0.000) and others which include source of information (p<0.05, r=0.453), year of schooling (p<0.05, r=0.394) and years of experience (p<0.05, r=0.290). These results implied that that the higher the level of schooling, source of information and years of experience, the more they are expose to extension service delivery on plantain production and this will in turn increase their knowledge on management practices in plantain farming. On the other hand, there was negative significant correlation between the age of plantain farmers (p<0.05, r=-0.215), this shows that the higher their age the lower the extension service delivery

**Table 17: Correlation analysis between respondent's socio economic characteristics and extension service delivery**

Variables	Correlation coefficient (r)	Correlation of determinants (r <sup>2</sup> )
Schooling	0.394*	0.253
Year of experience	0.290*	0.121
Age	-0.215	0.31
Source of information	0.453*	0.120
Extension contact	0.000*	1.00

p<0.05 level (2-tailed), \* =positive significant

## CHAPTER FIVE

### 5.0 Summary and Conclusion

The study assessed the extension service delivery on the value chain of plantain product in Ekiti state, Nigeria. The major agents of value addition were selected that is the Farmers, marketers and consumers of plantain products. These findings also focused on looking at the roles of extension workers and their impact in the development of plantain farmers in the study area. The study analyzed the major constraints faced by farmers due to lack of knowledge. The study revealed some major constraints in plantain production, factors that determine marketable plantain products, and the impact of extension agents on the value addition of plantain. The results of analysis of this study reveals that most of the farmers are old and will not be able to work effectively on the farm, most of the youth seek to find a better standard of living by migrating to the urban areas. In addition this study reveals that the packaging strategy of plantain products determine its price and level of consumption. The study concluded that there are important factors that determine the value addition of plantain product, it majorly expressed that farmers has no adequate access to information due to poor impact of extension workers, and also been faced with financial constraints. To overcome these challenges there must be effectiveness of extension contact. The farmers who supply the produce need to be encouraged. Arising from the observations, it could be derived that the merchants need adequate and sustainable transportation and storage facilities.



## 5.1 Recommendations

Based on the study that was carried out, the following recommendations are hereby suggested

- 1 There should be effective extension workers supervision so that farmers can acquire adequate knowledge on the production of plantain through adequate training or organization of agricultural extension programs to equip both young and old
- 2 Young people should be encouraged to engage in the business of plantain farming and marketing to replace the aging plantain producers
- 3 High cost of transportation and rent which accounted for high prices of plantain should be lowered with government sensitivity to reduce fuel price, improve rural-urban access roads and the provision of more economical market structures in the rural market
- 4 Improve in packaging and marketing strategy of plantain products to boost its consumption
- 5 Adequate and knowledgeable extension agents should be made available to organizetraining and seminars for rural farmers

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APPENDIX

FEDERAL UNIVERSITY OYE EKITI, NIGERIA

DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION

RESEARCH TOPIC: ASSESSING THE EXTENSION SERVICE DELIVERY ON  
THE VALUE CHAIN OF PLANTAIN PRODUCT IN EKITI STATE

Dear respondent,

I will be very grateful if you can take some time off your busy schedule to respond to the questions. It is purely for academic purpose as such will be highly appreciated if you give relevant information, as it will be treated confidentially

Thank you.

**INSTRUCTIONS:** Please tick ( ) or fill the spaces as it applies to you

**SECTION A** (Socio-economic characteristics)

1. Registered Name of your Plantain Farm .....Year  
Established .....
2. Gender: Male ( ) Female ( )
3. Age 20-30 ( ) 31-40 ( ) 41-50 ( ) 51-60 ( ) 61 above ( )
4. Marital status: Single ( ) Married ( ) Divorced ( ) Widowed ( )

7. What is your highest level of Education? Primary ( ) Secondary JSS ( ) SSCE ( )  
 Tertiary NCE ( ) OND ( ) HND ( ) B.Sc ( ) M.Sc ( ) Phd ( ) No formal education ( )

SECTION B

8. What is your total household size? 1-5 ( ) 6-10 ( ) 11-15 ( ) 16-20 ( ) 21 above ( )
9. Do any of your household members assist you in your plantain farm? Yes ( ) No ( )
10. What is the number of years of your farming experience in plantain production? 5-10yrs ( ) 11-20yrs ( ) 21-30yrs ( ) 31-40 ( ) 41-50 ( ) 51 above ( )
11. What was the total quantity of plantain produced in your farm during the last production period? .....bunches
12. Do you have any other source(s) of income other than plantain farming? Yes ( ) No ( )
13. If yes, indicate your other source(s) of income: .....
14. What is your annual income from this other source(s)? .....
- Estimate your cost of income per annum.....
15. What is the total size of your farm land? .....(Ha)
16. How do you acquire land for plantain production? ( ) purchase ( ) inheritance ( ) leasehold ( ) others, specify.....
17. If your plantain farm land is on rentage, what is the amount paid annually?



19. What are your sources of information? Other farmers ( ) family ( ) ADP extension agent ( ) television ( ) radio ( ) telephone ( ) research officer others, specify.....

20. Do Government Extension Agent visits you in your plantain farm? Yes ( ) No ( )

If yes, how many times have they visited you?..... per year

21. What is the location of your plantain farm? Urban ( ) Rural ( )

22. Are you full time/part-time on the plantain farm? Full time ( ) Part-time ( )

23. What is the average number of days spent on the farm/week? .....

24. What are your sources of finance? Personal savings ( ) loan ( ) cooperative ( ) community bank ( ) commercial bank ( ) sale agents ( ) others, specify

25. What are your sources of labour? self-labour ( ) family labour, ( ) hired( ) others, specify

26. Are you paid as the owner of the plantain farm? Yes ( ) No ( )

27. Do you collect loan from government or any organisation to run your plantain farm during the last production period? Yes ( ) No ( )

**CONSTRAINT ENCOUNTERED IN PLANTAIN PRODUCTION**

28. Please select the following limiting factors based on how it affected plantain production in your area in the last production period. Indicate depending on how the limiting factors affected you.

Effect of rain		
High cost of fertilizer		
Wind		
Cultural constraint		
Lack of information		
Man-labour		
Bushes		
Climatic changes		

29. Please select the following based on the causes of post harvest loss

Factors that influence post harvest loss	Yes	No
Diseases		
Method of storage		
Ponching		
Predators i.e animals		

30. Please supply the number of time you were visited by extension before this month

Month	How many times
January	
February	
March	
April	
May	
June	
July	
August	
September	

31. Please rate the effectiveness of information gotten from the extension agents

Level of effectiveness	Yes
Very effective	
Effective	

Not effective	
None	

32. Any other comment?.....

Thank you very much for your cooperation!!!

FEDERAL UNIVERSITY OYE EKITI, NIGERIA

DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION

RESEARCH TOPIC: ASSESSING THE EXTENSION SERVICE DELIVERY ON  
THE VALUE CHAIN OF PLANTAIN PRODUCT IN EKITI STATE

Dear respondent,

I will be very grateful if you will just help take some time off your busy schedule to respond to the questions. It is purely for academic purpose and it will help to understand the major factors that can affect the value addition of plantain product consumption and as such will be highly appreciated if you give relevant information as it will be treated confidentially

Thank you

2. Age 10-20 ( ) 21-30 ( ) 31-40 ( ) 41-50 ( ) 51-60 ( ) 61 above ( )
3. Marital status: Single ( ) Married ( ) Divorced ( ) Widowed ( )
4. Religion: Christianity ( ) Islam ( ) Traditional Worship ( ) others, specify.....
5. Ethnicity: Yoruba ( ) Igbo ( ) Hausa ( ) Others (Specify).....
6. What is your highest level of Education? Primary ( ) Secondary JSS ( ) SSCE ( )  
Tertiary NCE ( ) OND ( ) HND ( ) UNDERGRADUATE ( ) B.Sc ( ) M.Sc ( ) Phd ( ) No  
formal education ( )

**SECTION B** (Information on consumption of plantain)

7. Do you consume any plantain product? Yes ( ) No ( )
8. Which of the plantain product do you consume most? Plantain flour ( ) plantain dodo ( )  
plantain chips ( ) cooked unripe plantain ( ) cooked riped plantain ( ) others,  
specify.....
9. How often do you consume plantain product? Very often ( ) often ( ) not often ( ) rarely  
often ( ) none ( )
10. Are you aware of the benefits of plantain consumption to the body? Yes ( ) No ( )
11. Which of the plantain product is the best to consume? Plantain flour ( ) plantain dodo ( )  
plantain chips ( ) cooked unripe plantain ( ) cooked riped plantain ( ) others,  
specify.....

Location		
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Are there other factors apart from the ones listed above?.....

16. Any other comment? .....

Thank you very much for your cooperation!!!

**FEDERAL UNIVERSITY OYE EKITI, NIGERIA**

**DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION**

**RESEARCH TOPIC: ASSESSING THE EXTENSION SERVICE DELIVERY ON  
THE VALUE CHAIN OF PLANTAIN PRODUCT IN EKITI STATE**

Dear Respondent

This questionnaire is intended for research work. Your cooperation will be greatly appreciated in filling this questionnaire to the best of your knowledge. The information given shall be treated with utmost confidentiality.

**SECTION A**

1. Market community/location.....
2. Local Government Area .....

3. Age 20-30 ( ) 31-40 ( ) 41-50 ( ) 51-60 ( ) 61 above ( )

6. Highest level of education (A) No formal education (B) Primary education (C) Secondary education (D) University education (E) OND (F) HND (G) Others (specify).....

SECTION B

7. What is your main occupation? (A) Trading (B) Farming (C) Artisan (D) Civil service (E) Others (specify).....
8. Which of the plantain product do you sell? (A) Plantain chips (B) Plantain dodo (C) Plantain flour (D) plantain bunch Others (specify).....
9. Which of the plantain product do your customers buy most (A) Plantain chips (B) Plantain dodo (C) Plantain flour (D) Riped plantain (E) Others (specify).....
10. What other commodities do you sell? (A) Other food crops e.g yam, cocoyam, (B) Food ingredients and additives (C) Processed foods e.g *gari*, *elubo* (D) Livestocks e.g goats, poultry birds (E) others, specify.....
11. Years of experience in plantain marketing .....
12. How do you get your plantain for marketing? (A) From own farm (B) From farm gate (C) Plantain farmers bring them to the market (D) from wholesalers (E) Others, specify.....
13. What is your means of transporting plantain to the market? (A) Commercial car and/ bus (B) Commercial motorcycle (*okada*) (C) Bicycle (D) Head potterage (E) Others, specify.....
14. What is the distance from the market to plantain farm or purchase point? .....

- 18. If yes in the above, how often do you observe the market days? .....
- 19. When are your marketing hours? From ..... to .....
- 20. What standards are used for grading? (A) Size/quality (B) Degree of ripeness (C) Quality
- 21. How do you determine the price of plantain? (A) Price from previous sales (B) Haggling (C) Associations set price (D) Cost of purchase plus margin
- 22. How are buyers informed about your product? (A) Open display (B) Persuasion (C) Advertisement (D) others (specify) .....
- 23. What type of seller are you? (A) Retailer (B) Wholesaler (C) Wholesaler/Retailer (D) Agent
- 24. What category of people do you sell to? (A) Retailers (B) Restaurants (C) Processors (D) Final consumers (E) Others (specify) .....
- 25. How do you get information on prices in other markets? (A) Through GSM from colleagues (B) On radio (C) On Television (D) In Newspaper (E) others (specify) .....
- 26. What do you usually use for the ripening of plantain? (A) sun (B) pepper (C) capbard (D) oro (*native name*) (E) others (specify) .....
- 27. Which one is the best method of ripening? (A) Natural ripening (B) artificial ripening  
Which one is the best and stays longer.....
- 28. How do you store your plantain? .....

29. How much do you pay as shop rent