

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

The major agricultural cash crop produce of Nigeria up till the late 1950s, regarded as the pre-oil boom era in this study, were cocoa, groundnut oil, oil palm and rubber. Of all these agricultural produce, cocoa was arguably the most sustaining to the national economy in general and to the economy of southern part of the country in particular, with the country being second, to Cote D'voire, in terms of volume of production globally. Gill and Duffus, (1981). The production and marketing activities continued unabated since the crop was introduced into the country up till after independence. During this era, it was an important foreign exchange earner for the country and remained the second largest foreign exchange earner to crude oil till around 1972. CBN, (1998). Suitability of the crop to the local weather and climate of the producing environments, coupled with the possibility for joint cultivation of arable food crops on the same plot by the dominantly peasant farmers, account for its high production yield (Adegeye, 1977; Oni, 2000 and Soneye, 2014).

Furthermore, Cocoa production was an integral component of the Nigerian economy in the colonial and post-colonial eras. Prior to the development of petroleum, it was one of the principal employers of rural labour in Nigeria. (Niekerk, 2005). Cocoa cultivation provoked profound changes in determining who was wealthy in several agrarian communities in Nigeria. (Ezekiel, 2000, Akinola, 1998 and Guyer, 1980). The performance of this commodity (cocoa) was a significant constitutive element of rural earnings and Nigeria's capital

formation in the colonial and post-independence era. South-West Nigeria hosts the major cocoa farms in Nigeria and West Africa after Cote d'ivoire and Ghana. South-West Nigeria is one of the six geopolitical zones of Nigeria. The region constitutes the dominant supplier of cocoa and hosts important cocoa farming communities in Nigeria. These rural agrarian communities are numerous in states such as Ondo, Osun, Ekiti, Ogun and Oyo. Since the 1950s, cocoa has been a major employer of rural labour and a major means of livelihood for the people. The development of cocoa cultivation brought in its wake a new innovation and reoriented rural livelihood (Adeshina, 2004 and 1994). Cocoa more than any other export crop, had remarkably achieved the incorporation of the Nigerian farmers into the international economy (Adeshina, 1994).

The cocoa producing region of South-West Nigeria at independence singularly accounted for the high proportion of the total output of the crop generated from Nigeria and West Africa. On the average, the region's cocoa accounted for not less than 27% of all the agricultural export earnings, 29% of the non-oil export earnings and 0.6% of total export earnings between 1960 and 1980 and declined precipitously between 1986 and 2004 (World Bank, 2011). The production and export of this commodity was pivotal to Nigeria's capital formation, rural livelihood sustainability as well as provision of human, capital and basic infrastructural development in the country. For instance, out of the surplus accrued, to the Western region government between 1955 and 1960, from cocoa exports, the government planned a capital disbursement of £20 million pounds taken from the Cocoa Board to finance schemes designed to support cocoa farmers and development and another £21 million pounds was planned for between 1960 and 1970 (Olatunbosun, 1972). From the surplus earnings that accrued from cocoa, the defunct Western Nigerian Cocoa Board was able to build the Cocoa House in

Ibadan (the first skyscraper in West Africa); supported the establishment of several tertiary institutions; (Sanusi, Akinwumi, and Salami, 2001) and the Liberty Stadium Ibadan while the Unions of Cocoa farmers also established and constructed schools in some producing areas especially between 1960-1980.

Since the 1950s, Nigeria has contributed tremendously to world cocoa supply. In fact, until relatively recent times, West Africa produced up to 75% of the world's cocoa export annually with Ghana, Nigeria and Ivory Coast producing and exporting a greater percentage. The cocoa bean generated a chocolate business to the value of U.S. \$86 billion annually for the West African region until the end of the 20th century (Akinyeye, 2014 and Lewis, 2008). Although cocoa has become a tertiary export commodity and an inconsequential means of livelihood in some rural agrarian communities in Nigeria, its production is still a cardinal means of income for several producing households in South-West Nigeria. This study therefore examines the trends in cocoa production in South-West Nigeria since the pre-oil boom era to the post oil-boom era, with a view to analysing what happened over the years. Particularly, it investigates the causal factors that aided the decline in production, examines the policies directed at improving production and finally points out ways for improving the current situation.

1.2 Statement of Problem

Cocoa production and the export of its produce in the 1950s and the early 1970s accounted for not only the industrial growth in South-West Nigeria, but also triggered rapid socio-economic development of the producing areas. Earnings from the export constituted a major source of revenue to the government for financing major government activities such as education, health services and provision of pipe borne water. The general development of infrastructures

such as roads, railways and telecommunication systems were made possible through revenue from cocoa exports. Despite the rapid development that cocoa production brought about, the revenue obtained from the export of the product has declined, a decline occasioned by the discovery of crude oil. Production of crude oil and the revenue therefrom has thus diminished/displaced the status of cocoa as a significant foreign exchange earner.

From the late 1970s, Nigeria experienced many symptoms of what is generally referred to as the 'Dutch disease – a situation whereby as a result of strong size in the real effective exchange rate emanating from the growth and development of one sector of the economy, the other sectors suffer serious deterioration and decline (Mabogunje, 2011).

The major non-oil tradable agricultural goods in the country included cotton and groundnut from the north, oil palm and rubber from the south east and cocoa from the south-western part of the country. Each of the crops played major roles in sustaining the economy of the respective regions. Of particular interest is cocoa which sustained the economy of the south-western part before it was displaced by crude oil in the 1970s. The decline in production has negatively affected the socio-economic development of the producing areas in particular and the country in general. The problem of the decline in revenue obtained from cocoa as well as the continued dependence on crude oil as the major reliable foreign exchange earner seriously impacted on the continued sustenance of cocoa production. This decline is not unconnected to the neglect of the agricultural sector by successive governments. As argued by Debenhams (1999), Nigeria has the highest percentage of cocoa trees that are over 30 years old among the producing countries across the globe. Also the world market price dropped by 40% in the 1998/99 crop season to £569/ton in February 2000, an all-time low in 26 years (ED and

FMAN. 2001). ED and F Man is an employee-owned Agricultural commodities merchant and brokerage company.

Despite efforts to improve the situation through series of interventions, the anticipated results were hardly achieved with the volume of production still far below expectation when compared to the volume before the oil boom of the early 1970s. The resulting steady decrease in production of cocoa has led to rural-urban migration of youths and farmers, gross reduction in earnings for the producing local, state and federal government, unemployment, poor infrastructural development and poor state of social amenities in the region.

1.3 Aim and Objectives of Study

The aim of the study is to examine the trends of cocoa crop production in eight selected Local Government Areas (LGAs) noted for high cocoa production across four states of south-West Nigeria between 1950-1970 (pre-oil boom) and 1971-2010(post-oil boom) eras in Nigeria.

The Specific Objectives are to:

- evaluate trends in the volume of cocoa crop production within the study area spatially and temporally between the pre- and post-oil boom eras.
- analyse the factors responsible for the trends in cocoa crop production and their significance over the study areas and periods.
- examine the influence and impact of the farmers socio economic characteristics on the production of the cocoa crop within the study period.

- assess the impact of relevant policies and incentives by the government and other stakeholders directed at improving cocoa crop production.

1.4 Significance of Study

Although the cocoa production sector holds an important position on economic development and food security in Nigeria, systematic studies have not been conducted on comparative assessment of cocoa production between the pre-oil boom and post –oil boom eras of the country. The study attempts bridging this gap and add to the body of knowledge on cocoa production in Nigeria with emphasis on the subject themes and areas. It assesses the patterns of production and the factors responsible for it over the study area and period. This is with a view to engaging the efforts by stakeholders, particularly the federal government, National Cocoa Development Committee, Cocoa Association of Nigeria, Farmer’s Development Union, at facilitating the crop production. This is with a view to improving the livelihood of the farmers and enhancing the development of supportive social amenities in the producing areas. The study provides a discourse on relevant aspects of the current efforts at restoring agricultural production as a precursor to agro-industrial development, food security and sustenance in Nigeria.

In recent years, the environmental, economic and socio-political dimension of oil and gas production has been of concern globally. By comparing and contrasting the pre-oil boom and post –oil boom eras, the study has identified and examined the implications for strengthening cocoa production, marketing and foreign exchange earnings in the country.

1.5 Scope and Delimitation of Study

The study is limited to four of the six states of South-West Nigeria noted for high cocoa production in the country. These are: Ondo, Osun, Ekiti and Ogun. Lagos and Oyo state are excluded because Lagos does not have cocoa farms and Oyo state produces much less when compared to the other four states. The division of the old Western Nigeria into six states over the years affected the efforts at accessing some institutional records on crop production and marketing from respective departments responsible for the crop in each state. Supplementary data were generated however using relevant scientific tools and methods.

1.6 Research Questions

The following research questions are formulated to align with the study objectives.

1. What were the trends in cocoa production spatially and temporally during the pre- and post- oil boom eras?
2. What factors were responsible for the observed trends and what is their significance for the selected study areas and periods?
3. How significantly influential are the socio-economic characteristics of the farmers on crop production in the selected study areas?
4. In what ways do government policies and incentives as well as those of other stakeholder groups impact cocoa production?

1.7 Research Hypotheses

The research hypotheses from which conclusions are drawn for the study are as follows:

1. H₀: There is no significant decline in the volume of production from the pre-oil boom to the post-oil boom era in South-West Nigeria.
2. H₀: There are no significant differences in the factors (Seedlings, access to loan, storage, pesticides, marketing, social amenities, age of plants, fire outbreak, and lack of interest by younger ones) that affect cocoa production in the study periods.
3. H₀: There are no socio-economic variables (gender, marital status, educational level and occupational priority) that determine the level of cocoa production in the pre and post-oil boom eras.

1.8 Rationale/Justification of Study

The discovery and exploitation of petroleum in commercial quantities in the 1970s led to the decline in the importance attached to cash crops in Nigeria. Nevertheless, cocoa is still one of the major foreign exchange earners from non-oil export commodities in the country and still has far reaching impacts on more than 10 million people who live in the producing belts and depend on agriculture as a major occupation.

In recent years, the production marketing and revenue significance of cocoa has nose-dived thereby affecting the socio-economic life of the farmers. There is therefore the need to assess and compare the factors responsible for the changing status of the crop comparatively from the pre-oil boom era to the post-oil boom era spanning about 60 years (1950 to 2010) with a

view to examine the potential for improvement and significance for sustainable socio-economic development of the producing areas.

1.9 Operational Definition of Terms

The operational definition of terms are listed below.

- a. **Cocoa Producing Belt:** This is defined as the geographical space/area within which cocoa is cultivated.
- b. **Cocoa Storage Facilities:** This is defined as warehouses where dry cocoa beans are stored.
- c. **Post – Oil Boom Era:** This is defined as the period after the oil boom when earnings from cocoa declined as a major foreign exchange earner for the country from 1975-2010
- d. **Pre-Oil Boom Era:** This is defined as the period when cocoa was the highest foreign exchange earner for the country before crude oil took over as the highest foreign exchange earner for the county between 1950-1970.
- e. **Socio-Economic Development:** This is defined as the improvement in the standard of living of the people in a community and their economic wellbeing.
- f. **South-Western Nigeria:** South-West, Nigeria is a geo-political region made up of Lagos, Ogun, Oyo, Osun, Ondo and Ekiti States
- g. **Spatio-Temporal Analysis:** A geographical connotation of the study of events over space and time periods, in which the cocoa production that is being assessed in the study is carried out.

1.9.1 The Study Area

The study area is located in the south west part of Nigeria covering Ogun, Osun, Ondo and Ekiti states. Two Local Government Areas each from four of the six states in the cocoa producing belt of south-west Nigeria were covered in the study. As shown in Figure 1, they include Ikole and Ekiti East in Ekiti-State, Ijebu-North and Ijebu-East in Ogun State, Idanre and Akoko North-East in Ondo as well as Atakumosa and Oriade in Osun State. The LGAs or study region falls roughly within longitudes $2^{\circ}40'E$ to $6^{\circ}00'E$ of the Greenwich and latitudes $5^{\circ}53'N$ to $9^{\circ}11'N$ of the Equator. The states within which the LGA falls and the communities studied are as shown in figure 1. The region is mainly within the cocoa belt of Nigeria shown in Figure 2.

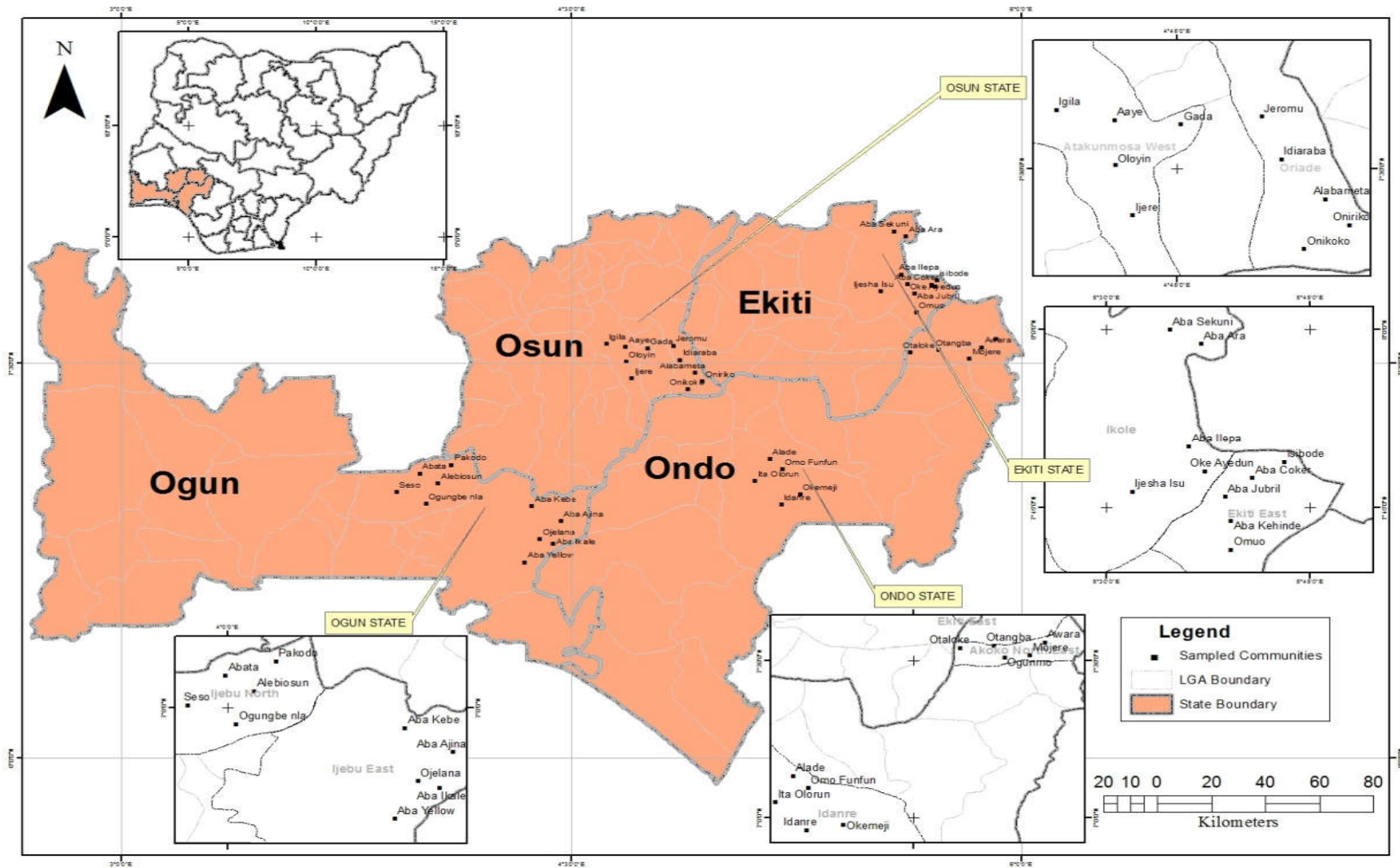


Figure 1: The Study Area

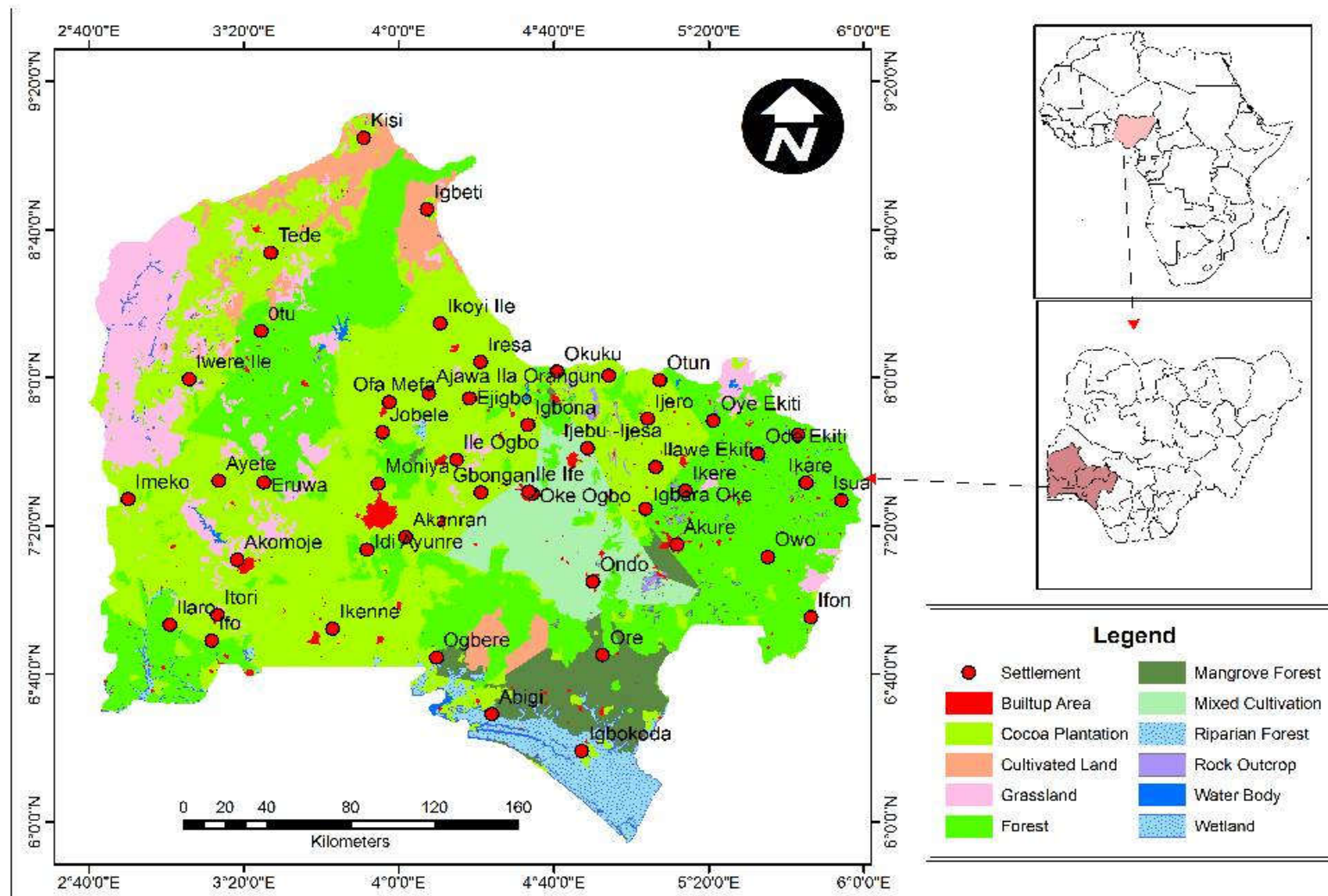


Figure2: The Study Area showing the Cocoa Belt and other Agricultural Landmarks.

1.9.2 The Cocoa Belt of South-West Nigeria.

The Nigerian cocoa belt covers a total area of over 16,000 square kilometres, a tenth of which is planted cocoa. It produces over 95% of the country's cocoa, the rest coming from the south-eastern and Mid-western States in Nigeria. In the west and north, the limits of the region are set by rainfall and follow approximately the 1,143mm rainfall isohyets, while unsuitable soil combined with excessive rainfall are the limiting factors in the east and south. In Ibadan and Ife-Ilesha Divisions of Oyo Provinces where cocoa production is concentrated, *percapita* income is more than double the national average and the high standard of living is obvious from the expensive houses and dresses of the local people. By tradition, the Yorubas live in towns and it is in the cocoa belt that these towns are concentrated.

The emphasis placed on cocoa and kola cultivation as well as the growth of towns in this region has converted the cocoa belt into a food deficit area. But unlike other such food deficit areas of the Jos Plateau, and parts of Owerri and Onitsha Provinces, the cocoa belt has much cultivable but as yet uncultivated land. Wherever suitable land for cocoa exists, local farmers concentrate on cultivation of cocoa, and grow practically no food crops, particularly when the trees are in full bearing. The general belief appears to be that no food farmer can prosper as much as the farmer who plants cocoa and so the bulk of the yams and other foodstuffs sold in Ibadan and Ondo comes from non-cocoa growing parts of Oyo, Iseyin, Ekiti and Owo Divisions. (Udo, 1970).



Plate 1: Cocoa farm.

1.9.3 The Physical Setting

The landscape of the study area in most cases is characterized by lowlands, undulating grounds and rugged hills with granitic rock outcrops in many places. The land rises from the coastal areas to the rugged hills in the north. Among the hills, is the Idanre Hill upon which a tourist centre has now been built. It is not uncommon to find isolated blocks of high standing

but smoothed inselbergs thoroughly polished by agents of denudation in places like Ile-Oluji, IgbaraOke and Ilara areas. The inselbergs sometimes are found in groups.

It enjoys a tropical climate with distinct dry and wet seasons. The rainy season lasts for more than eight months in the year (April-October) and the annual rainfall total decreases from 2000 millimeters in the southern parts to about 1,150 millimeters in the northern parts. Ayoade (2004) observed that there is a variation in the distribution, duration and intensity of rainfall amounts from the coastal areas to the hinterland. Adegeye (2006) had earlier stated that cocoa trees which attain a height of 37.5 centimeters to 62 centimeters require annual rainfalls ranging from 1,125 millimeters to 1,500 millimeters and must spread over eight or nine months, followed by a dry period of three or four months to enable the cocoa pods to ripe. This observation indicates that the study area has the potentials for cocoa to flourish well. The period of dry season that is, November- March is very important for the fermentation and drying of cocoa seeds. The average temperature of about 35° C enables cocoa pods to ripe quickly and allows for an easier preparation of cocoa beans for sale.

Under present climatic conditions, lowland rainforest is the natural vegetation, even in the northern districts of Ekiti. A heavy biotic pressure due to centuries of human occupation has, however, reduced the forests to derived savanna, particularly in the drier northern fringes and in areas having soils with poor moisture retaining qualities. Gallery forests along streamside's are common in the derived savanna of Ibadan, Ede-Oshogbo and Ikirun Districts. These forests feature such conspicuous species as the *Brachystegiaeurycoma* which has flaming red young foliage during the months of January and February. Large forest reserves exist in Ondo and Ijebu Provinces and are exploited in much the same way as the forests of Benin

Lowlands. Afforestation with teak is practiced by the Forestry Department as well as by local farmers, the tree plantations being concentrated in the derived savanna areas where they are intended to provide building poles and fuel. (Udo,1970).

The region is drained by many north-south flowing rivers of which the Ogun, the Osun, the Shasha and the Owena are the more important. The main rivers normally flow all-round the year, but there is a marked seasonal variation in their volume and in exceptionally dry years many of them may be reduced to a series of pools maintained by sub-surface flow. The smaller tributaries are dry each year for periods varying from a few weeks to several months. Navigability of the main river channels is restricted to their lower reaches where they form part of the coastal creeks, but in general these rivers constitute an impediment to east-west road communications. (Udo, 1970).

Edaphically, the character of the soil profile in the study area is determined largely by the nature of the parent materials. Most of the study area is composed of a great variety of Basement Complex rocks, giving rise to ferruginous soils that have high clay content and are of good retentive capacity (Udo, 2001). The determination of whether a particular soil is a product of the underlying or closest parent material is usually based on an inference. It is obvious that the inselbergs in the area were subjected to various stages of disintegration by agents of denudation and weathering processes thus, the regolith and other weather able minerals were washed down the valley forming extensive layers of alluvial clayey type of soil suitable for the growing of cocoa trees.

1.9.4. The Socio-Economic/Cultural Setting

The traditional settlers are Yorubas who traced their origin to Oduduwa of Ile-Ife in Osun State. Incomes from the primary sector accounted for a vast proportion of the resources for developing the urban areas of the region over time (Udo, 1970). However, there are many local dialects spoken such as the Ekitis, Akokos, Owos, Ondos, Akures, Ikales and the Ilajes. Other inhabitants in the study area include the Arogbos and Edos who are not strictly Yorubas but all the languages are understood by nearly all the inhabitants of the area (CDU, 2000). The people live in compact settlements with varying degree of population concentrations. Apart from the compact settlements, there are numerous farm villages and hamlets with five to ten people living in them; usually a farmer, his wives and children. The farmsteads are found scattered all over the place and their locations are far from the main compact settlement which used to be the farmer's home town. It is usually during important events such as Yam Festivals, Christmas, New Year, the Muslim Sallah and launching occasions that farmers along with their wives and children come home.

The principal occupation of the people in the study area is farming. Agriculture is the main stay of the economy and their means of livelihood. The major industrial cash crops are cocoa, palm produce, kolanut and timber. The subsistence food crops include yam, cocoa-yam, cassava, rice, plantain, beans, maize and a variety of vegetables.

CHAPTER TWO

2.0 LITERATURE REVIEW/CONCEPTUAL FRAMEWORK

The literature review/conceptual framework for this research are stated below.

2.1 Cocoa and its Origin

Centre for Agriculture and Bio-Sciences International (CABI, 2003) writes that the word cocoa derives from the Greek words for “food of the gods” and key components being the beans (*cacahuatl*), pod (*cacahuatzintle*) and tree(*cacahuaquahuitl*). It is believed to have originated from several potential localities around the foot of the Andes cordillera and the upper reaches of the Amazon Hill in South America (CABI, 2003). Romain (2001) argued that it originated on the edges of the Amazon and Orinoco basins in South America, noting that the cultivation of cocoa is dated to ancient times in the American tropics, particularly by the Toltec’s (900-1,200 AD).

Opeke (2003) reported that the first accurate export figure of dry cocoa beans from Nigeria was in 1910. However, it was revealed that the first exportation of cocoa beans from Nigeria was in 1895 (Sanusi and Oluyole, 2005). The crop and its products (especially chocolate) are commonly consumed worldwide. However, per capital consumption is poorly understood, with numerous countries claiming the highest.

2.1.1 Economic Uses of Cocoa

The utilization of the main (economic) component of cocoa, i.e. the beans is well established. It is usually the major component of instant beverages and chocolate as well as some other

foods. However, some other economic uses are not so popular since majority of these other (other economic uses) are mainly research discoveries. Furthermore, these discoveries are mostly on the by-products of cocoa. Many researchers have carried out investigations into the alternative uses of cocoa. Part of the initial discovery was that cocoa pod husk (CPH) contains pectin which can be broken down to sugars as well as ash and organic acids such as galacturonic acid (Blakemore, Dewar, and Hodge, 1966). Hence, it (CPH) could be utilized for producing fertilizer, livestock feed and soap making; (Blakemore *et al*, 1966). As a result of this, further studies were carried out and CPH as well as cocoa juice (mucilage) were found to be “economically useful” in producing a variety of feed rations for different livestock types, biogas, fertilizer, alcohol, pectin, soap, jam, nematicides, etc (Akinrimisi, 1971; Egunjobi, 1977, Olubamiwa and Akinwale, 2000). Further investigations led to research breakthrough in the use of cocoa bean shell which is a by-product generated during bean roasting in the cocoa processing factories (Akinsoyin and Adeloye, 1987, Adomako and Tuah, 1987, Olubamiwa *et al*, 2000). Also, alternative uses for cocoa beans were investigated and it was found to be useful in making soft drinks and wine when its pulp is extracted (Lopez, 1984). The beans were also found to have pharmaceutical uses (Samuel, Abdul, and Seng, 2000).

The advantage inherent in this cannot be underestimated since these can have tremendous impact on the economies of the cocoa countries of origin. For example, cocoa pulp soft drink that started on a low key around mid- 1980s in a region in Brazil (Lopez *et al*, 1984) has boomed into a thriving industry by 1977 so much that regional extraction capacity increased from 24,000 tons to 152,530 tons between 1990-1997 (Mororo and Serodio, 2000).

Also, Mororo and Serodio (2000) revealed an increasing trend in employment generation as a result of increased regional extraction capacity of cocoa pulp soft drink firms' plants in Brazil.

The boom in the agro- industrial sector in Brazil placed a heavy demand on fossil fuel hence the Brazilian government further enhanced the sector by putting in place policies that favour the development of biogas from cocoa pod husk (Lopez *et al*, 1984). Another area which the Brazilian experience has stimulated within its economy is the design and fabrication of machines and other equipment which have helped the industry greatly (Freir, Schwan, and Serodio, 2000). This has provided gainful employment for engineers, researchers and technicians alike. However, it is worthy to note that small/medium scale entrepreneurs dominate this sector in Brazil.

Oni (1977) enumerated the factors limiting the “successful economic performance” of cocoa processing in Nigeria to include large capital investment, under- utilization of existing capacity, discount pricing for finished products, protective tariffs charged by developed countries, and low level of domestic consumption.

The above highlights the fact that any discussion on cocoa utilization will be incomplete without a mention being made of marketing and a very important component of marketing i.e. consumption which determines the consumers’ demand for the value added product. This becomes more pertinent in view of the fact that production, processing, packaging and other activities become meaningless if there is low or zero consumer acceptability for the finished product.

2.2 Global History of Cocoa Production

Cocoa was introduced to the West African sub region from Brazil. By the 1950s, Ghana and Nigeria had become major producers. Cote D’Ivoire came strongly on to the scene in the 1960s and steadily increased its output. Ghana produced 451,000 tons on the average in 1960 - 1965,

followed by Nigeria with 21,800 tons and Brazil with 12,700 tons. The following period, 1966 - 1970 saw a decline in Ghana's output to 37,200 tons while Cote D'ivore and Brazil showed relatively large increases (41% and 40.7% respectively). From that period, production in all the countries under review increased except Nigeria, which declined steadily (Akinwunmi, 1995).

Cote d'ivoire overtook Ghana in 1981 — 1985 and has remained the world's largest producer of cocoa followed by Brazil, with Ghana a distant third, producing less than 200,000 tons annually during the five-year period. Nigeria's cocoa output stood at 153,900 tons in that period. Malaysia, which produced only 400 tons in 1961, gradually increased its production until it recorded 71,700 tons in 1981.

The next five-year period saw Cote d'ivoire hitting the all-time high level of 689,500 tons, which was nearly double the output of Brazil that stood at 355,700 tons and triple Ghana's production. Meanwhile Nigeria's cocoa output further declined to a mere 137,000 tons and Nigeria was clearly overtaken by Malaysia, which recorded 198,600 tons.

The cocoa production trend shows that Cote d'Ivoire produced 840,000 tons in 1994, Brazil had 300,000 tons and Indonesia came third with 260,000 tons while Ghana managed to hold the fourth place with 245,000 tons. The fifth largest producer is now Malaysia with 220,000 tons while Nigeria holds the sixth position with 135,000 tons, Cocoa is very important to the agricultural sectors of a number of producer countries (Côte d'ivoire, Ghana, Cameroon, Grenada and the Dominican Republic) and those of others, including some newly industrialized countries in Latin America and South East Asia (Brazil, Ecuador, Colombia, Malaysia. Indonesia)

Akinwumi (1995) therefore opined that the above trend is certainly disturbing for Nigeria and unless serious efforts are made to re-establish Nigeria's position in cocoa producing and supply industry, even lesser producers like Cameroon, Equador and Papua New Guinea could overtake Nigeria. While Nigeria's cocoa output fell from its peak of 248,000 tons per year to 135,000 tons between 1970 and 1991, the world's total production has managed to increase steadily.

Available statistics show that total production in 1961 - 1965 averaged 1,241,000 tons rising steadily to 2,211,000 tons in 1986 - 1990. The 1994 total output was estimated to be 2,467,000 tons. Thus Nigeria's losses in production were not felt in terms of aggregate supply since other countries supply compensated for the shortage in Nigeria's supply. Akinwumi (1995). The implication of the above as opined by him is that Nigeria would easily be forgotten in cocoa production and supply business. This would cause serious problems for the lives of millions of Nigeria's small scale cocoa producing farmers and their families. Also other benefactors from cocoa industry would suffer from this set back in cocoa industry.

On the history of cocoa production in Nigeria, average cocoa production figures between 1967 and 1969 was put at 227, 660 metric tons, it increased to 239,600 metric tons between 1970 and 1974 after the discovery of oil during which the production figure fell to an average of 203,000 metric tons. This negative development continued till 1989 when the average production between 1985 and 1989 was 120,000 metric tons. From 1990, the average cocoa production between 1990 and 1994 increased to 146,000 metric tons. Since then cocoa production had been on the increase in Nigeria and the average production increased to 175,000 metric tons between 2000 and 2004. This figure is far below the average production

of 1970 and 1974 before oil was discovered. Cocoa acreage actually declined for most part of the 1980s (FAO, 1985 and FAO, 1990-1997).

This decline could be attributed to cocoa farms abandonment (ICCO, 1999). The increase in the 90s could be attributed to the effort of the federal government to promote cocoa production through NCDC. This is in line with the situation in Brazil and Cote d'Ivoire some years back. Government policies reinforced the expansion of cocoa cultivation in the late 1970s and early 1980s when officially sponsored cocoa development and rehabilitation programmes were responsible for an increase in areas under cocoa cultivation, most of which used modern hybrid planting materials. Expansion of cocoa production into new areas in Indonesia was also promoted, as a means of economic growth and development in rural areas.

2.2.1 Global Production of Cocoa

UNFAO (2012) established the global tonnage of cocoa produced in the years shown in Table 1. It shows an increase of 131.7% in 2004 over 1974. There were 3.1 million tons of cocoa beans produced in the growing seasons of 2008-2009- Table 2. Of this total, African nations produced about 2.45 million tons (69%), Asia and Oceania produced 0.61 million tons (17%) and the Americas produced 0.48 million tons (14%). The two African nations of Cote d'Ivoire and Ghana accounted for more than half of the output with 1.23 million tons (35%) and 0.73 million tons (21%) respectively (Table 2).

Table 1: The Global Production of cocoa, 1974-2004

Year / Period	Production ('000 tons)
1974	1,556.5
1984	1,810.6
1994	2,672.2
2004	3,6071.
2014	4,370.1

Source: F.A.O (2012), *Production Year Book*, Food and Agriculture Organisation (FAO), Rome Italy, ICCO (2016) Quarterly Bulletin.

Table 2: Cocoa Production by countries for 2008-2009, 2011-2012, 2013-2014 and 2014-2015 seasons

Countries	2008 and 2009 seasons		2011 and 2012 seasons	
	Volume ('000 tons)	Percentage	Volume ('000 tons)	Percentage
Cote d'Ivoire	1230	34.70	1650	35.09
Ghana	746	20.60	879	18.69
Indonesia	489	13.80	936	19.91
Cameroon	220	5.90	256	5.44
Nigeria	210	5.90	383	8.15
Brazil	165	4.70	253	5.38
Ecuador	13	3.70	133	2.83
Malaysia	32	0.90	NA	NA
Mexico	NA	NA	83	1.77
Dominican Republic	NA	NA	72	1.53
Peru	NA	NA	57	1.21
	2013 and 2014 seasons		2014 and 2015 seasons	
Cote d'ivoire	1746.2	42.34	1795.9	45.02
Ghana	896.9	21.75	740.3	18.57
Indonesia	375.0	9.09	325.0	8.15
Cameroon	211.0	5.12	232.3	5.83
Nigeria	248.0	6.01	195.0	4.89
Brazil	228.2	5.53	230.0	5.77
Ecuador	232.0	5.63	261.0	6.55
Malaysia	6.0	0.15	6.5	0.16
Mexico	30.0	0.73	28.0	0.70
Dominion Republic	70.0	1.69	82.0	2.06
Peru	80.7	1.96	91.5	2.29
TOTAL	4124.00		3987.5	

NA: Not Available.

Source: UN Food and Agricultural Organisation (2012), ICCO (2016) Quarterly Bulletin.

The existing scholarship on cocoa farming can be grouped into three categories, based on the evolution of works on the phenomenon. The first category of literature focuses more on the interface between cocoa production and colonial capitalism, while the second engages the

subject in the context of post-independence political economy of Nigeria in the 1960s and 1970s. The Third category are works that focus on the post Structural Adjustment Programmes/Oil Boom moments. In this regard, Berry (1974, 1980, 1985 and 1993), Guyer (1980) and Ezekiel (2000) studies forms the major body of works on cocoa farming in Nigeria. Sara Berry's scholarship is the most appropriate starting point for any serious exploration of cocoa and socio-economic transformation in southwestern Nigeria, not only because she conducted some of the earliest historical research on this subject, but also because her findings continue to have significant implications for agriculture and social change decades after crude oil superseded cash crops as Nigeria's main foreign exchange earner. (Aderinto, 2014).

Berry (1974, 1980, 1985 and 1993) examines the introduction and consolidation of cocoa, “as a process of capital formation in a land surplus economy. Cocoa economies, according to her, reconfigured Yoruba demography by paving the way for the establishment of new settlements and villages structured along an indigenous socio-political system. In this work and several others, she pays close attention to cocoa farmers' ingenuity in investing in new economic ventures, labour migration, and the creation of new patterns of relations among diverse groups of people. By focusing on the transformation of agrarian economy in response to imperial capitalism, Berry is able to tell the stories of farmers and their families as active agents in the world capitalist system. She proves, convincingly, that the impact of cocoa on the land tenure system varied from place to place and was shaped by indigenous cultures of the various domains. The capital formation according to Berry (1980, 1985) occurred due to the ability of the Yoruba's to take complex risks in commercial agriculture in addition to the colonial policy framework and application of the vent for surplus theory.

Economic surpluses accrued by Yoruba cocoa producing communities help to improve the condition of living, of peasant farmers in western Nigeria. Agrarian accumulation in Berry (1985) studies created immense opportunity for social and economic mobility of farmers generally in Yorubaland. She therefore argues that income made by indigenous capitalist farmers paved the way for the emergence of several political, intellectual as well as agrarian (Bourgeoisies) elites who dominated Nigeria's public space throughout the twentieth century. One fundamental flaw in Berry scholarship, however, is the degree to which she deployed the data she derived from micro studies of cocoa communities in Ife and Ondo to generalize and make a case for spatial mobility and accumulation of wealth among the Yorubas.

Moreso, Berry is bias in her anthropological analysis. Berry asserts authoritatively that Nigerian cocoa farmers prospered tremendously under the British colonial capitalism in Nigeria and attributes the collapse of Nigeria cocoa industry mainly to the failure and weak agricultural policies of the Nigerian government in the 1960s and 1970s. What is more, (Berry 1985 and 1993) deployed her facts in favour of the modernization paradigm. She sees the adoption of the economic liberalization of Nigerian cocoa exports of the 1980s as a process of continuity and change in the process of agrarian accumulation, social change and capital formation rather than a dispensation of economic stagnation in rural cocoa producing social formations in Nigeria. However, Berry did not examine in specifics, the pattern and nature of cocoa production in different, though homogenous Yoruba cocoa producing communities in Western Nigeria. Put simply, Berry's (1974) data generally comes from two micro cocoa cultivating villages in Western Nigeria. She therefore left a gap for a holistic and comparative study of the trends of cocoa production in South - West Nigeria.

Guyer (1980) dealt with the cultural and historical development of the division of labour by sex in two patrilineal societies notably Yorubaland and Beti cocoa farming communities in Cameroun. Guyer (1980)'s ultimate goal was to compare the degree to which gender relations participation and accumulation shaped the socioeconomic development of men and women in Africa. Utilizing an ethnographical approach to pinpoint the ratio of men to women's work over time, their relative values, their adaptation to resources and maximization of economic values inherent in cocoa cultivation, Guyer shows that the degree in which women experienced upward social mobility in Yorubaland was greater than that in the Beti community. Guyer (1980) notes that cocoa was predominantly men's occupation in the two communities; Beti and Yorubaland where women chiefly functioned as poultry farmers and engaged in planting and harvesting for their husbands. He argues that within the context of Yoruba cocoa farms, sexual division of labour operated under a strong cultural logic of male and female differences, despite the fact that the divinity of the earth (Onile), the custodian of the Yoruba farm "OrisaOko" is a woman (Guyer, 1980). In the Yoruba and Beti production system, women played significant role in agricultural activities; however, they hardly owned cocoa farms. This economic exclusion, he attributes to the tedious labour for cocoa planting coupled with prevalent land ownership rights and tenure system in Africa. He posits that the reason for the relative growth of cocoa farms in Nigeria and Beti was due to the time and high ratio of men to women in the production. For instance, Yoruba men on the average spent 82 per cent of their working time in the farm - Beti men spend 40 per cent while women in the two areas hardly meet 5 per cent. This in Beti society results according to Guyer (1980) to food insecurity and over dependence on husbands for every expenses on day-to day basis. Guyer further argues that women's inability to gain access to essential means of production

aided unevenness in social relations among men and women. Women's opportunities to earn their living directly from agriculture was circumscribed by cultural beliefs, rigour and the belief that they lacked the endurance needed for cocoa growing.

In the same trajectory, Ezekiel(2000),Ekpenyon(1984)andAkinola's(1998) studies focus on migration and the social character of production in South-West Nigeria and Cameroun differently. With regard to Nigeria, they investigate the effect of migration on cocoa production as well as challenges Nigeria cocoa farmers faced between 1950 and 1980. Ezekiel (2000) examines the changes in social relations among cocoa farmers/labourers, means of production, and distribution as well as the decline of the cocoa business in Nigeria in the 1970s. Ezekiel, (2000), highlights three main problems that affected cocoa production in south-west Nigeria. The first was the Nigeria civil war that compelled many Igbo migrant farmers and labourers from the southcocoa belt to return to the east, in view of the security threat to their lives during the time of the war. The second was the unprecedented discovery and boom in Nigeria's oil exports in the 1970s and concomitantly the rise of urban jobs which lured farm labourers and farmers to Nigerian cities for 'white collar jobs. The gap in these studies however is that like Berry (1980), Ezekiel (2000) also concentrated only on few localities in Ondo, Ibadan, and Ife cocoa producing areas. Ezekiel like Berry did not take into cognizance the spatio-temporal trends in cocoa production of cocoa producing areas of South-West Nigeria.

Stephen Ekpenyon, (1984) discusses the consequences of migration on Ikpe cocoa farming community in Cameroun between 1977 and 1980. He notes that migrants in Iketown prior to its colonial artificial demarcation enjoyed a deep sense of socio economic development and inter group relations owing to introduction of cocoa cultivation to the area in the mid

twentieth century. However, since 1981, as a direct result of the border dispute, the area witnessed large exodus of Nigerians cocoa farmers in Cameroon. Similar to Nigeria's case, Walker (2000) reveals, one of the effects of out-migration on Ikpewas also was a reduction in the labour supply. Migration, according to Ekpenyon, (1984), has led to a perpetual realization in the cocoa producing community that Indigenous capitalist cocoa farmers have to rely on local labour. This has raised the cost of labour to a level which many people, particularly those elderly men and women who have neither money nor well-to-do children, could not afford to pay.

This is however, beneficial to those members of the poor peasantry who have not yet joined the stream of migrants. Indeed, the rate of migration of new migrants has fallen from the peak of the 1960's and early 1970s. For example, in 1980, there were five new migrants to the cocoa farms compared with twenty-seven in 1971. The over searching result on gross output has been a reduction in the acreage under cultivation and a lower acreage has led to a permanent need for cash to make up the consumption gap. Land consolidation in Ikpe villages, as in other communities in South-Eastern Nigeria, is not taking place, since those who migrate to farms elsewhere do not normally dispose of the small parcels of land that they own in their home districts, though these plots may sometimes be leased to farmers until the migrants return. Ekpenyon asserts demonstratively that, out-migration and the sending of wives and children back to Nigeria have changed the traditional social structure and organization of the Ikpe community. Using his analogy, age long absences of the Ikpe male migrants on the cocoa farms have meant the emergence of a new type of social organization in which kinship relations based on a three-generational kinship structure are dominant. His study shows that more than 27 per cent of Ikpe households are now headed by women, and

such households probably have no male at home of working age - while at least 22 per cent of Ikpe men in the twenty-to-thirty-four age bracket are involved in migration owing to social insecurity and the question of identity. Ekpenyon, (1984). The verdict however, is that the implication of massive movement of over 10,000 Nigerians, largely from the Igbo and Ibibio, to migrate to work on the plantations of Southern Cameroon is profound in Ikpe. He concludes that the economy of Ikpe villages suffer from the loss of manpower which is disruptive to their social organization.

Akinola (1998) drawing on primary data from official and unofficial documents, interviews with smaller farmers and rural dwellers, former and serving officials as well as political functionaries examines continuity and change in farmer organizations in Nigeria's cocoa belt since the 1930s. Akinola (1998) demonstrates that the creation of a Congress system proximately after the abolition of the cocoa marketing board had debilitating effect on the structure of cocoa production and marketing in Ondo State. He notes that Congress was no more creative than Nigeria's adjustment programme was orthodox. Congress's very existence was rooted in the well-worn 'top-down' administrative traditions dating back to policy-making in the late colonial period; nor were its structures any different from those of its forbearers in the Western Region in the 1950s and 1960s. He posit convincingly that wholesale state retreat is a much less optimizing option where market failures are widespread. But market reforms to him, are no more likely to succeed without simultaneous efforts at deepening existing levels of farmer autonomy, both through genuine producer based associations, and by creating a broader rural alliance against unjustified appropriation of rural surpluses by less productive, urban based interests. Akinola (1998)

Asare (2011) investigates the impact of the “meso model” on Ghana’s cocoa sector in general and the practices and opportunities for smallholder cocoa farmers in connection to Ghana’s efforts to embrace globalization. He notes that despite the burgeoning campaign and general liberalization and deregulations of commodity boards in sub Saharan Africa, Ghana stood up to the IMF and the Bank by refusing to dismantle its cocoa marketing board (COCOBOD) as was recommended by them under the Washington Consensus and rather adopted a” meso model” of partial liberalisation of the cocoa sector after skilful negotiations. He further pontificates that the output of cocoa farmers in general is a function of not only the price paid to them but also the overall environment created for production. Secondly, the” meso model” Ghana adopted challenges the “One Size Fits All” Washington Consensus development model because it enhanced cocoa farmers’ output and income, and Ghana’s cocoa export and foreign revenue enabling it to attain economic growth and development. Thirdly, the use of mobile phones by cocoa farmers contributes to the reduction in their transport cost and transforms their mode of operations. He concludes that, Ghana’s efforts to embrace globalisation and to integrate into the global economy have been impressive albeit urban biased.

The literature review thus shows that scholars have engaged the subject from multi-disciplinary perspectives. However despite the wealth of studies on cocoa not many works exist, using the spatio-temporal approach to analyze the trends in cocoa production in South West Nigeria. The growing body of literature on cocoa production has been saturated by anthropological and historical scholars.

Other studies on cocoa production such as Olatubosun (1974) assessed cocoa’s contribution within the framework of a socio – economic impact analysis. He identified certain chains of impacts associated with cocoa production. These include a change in the pre-existing patterns

of labour employment to the overall development of a different pattern of labour migration in Nigeria, as providing income and insurance against old age to the individual farmer, as a source of foreign exchange and government revenue through sales tax, duties and Marketing Board surplus, in the development of infrastructure and as a raw material for agro-based industries. Food and Agriculture Organisation (1966), admits that cocoa brought great wealth to the coastal zone of West Africa, from Cote D'voire to Cameroon including Ghana and Nigeria.

The food deficit area which the cocoa belt has been turned into according to Udo (1970:26) resulted from the emphasis placed on cocoa and kola cultivation as well as the growth of towns in this region. He contended that whenever suitable land for cocoa exists, local farmers concentrate in full bearing. In all cases, newly cleared forest planted with cocoa is not bearing any fruit. The general belief appears to be that no food farmer can prosper as much as the cocoa farmer. Adegboye (1974) refers to the introduction of cocoa planting into our agricultural system as not only an innovation but also an improved practice. This introduction changed radically the crop and income concept of their peasant farmer in addition to causing him to review his relationship with other peasants in the control or occupation and use of land resources.

Two types of hypothesis of marketable surplus are identified by Ilorin (1974). The first one considers marketable surplus as the quantity that the farmer has left for sale in the market after all his family consumption requirements have been met. That is marketable surplus is a function of output. Secondly, that it is determined by the demand for cash. This means that a farmer sells that quantity of his output which is just sufficient to satisfy his needs for cash. Thus increase in cash needs all things being equal, will lead to increase in marketable surplus

and vice versa. He thus inferred from this that the greater the cash income derivable from other sources than food production, the smaller would be the quantity of food surplus that has to be produced for sale in the market. Thus other farmers produce high quantity of food surplus for markets in areas of Ife, Ilesha and Ondowhere farmers have become so specialized in the production of cocoa and so devote all their available land and time to it that food has to be imported into these areas from areas which have been less suited for the production of cocoa.

The problem created by cocoa is explicit in Okurune's (1973) remark that "agricultural production and food production are not synonymous especially in descriptions of tropical African economies". According to him, Africa's most important commercial crops such as cocoa, coffee, cotton, and tobacco, are not domestically consumed as food. These crops are produced almost exclusively for export although as an economy develops, some of them begin to be used in part for domestic manufacturing. It is conceivable therefore that such countries, although primarily agricultural, could become heavily dependent on imports for their food supplies if they expanded their commercial or export crop production sufficiently far. Such a possibility he claimed, is even more probable in those cases where the export crop is a perennial tree crop. Okurume (1973) also did a critical analysis of public in agriculture in Nigeria. According to him it has traditionally focused on the expansion of commercial crops, while food production was generally left to develop on its own within the framework of the unaided market mechanism. He gave the example where in the mid-1960s the government of Western Nigeria published a proposal for a cocoa development scheme, the main objective of which was "to maintain Western Nigeria cocoa production and to increase cocoa farm productivity" in the same vein. The United Nations Food and Agriculture Organisation (FAO,

1993) in a report on Nigeria's agricultural development recommended that nearly sixty-three million naira (₦63,000,000) be invested in Western Nigeria cocoa production over the period 1968/69 to 1983/84.

Cocoa is grown almost entirely on small holdings and each farm is usually less than one hectare. Most of the cocoa plantations were established more than four decades ago and very old villagers and tenant farmers are involved in cocoa production (Opeke, 1987 and Adegeye, 2000). Although the production was so low at the start, by 1914 Nigeria was producing only about 4,000 tons per annum or less than two percent of the total world output. Progress became more rapid thereafter, and between 1913 and 1930, production increased to about 80,000 tons per annum. Nigeria's cocoa production continued to increase both in absolute quantity and as a proportion of total world productions, that by 1965, Nigeria became the second largest producer in the world with an annual output of about 270,000 tons (Olayemi, 1974; Olatunbosun, 1974; Aigbenekan, 2004; Sanusi and Oluyole, 2005). Her share of total world production also rose from about two percent barely half a century earlier, to about 18 percent. However, the discovery of oil in large quantities has brought a forward trend in Nigerian production and position in the world market (Ayoola, Badaru and Aikpokpodion, 2000). Daramola (2004) reported that Nigeria cocoa output has declined from over 300,000 tons to 155,000 tons with average annual growth rate declining from 8.30% during the 1992-1996 period to 1.8% during the 1997 – 2001 period. Respectively, also, Sanusi (2005) revealed that average cocoa output was 175,000 tons in 2000 – 2004 period. Cote d'Ivoire which was placed at a distant third in Africa with 143,000 tons behind Nigeria's 196,000 tons in 1970 is now the largest producer in the world with 1.3 million tons accounting for about 40% of total world production while Nigeria is currently the fourth largest producer

after Cote d'Ivoire, Ghana, and Indonesia (International Cocoa Organisation, 2003). The dramatic growth of cocoa production in Cote d'Ivoire is very interesting in that Nigeria supplied the improved F1 Amazon hybrid seeds to Cote d'Ivoire in 1965 for commercial planting to replace Amelonado variety hitherto grown there (Opeke, 2003).

Despite the fluctuations in production, western Nigeria remains the predominant cocoa zone accounting for about 94 percent of Nigeria's total output (Olayemi, 1974 and Ojo, 2005). Within Western Nigeria itself, most of the crop is produced in a small contiguous area, generally referred to as the cocoa belt (Ojo, 2005). Nigeria commenced commercial cultivation of cocoa with the Amelonado variety. The Amelonado is slow in growth, coming into bearing on good cocoa soils after five years of planting and it possesses a highly valued chocolate aroma with its medium-sized bean (generally less than one gram/bean). It produces its yearly crop all at once, generally between September and October under Nigeria's condition (Opeke, 2003). In 1935, the devastating cocoa swollen shoot disease (CSSD) virus was discovered in all cocoa farms in West Africa. The Amelonado variety that was then being grown was very susceptible to CSSD virus infection. West Africa Cocoa farms were on the verge of being wiped out. In an effort to rescue the farms, the West African Cocoa Research Institute (WACRI) was established with its headquarters at Tafo, Ghana and viable substations in Nigeria and Sierra Leone in 1939. The intervention of this institute led to the introduction of the tolerant Amazonian Forastero to replace the Amelonado. The colonial office jointly with British cocoa merchants financed WACRI until 1957 when Ghana attained independence. WACRI headquarter and substations were later converted to independent Research institutes on attainment of independence by the countries of location (Opeke, 2003)

The remarkable thing about the development of the Cocoa Industry Nigeria is that it took place with no major departure from the traditional peasant method of farming. The success of the peasant cocoa industry in western Nigeria and other parts of West Africa, has often been explained in terms of the “west-for-surplus” hypothesis which states, in effect, that the opening up of a relatively isolated country to world trade provides a vent for its surplus productive capacity (mainly land and labour) provided that the production of the new crop does not involve a drastic departure from the traditional method of economic organization (Olayemi, 1974). Myint (1964) stated that the function of international trade in such an economy is to provide the necessary effective demand for the output of hitherto surplus or unused resources.

Opeke (2003) reported that the first accurate export figure of dry cocoa beans from Nigeria was in 1910. However, it was revealed that the first exportation of cocoa beans from Nigeria was in 1895 (Sanusi and Oluyole, 2005).

The importance of cocoa to Nigeria’s economy cannot be over emphasized. Cocoa export had been and will continue to be a significant factor in the economic growth of Nigeria. For instance, in 1969 alone, cocoa earned ₦106 million naira (US \$74.2 million), which accounted for 40% of all agricultural exports for the year (Federal Office of Statistics 1972). Despite negative effects of government policy, cocoa remains the highest foreign exchange earner of all agricultural export crops (which the Structural Adjustment Programme (SAP) sought to promote as a development policy objective) in Nigeria (Tijani, Farinde and Agboola, 2001).

The need to improve the level of Cocoa production serve as the basis of Cocoa Projects financed by the Nigerian Government and the World Bank, the first of which started in 1971. This scheme was relatively modest covering 17,000ha, but it laid a foundation for a much larger, more widespread scheme to replant 184,000ha and to established 37,600ha of new cocoa plantation(s).The Nigerian government in an effort to increase National output supplied 26 million seedlings of cocoa to farmers for new planting and also established National Cocoa Development Committee (NCDC) for the producing states with a view to rehabilitating old farms and improve the country's production (Federal Republic of Nigeria, 2000).

However, it is worth noting that “the contribution of the temperate world to the tropical world, whether in capital or in knowledge, has in the main been confined to the commercial crops for export, where the benefit mainly accrues to the temperate world in lower prices” (Johnston1963:267).

Obatolu, FashinaandOlaiya(2003) had earlier remarked that cocoa produced well with minimal but sustained water availability through most of the year. The quantity of cocoa output is largely a function of the climate, soil, topography, diseases, insects and pests. Ajao (2006) highlighted factors militating against cocoa production to include shortage of farm labour, non-availability of essential chemicals and poor access road to cocoa producing areas. Nigeria has two major groups of farmers. Adegeye (2006) identified large scale cocoa farmers and the small scale cocoa farmers. The large scale cocoa farmers devote a higher proportion of their production to generation of income. The farmers usually opt for the creation of large cocoa holding through mobilization of family labour. The major problem facing cocoa production in Nigeria is the acquisition of land for cocoa farming.

In their study (Ajewole and Sadiq, 2010) investigated the effects of climate change on cocoa yield within the cocoa research institute (CRIN) Ibadan and discovered that an optimal temperature of 29° C coupled with a minimal of 900 – 1000 millimetres of annual rainfall are required for cocoa to flourish well. The correlation statistics showed a weak relationship of 0.2196 between temperature and cocoa yield. Also, the study discovered a weak inverse relationship between rainfall and cocoa yield. The result shows that the higher the rainfall the less in cocoa yields.

It is not gainsay that cocoa production is very critical to rural livelihood particularly where cocoa is being produced as it accounts for a high proportion of the household income. Gilbert, (2000) observed that the real income of the cocoa producers is dependent of the vicissitudes of the world market price of which cocoa marketing board was given the mandate to regulate but failed in this connection and subsequently scrapped in 1986.

The structural adjustment programme (SAP) that was introduced by the military junta had serious effects on cocoa industry. Idowu et al. (2007) examined the impact of market deregulation policies on cocoa production in the South western area of Nigeria and observed that consistent economic downturn affected cocoa production on the aggregate between 1970s and 1980s. The economic recess culminated in the introduction of SAP in 1986 to stem the trend. The study employed both descriptive and regression statistics and discovered that after two decades of SAP coupled with economic liberalization policy, cocoa production confined to the hands of small-holder operators with little application of chemicals to increase annual output. Alimi and Awoyomi (2001) had earlier remarked that the scrap of the cocoa marketing board also encouraged illegal commercial activities which lowered the quality of cocoa standard thus, made Nigeria to become backward in cocoa industry.

In their reports (Michael and Uche, 2011) observed that cocoa problems in Nigeria varies from ageing of farmers, cocoa trees are getting diminishing returns to high costs of chemicals. This is corroborated by (Ajao, 2006) who identified factors limiting cocoa production to include rarity of chemicals, shortage of farm labour, climate change and poor access roads to cocoa producing areas. It is obvious that cocoa farmers and the trees are ageing coupled with the low producer's price - have combined effects on cocoa productivity.

Plate 2 shows cocoa pods on cocoa trees and Plate 3 shows sun drying of cocoa beans in Oriade LGA, Osun State.



Plate 2: Cocoa pods on cocoa tree.



Plate 3: Sun drying of cocoa beans in Oriade LGA, Osun State.

Plate 4 shows weighing of cocoa beans in jute bags in Ogun State.



Plate4: Weighing of cocoa beans in jute bags in Amu market, Ijebu North LGA, Ogun State.

2.2.2 Spread of Cocoa Production to Africa

Spanish merchants probably introduced cocoa in the 16th century, into the island of Bioko (Fernando Po) in the Gulf of Guinea. The Dutch and Portuguese also introduced it in the 18th Century, into Sao Tome Principe. Around 1800, plantations were also established on the islands of Reunion and Madagascar.

For continental Africa, the important date is 1879, when a local planter brought back a pod from the island of Bioko and sowed the first beans in Ghana (Gold Coast). He thus obtained a

few trees, the origin of the entire African stock, which has been characterized ever since by its considerable homogeneity. Around 1923, Ghana overtook Brazil to become the world's largest producer. Cocoa was introduced into Nigeria from Ghana around 1890. The first plantations in Cote d'ivoire, established in the eastern regions in 1905, were not successful and it was only from 1912 onwards, following a government extension programme, that this new crop was grown on a wider scale. Towards the end of the 19th century, the Germans introduced cocoa into Cameroon. In Bas-Congo, cocoa originating from Sao Tome was already reported around 1887. A few years later the crop was introduced into Mayumbe and the central basin along the River Congo. Unlike Congo-Kinshasa, Liberia and the islands of Sao Tome and Principe, where cocoa production has essentially been the domain of large companies, almost all of West Africa's huge output has derived from small peasant cocoa farmers.

Since the end of the First World War, West Africa has dominated the world cocoa market. In addition, of the six leading exporting countries, four are African (Cote d'Ivoire, Ghana, Cameroon and Nigeria); one is South American (Brazil) and the other Asian (Malaysia).

In Cote d'ivoire, cocoa is cultivated within the forest zone between 5⁰ N and 8⁰N latitude. Cocoa cultivation spread from the east towards the center (Divo region) and from there towards the west, due to forest exploitation. About 90% of cocoa production is in the hands of African planters. Since 1960, the area under cultivation has increased dramatically in Cote d'Ivoire.

In Ghana, this crop, which is grown exclusively on small family farms, is concentrated in the southern humid forest zone and extends from the west to the east of the country, where

climatic and especially soil conditions are particularly favourable. Since 1965, cultivation has declined mainly due to the devastation caused by a viral disease known as swollen shoot disease and delay in the regeneration and expansion programmes.

In Nigeria, more than 97% of production comes from the South-West Nigeria, from an area lying between the savanna in the north and west and the extremely rainy areas of the southeast. In Cameroon, cocoa is the main export crop and 27 – 30% of agricultural land is devoted to it. In the southern area, including the Center (Nyong and Sanaga) and South (Ntem, Dja and Lobo) Provinces, which formerly supplied 65% of the total production, there has been a sharp decline. This is due to the ageing of the plantations and the devastation caused by black pod. Currently the Meme (South-West), Lekie and Mbam (Centre) departments alone account for more than 60% of production.

Estimations put Nigerian cocoa acreage at 10,000 acres (4,000ha) in 1912 and this increased to over 300,000 acres (120,000ha) by 1930 (Olayemi, 1974). Planting continued at a very heavy rate from 1930 to 1945 by which time nearly 1,000,000 acres was planted.

2.2.3. Cocoa production trends in individual countries

Lass (2004) posited that there are four major West African cocoa producers namely the Ivory Coast, Ghana, Nigeria and Cameroon. According to Lass (2004), together they account for about two-thirds of world production. Cote d’Voire produces about 43% of the world’s cocoa. The next largest producer is Ghana with about 14 percent of the world’s output. Nigeria produces about 6% of the world’s cocoa.

Outside of West Africa, the major producers of cocoa are Indonesia, Brazil, Malaysia, Ecuador, and Dominican Republic.

Cocoa production level across the globe varies from country to country with the African countries being the major producers of this commodity. This section discusses the cocoa production trends among various cocoa producing nations as stated by Lass (2004).

2.2.4 Cocoa Production Trend in Ghana

The trend of cocoa production in Ghana is as reported by Lass (2004), shows that the cocoa year 1964/5 gave a record cocoa production in Ghana (of 566,000 tons) due to very favourable weather, farmer motivation and the success of a Government-run cocoa capsid control programme introduced in the previous season. This level of cocoa production has never again been achieved and indeed from that time, there was a steady decline of cocoa production in Ghana for many years - reaching a dismal 159,000 tons in 1983/4. The very high cocoa prices seen in 1975/8 were not passed on to the Ghanaian cocoa growers by means of the Government controlled fixed price and so they became very dispirited; many Ghanaian cocoa farmers uprooted their cocoa trees for fire-wood and planted food crops instead. Nevertheless since then there has been, steadily, more rewarding prices for cocoa growers in Ghana, so that they are now receiving close to 70% of the Free on Board (FOB) export price and cocoa production is now on a rising trend.

2.2.5 Cocoa Production Trend in Cote D'voire

In Cote d'ivoire, there has been a steady increase in cocoa production since 1960. This was in large part due to a pro-active Government plan to encourage immigrant farmers to plant cocoa

after the land under primary forest had been exploited for commercial timber extraction. As a result, cocoa production rose from 62,000 tons in 1959/60 to 1,400,000 tons in 1999/00 at a quite remarkable average rate of about 320,000 tons per annum.

There is now very little primary forest remaining to be exploited in Cote d'ivoire and it may be that production of cocoa there has levelled out for now. Currently, the unstable internal security situation is discouraging farmers from caring for, or replanting, their cocoa farms (Lass, 2004).

2.2.6 Cocoa Production Trend in Brazil

The first plantings of cocoa in Brazil were probably made in about 1746 making it one of the earliest commercial cocoa-growing areas. Production reached about 100,000 tons in the 1930s and then languished there until the Government of Brazil mounted a very active planting and replanting programme for cocoa from about 1975.

This replanted and rejuvenated a very substantial area of elderly cocoa fields and encouraged the planting of cocoa in the Amazon region of Brazil, resulting in the recovery of Brazilian cocoa production from that level to some 400,000 tons over the period 1984 - 1998. Unfortunately, in May 1989 the devastating witches' broom disease of cocoa, which has for many decades been endemic on cocoa in parts of the Amazon Basin of Brazil, spread to the traditional cocoa-growing area in the state of Bahia in southern Brazil. The result was immediate and catastrophic. Production fell from about 400,000 tons in the mid-1980s to an average of some 140,000 tons over the period 1999 - 2002.

Many observers believe that it is now unlikely to ever return to the levels that were normal before the arrival of the disease. The risk that witches broom disease could spread to other cocoa growing areas of the world must be a matter of the gravest concern to cocoa producers and consumers alike. The importance of rigorous plant quarantine procedures for moving live cocoa materials cannot be overstated.

2.2.7 Cocoa Production Trend in Malaysia

There are many well established, commercial planting companies in Malaysia involved in large scale plantations of rubber, oil palm and at one time also of cocoa. Until 1975/6, Malaysia was an insignificant cocoa producer. The high world market prices of the late 1970s encouraged many of these experienced commercial operators to commit very substantial areas to mono-crop cocoa. This resulted in a very dramatic increase in cocoa production in Malaysia leading to a production peak of 240,000 tons in 1989/90. Since then, there has been an even more dramatic fall in cocoa production as these same commercial operators realized that cocoa is a crop that is poorly suited to large scale cultivation. In addition, there was a genuine shortage of agriculture labour as industrialization advanced in Malaysia.

The large-scale (plantation) cocoa has been uprooted and mostly replaced by oil palm. Many of the small or smaller growers have followed suit and cocoa production is now down to about 150,000 tons.

2.2.8 Cocoa Production Trend in Indonesia

Cocoa cultivation started in Indonesia on the island of Java in the early years of the 20th century under the Dutch administration of the day, but was virtually abandoned in the 1930s

due to a severe pest problem, the Cocoa Pod Borer (CPB), that remains very serious to this day.

From the early 1970s, active Indonesian Government involvement encouraged cocoa planting, partly by including cocoa as one of the crops in their Transmigration Schemes - which moves people away from the overcrowded island of Java to elsewhere in Indonesia. A number of plantation companies planted substantial areas of cocoa, though they were quite quickly discouraged for the same reasons observed in Malaysia. Cocoa exports became significant from the late 1980s and cocoa has now become an important export crop especially in Sulawesi. Though CPB is seriously spreading, production increases from Indonesia are still being expected.

2.2.9 Cocoa Production Trend in Nigeria

In Table 3, Ojo (2005) in his critical review of the cocoa production in Nigeria determined the average production level for every ten years since 1895 – 2004. The trend revealed that since 1895 up unto 1974 there was consistent increase in cocoa production in Nigeria. After which a gradual fall in cocoa production was recorded in cocoa industry; the fall was attributed to the neglect of agricultural sector due to oil discovery in the country (FAO, 1985 and FAO, 1990, 1997). There was a gradual increase from 2005 – 2014. This same experience was established in Venezuela when cocoa cultivation was very important before the discovery of oil.

Table 3 Decadal (10-year) moving Average of Cocoa Production since 1895 – 2014in Nigeria.

Years of Production	Average Tonnage per Annum
1895 – 1904	261
1905 – 1914	2,594
1915 – 1924	20,865.8
1925 – 1934	53,394.6
1935 – 1944	90,237.3
1945 – 1954	103,658.6
1955 – 1964	150,057.4
1965 – 1974	245,491.9
1975 – 1984	153,947.1
1985 – 1994	136,978.2
1995 – 2004	144,538.5
2005 – 2014	241,784.9

Source: Ojo,(2005), CBN (2009), F.A.O (2015).

The literature review thus shows that scholars have engaged the subject from multi-disciplinary perspectives. However despite the wealth of studies on cocoa not many works exist, using the spatio-temporal approach to analyze the trends in cocoa production in South West Nigeria. The growing body of literature on cocoa production has been saturated by anthropological and historical scholars. Also, there has not been any systematic comparative assessment of cocoa production, within the periods of study, focusing on the challenges, the influence of socio-economic variables of production on the people, as well as a review of the impact of the various government policies directed at revamping production. This study attempts to fill this gap in literature.

2.3 Theoretical /Conceptual Framework

Location theory, especially agricultural location theory which is concerned with the geographic location of economic activity has become an integral part of economic geography, regional science and spatial economics.

Location theory addresses what economic activities are located where and why. Location of economic activities are determined on a broad level such as a region/belt or metropolitan area, or on a narrow one such as a zone, neighborhood, city block or an individual site.

Some of the early proponents of location theory include Von Thunen, (1826), who published the isolated state, Alfred Weber (1929) who wrote on the theory of location of industries and the Walter Christallerof (1933) on the central place theory.

More recent developments and studies on location theory include the Alonso's (1964) work on location and land use; towards a general theory of land rent. Also important is the work of Isard (1952) who wrote on a general location principle of an optimum space economy. All these theories have great relevance in the study of rural settlements and the location of agricultural activities and settlements. However, of all these theories, arguably, none has greater relevance on agricultural land use and agricultural settlements in the developing world than that of Christaller's(1933) central place theory, hence its adoption in developing the theoretical framework for this study.

In considering the pattern of urban centers that would ensure a more self-centred development in most developing countries, it is necessary to consider the relevance of Christaller's Theory of Central Place along with its later modification by Losch (1954).

While formulating his central place theory Christaller(1966) made these assumptions:

- I. An isotropic surface with equal movement ease, everywhere.
- II. A uniform distribution of population and purchasing power; and
- III. A uniform terrain and resource endowment.

With these assumptions, Christaller was convinced that the process of agglomeration of metropolitan centres, cities, towns and villages was holistic, and the task of analysis was to discover the symbiotic pattern of “dependence” and “interdependence” of the various units of spatial economic organisation. He used the generic term of “central place” for all urban agglomerations, and stated that they differ in sizes and perform varied and quite dissimilar functions. He classified them into “central place of higher order”, “central place of high order”, “central place of lower order” and “smaller place with no central place importance”. Christaller defined the concepts of “size” “importance”, “range”, “threshold”, “economic distance”, “centrality”, “complementary region”, etc., by centrality of a central place. By this Christaller means that certain functions are performed by professionals who provide central (important) goods and services. These central goods are sold in a few central points of region; and are consumed at many scattered points.

He stated that since the least cost location of an industry may not necessarily be found in a large central place, the “importance” of a central place consist not so much in the production of central goods, as in the offering of such goods and services. In other words, it is the trading function of a central place that reflects its real economic centrality. This trading function ties each central place to its respective complementary region. He demonstrated the hierarchical interrelationship between central places in an economic landscape with two geometric models

that are well known. These are the “market principle” – if the objective is to achieve the largest provision of central goods by a minimum number of central places in an economic landscape; and the “transport principle”, if the objective is to satisfy the maximum demand for the transportation of goods at minimum cost; then, many central places shall line on each transport route.

Losch (1954) modified Christaller’s central place theory by incorporating more realism, and flexibility into it. As a result, he made it easy to be utilized in creating a desirable hierarchy of central places in a regional planning process. Johnson (1976) pointed out that although Christaller’s central place theory has been criticized because of its assumptions; the modifications by Losch (1954) made it an effective tool for national development. He stated that differences between developed and developing countries or between progressive and backward areas within countries can to a useful degree, be assessed in terms of how terrestrial space has been organized. He noted that the spatial organisation of the landscape provides incentives that induce people to do their very best to maximize the productive capacity of an economic region, and added that whether farming be primitive, more advanced or modern, the motivation that keeps the process going depends on the incentives that exist in the different forms of agricultural organization. He stated that the relative lack of central place infrastructure in undeveloped countries lead to serious handicaps- no viable market centres to sell farm produce, with shops filled with cheap consumer and capital goods that provide incentives to farmers to produce more for high incomes and food security.

Christaller’s Central Place Theory and its modification by Losch as seen above serves the purpose of this study in three main ways. Firstly, it provides a basic framework for industrial and agricultural commercialization. Secondly, it can be created through a regional planning

process and thirdly, it is considered in this study as a workable framework for spatial organisation that can accelerate and sustain development in the area.

CHAPTER THREE

3.0 THE RESEARCH METHODOLOGY

3.1.0 Population and Sample Frame of the Study Area

The population of interest comprises all cocoa farmers in Osun, Ogun, Ondo and Ekiti States, while the sample frame includes eight local government areas selected for this study as stated in Figure 1. The choices of cocoa farmers are based on the fact that they are the major producers and suppliers of cocoa in South West part of Nigeria.

The Cocoa farmers of the sample frame were administered questionnaires on farm sites. This is based on the assumption that they are in a better position to give credible response to the questionnaire by virtue of their position and responsibilities in the farm. However, in a few situation where the owners of the farm was unavailable, questionnaires were administered to other persons responsible for the farm operations.

3.1.1 Sample Size

The sample frame is the total number of cocoa farm owners in the southern western state under study. 200 cocoa farmers were randomly selected from each of Osun, Ogun, Ekiti and Ondo States. Farmers selected were actively engaged in cocoa cultivation during field survey.

3.1.2 Sampling Technique

Convenient sampling was used in sample selection. For each state, a total number of two hundred cocoa farmers were interviewed. The farm settlement was selected through

convenient random sampling. The questionnaires were administered to cocoa farm owners directly. (Table 4).

3.1.3 Data Sources

The data employed in this study were sourced from questionnaires, Focus Group Discussion (FGDs), and periodicals including Statistical Reports by Central Bank of Nigeria (CBN) and the Federal Office of Statistics (FOS), amongst others.

For each of the four major cocoa producing areas of Ekiti, Ondo, Ogun and Osun States of the study, two major cocoa-beans producing LGAs were used as samples. Five communities from each of the LGAs which are predominantly cocoa farming communities were also used as sample for data collection at the household level. This is because there are other food crop and cash crop farming communities. Focus Group Discussions (FGDs) were then carried out at the respective locations listed in Table 4 on page 56. The issues raised at the FGDs included the number of household members involved in cocoa farming, the benefits of cocoa production and marketing on the communities and the impact of relevant stakeholders on the development of the cocoa producing communities.

At the conclusion of the FGDs, copies of the questionnaires were then administered on twenty cocoa farmers at each of the sampled locations. It is only those actively engaged in farming during the period of field survey were considered. The researcher with two research assistants visited the communities in each LGA and administered some of the questionnaires on 20 farmers. In achieving this, a reconnaissance survey was previously done for the selected units of the sampled local government areas in order to have a working knowledge of the environment and for an effective and efficient field work. The researcher then did a pilot

survey with two field assistants. On the basis of the pilot survey, 16 field research assistants were employed and trained for five days in the Geography Department laboratory of the University of Lagos to administer the questionnaires. The field assistants and the researcher went back to the field and conducted the questionnaire administration which lasted four weeks. 20 cocoa farmers were sampled in each of the sampled communities in the states. In most cases, about 85% to 90% of the questionnaires were properly answered in the communities visited. Where there were shortfalls in the number of properly answered questionnaires, the researcher went back to the communities with the research assistants to meet more farmers at their farms to obtain properly answered questionnaires to make up the shortfall of 20 sample size respondent farmers. The sampled communities of cocoa production are shown in Figure 3.

Table 4: Sampling Locations of Cocoa

State	LGA	Communities sampled	Latitude	Longitude
EKITI	Ekiti East	1) Isibode	07° 42'441"	05° 33' .611"
		2) Aba Coker	07°.41.411"	05°527'309"
		3) Aba Jubril	07°.45°.671"	05° 35' . 610"
		4) Aba Kehinde	07°.44'.201"	05°.35'.472"
		5) Omuo	07°.38'.207"	05°.34'.313"
	Ikole	1) Aba Ara	07°.46'.815"	05°.30'.601"
		2) Aba Ilepa	07°.44'.411"	05°35'.457"
		3) Aba Sekuni	07°.48'.721"	05°31'.222"
		4) OkeAyedun	07°.48'.b002"	05°34'.200"
		5) Ijeshalsu	07°.43'.201"	05°30'.117"
ONDO	Akoko North East	1) Awara	07°.30'.895"	05°.41'.049"
		2) Mojere	07°.30'.059"	05°.39'.644"
		3) Ogunmo	07°.29'.577"	05°.38'.855"
		4) Otalolke	07°.31'.295"	05°.31'.235"
		5) Otangba	07°33'007"	05°40215"
	Idanre	1) Alade	07°.09'.818"	05°.06'.521"
		2) Idanre	07°.06'.322"	05°.06'.322"
		3) ItaOlorun	07°.11''.444"	05°.06'.627"
		4) Omofunfun	06°. 52''. 817"	05°.12'.021"
		5) Okemeji	06°.48''.711"	05°.12'.235"
OGUN	Ijebu-East	1) Aba-Yellow	004°.10'.001"	06°.48'.296"
		2) Ojelana	004°.10'.134"	06°.49'.104"
		3) Aba Ajina	004°.09'.234"	06°.47'.166"
		4) Aba Ikale	004°.10'.045"	06°.47'.546"
		5) Aba kebe	004°.10'.583"	06°.49'126"
	Ijebu North	1) Pakodo	07°.00'.590"	03°.55'.780"
		2) Alebiosun	07°.00'.142"	03°.53'.624"
		3) Abata	07°.00'.549"	03°.53'.001"
		4) Ogungbenla	06°.59'.433"	03°53'.011"
		5) Seso	07°.00'.022"	03°.53'129"
OSUN	Atakumasa West	1) Aaye	07°.34'.029"	04°39'.807'
		2) Gada	07°.34'.275"	04°.39'.555"
		3) Oloyin	07°.34'.866"	04°.39'.741"
		4) Ijere	07°.34'.821"	04°.38'.219"
		5) Igila	07°.34'.877"	04°.39',738"
	Ori-Ade	1) Onikoko	07° 24' 031"	04°52'918"
		2) Idiaraba	07°24'037"	04°52.579"
		3) Jeromu	07°23'945"	04°51.839".
		4) Alabameta	07°24'279	04°53'630
		5) Oniriko	07°24'031	04°52.914

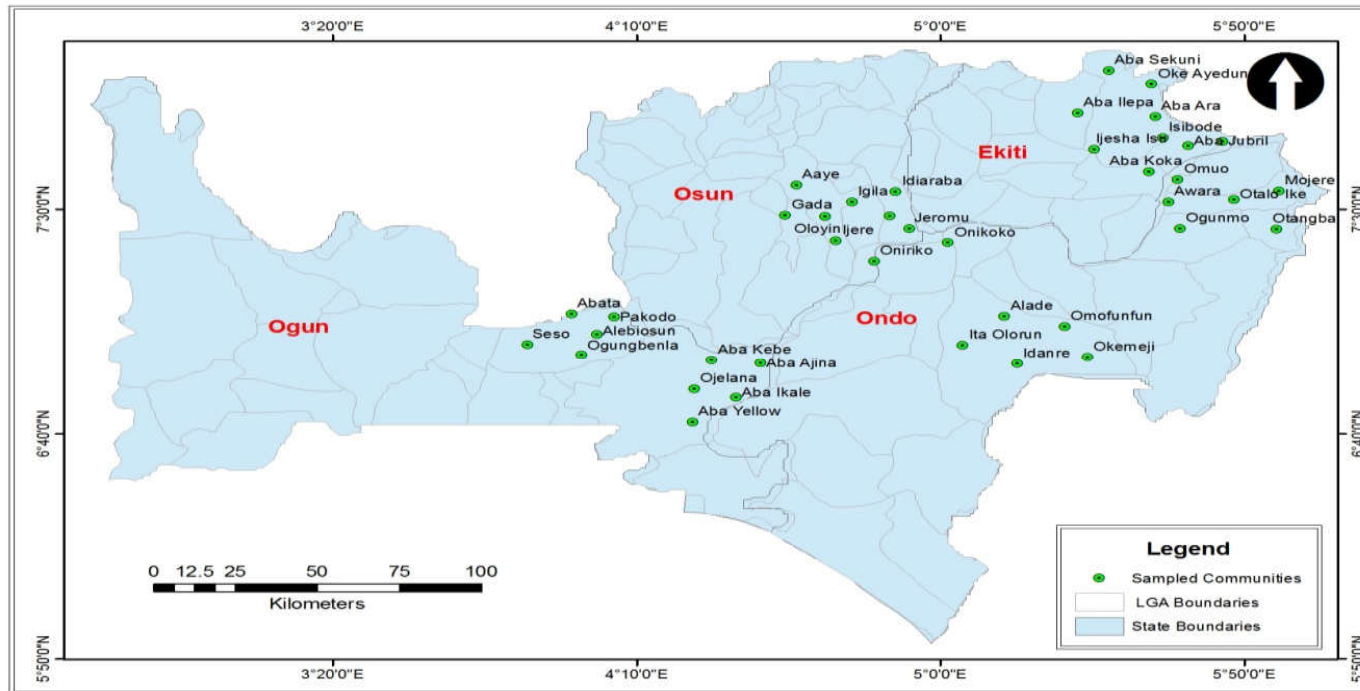


Fig. 3: Sampled cocoa-producing communities in the Study.

3.2. Data Analysis

The data were analysed and evaluated by means of the Statistical Package for Social Sciences (SPSS). A combination of descriptive statistics such as percentages, averages, frequency, graphs and charts were employed to interpret the data and explain the associations among the groups of statistics for drawing inferences and conclusions on their relationships. In particular, the following analytical procedures were employed:

- a) Trends analysis, independent t-test and descriptive analysis were used to evaluate the trends in volumes of cocoa production in the study area (Objective 1).
- b) Factor analysis and descriptive statistics were used to analyse the factors responsible for the trend in cocoa production (Objective 2).
- c) Regression analysis and descriptive statistics were used to examine the socio-economic characteristics of the cocoa farmers (Objective 3).
- d) Focus group discussions and administrative records on policies were used to assess the impact of relevant government policies and incentives by stakeholder groups and associations on the cocoa production (Objective 4).

3.2.1 Trend Analysis

Trend analysis seeks out and examines systematic historical patterns in quantitative data. Such analysis of data over time can vary from primarily descriptive techniques to more complex cause-and-effect methods. This module minimizes discussion of cause-and-effect analysis and focuses on the trend of cocoa production from 1950 to 2010 in Nigeria. Trend analysis is valuable when one wants to use historical data to predict future values or to

calculate expected values for comparison to actual current values. Trend analysis is also useful for identifying unexpected variances that may indicate strategic or operational changes or entity weaknesses worthy of additional exploration and analysis.

In addressing objective one, the trend of cocoa production from 1950 - 2010 in Nigeria was analyzed using Time Series Analysis line graph. The trend of cocoa production from 1950 - 2010 from Osun, Ogun, Ondo and Ekiti state were summed up by the response given by the cocoa farmers in the four states. The analysis of trend of cocoa production was also done on state, basis such that size of cocoa farm presently managed by states in terms of average size of farm, maximum size and minimum size for each of the states under study were also taken into consideration. Ranking of the size of cocoa farm was also done in order to know the state which has the highest average size of cocoa farm. Some age-related variables of the cocoa farm managed by the states in terms of the average, maximum and minimum age and ranking were also determined.

3.2.2 Independent Sample T Test

The independent Samples t - Test is a parametric test that compares the means of two independent groups in order to determine whether there is statistical evidence that the associated population means are significantly different.

Bartlett's Test of Sphericity relates to the significance of the study and thereby shows the validity and suitability of the responses collected to the problem being addressed through the study. Factor Analysis to be recommended suitable, the Barlett's Test of Sphericity Significance must be less than 0.05.

3.2.3 Regression Analysis

Regression analysis is a statistical technique used to explain or predict the behaviour of a dependent variable. Generally, a regression equation takes the form of $Y=a+bx+c$. Cocoa production is the dependent variable that the equation tries to predict, socio-economic variables are the independent variables that are being used to predict cocoa production, a is the Y- intercept of the line, and c is a value called the regression residual. The values of a and b are selected so that the square of the regression residuals is minimized. It is a Statistical Forecasting model that is concerned with describing and evaluating the relationship between a given variable (usually called the dependent variable i.e.Cocoa production and one or more other variables (usually known as the independent variable) i.e.socio-economic (variables). Regression analysis models are used to predict the value of one variable from one or more other variables whose values can be predetermined. The first stage of the process is to identify the variable to be predicted (cocoa production) and to then carry out multiple regression analysis focusing on the variables used as predictors.

The ordinary least square linear regression analysis would then identify the relationship between the dependent variable and the explanatory variable; this is then finally presented as a model:

$$(y) = a +bx + c \dots\dots\dots (1)$$

Where:

$$\text{Slope (b)} = (N\Sigma XY) - (\Sigma X)(\Sigma Y), \dots\dots\dots (2)$$

and

$$\text{Intercept (a)} = (\Sigma Y-b (\Sigma X)/N \dots\dots\dots (3)$$

3.2.4 Factor Analysis

Factor analysis is a statistical method used to describe variability among observed variables in terms of a potentially lower number of unobserved variables called factors. In other words, it is possible, for example, that variations in three or four observed variables mainly reflect the variations in a single unobserved variable, or in a reduced number of unobserved variables.

Factor analysis searches for such joint variations in response to unobserved latent variables. The observed variables are modeled as linear combinations of the potential factors, plus “error” terms. The analysis variate these factors: seedlings, access to loans, age of plants, fire outbreaks, interest by younger persons, pesticides, storage, marketing and social amenities. Factor analysis is an interdependence technique. The complete set of interdependent relationships is examined. There is no specification of dependent variables, independent variables, or causality. Factor analysis assumes that all the rating data on different attributes can be reduced down to a few important dimensions. This reduction is possible because the attributes are related. The rating given to any one attribute is partially the result of the influence of other attributes. The statistical algorithm deconstructs the rating (called a raw score) into its various components, and reconstructs the partial scores into underlying factors: seedlings, access to loans, age of plants, fire outbreaks, interest by younger persons, pesticides, storage, marketing and social amenities. The degree of correlation between the initial raw score and the final factor score is called a factor loading.

3.2.5 Factor Loadings

The factor loadings, also called component loadings in Principal Component Analysis, are the correlation coefficients between the variables (rows) and factors (columns). Analogous to Pearson's r , the squared factor loading is the percent of variance in that indicator variable explained by the factor: seedlings, access to loans, age of plants, fire outbreaks, interest by younger persons, pesticides, storage, marketing and social amenities. To get the percent of variance in all the variables accounted for by each factor, add the sum of the squared factor loadings for that factor (column) and divide by the number of variables. (Note the number of variables equals the sum of their variances as the variance of a standardized variable is 1.) This is the same as dividing the factor's eigenvalue by the number of variables.

3.2.6 Eigenvalues:/Characteristic Roots

The eigenvalue for a given variance, measure the variation in seedlings, access to loans, age of plants, fire outbreaks, interest by younger persons, pesticides, storage, marketing and social amenities is accounted for by that factor. The ratio of eigenvalues is the ratio of explanatory importance of the factor with respect to the variables. If a factor has a low eigenvalue, then it is contributing little to the explanation of variances in the variables and may be ignored as redundant with more important factors. Eigenvalues measure the amount of variation in the total sample accounted for by each factor.

3.2.7 Extraction Sums of Squared Loadings

Initial eigenvalues and eigenvalues after extraction (listed by SPSS as "Extraction Sums of Squared Loadings") are the same for PCA extraction, but for other extraction methods,

eigenvalues after extraction will be lower than their initial counterparts. SPSS also prints “Rotation Sums of Squared Loadings” and even for PCA, these eigenvalues will differ from initial and extraction eigenvalues, though their total will be the same.

3.2.8 Factors Scores

Are the scores of each case (row) on each factor (column). To compute the factor score for seedlings, access to loans, age of plants, fire outbreaks, interest by younger persons, pesticides, storage, marketing and social amenities, one takes the case’s standardized score on each variable, multiplies by the corresponding factor loading of the variable for the given factor, and sums these products.

3.2.9 Kaiser Criterion

The Kaiser rule is to drop all components with eigenvalues under 1.0-this being the eigenvalue equal to the information accounted for by an average single item. The Kaiser criterion is the default in SPSS and in most statistical software but is not recommended when used as the sole cut-off criterion for estimating the number of factors as it tends to over extract factors.

In addressing objective two, principal component analysis was used to analyse the factors that led to the observed trend and relationship in 1950-1970, 1971-1990 and 1991-2010. Factor analysis is the most appropriate for this kind of analysis because it helps to group variables into different components to which they are best suited. Hence, the particular factors that led to observed trend in cocoa production in the three periods mentioned earlier were analysed and grouped accordingly.

3.3 Research Design

The research technique employed in this study is the basic fundamental survey. It is designed to answer questions about relationships because it is more suited to answer questions about facts and descriptions. It is also fact-finding research technique that explores a situation of study or phenomenon. The study goes further to find out the factors militating against low production of cocoa production over the years in the study area. The questionnaires were structured in such a manner that the grey areas were made explicit to the respondents so that they could give valid response.

3.3.1.1 Reliability of the Instrument

The re-test analysis of the instrument was carried out at three-week intervals. The responses were then compared and correlation coefficient calculated.

3.3.2 Validity

Validity refers to the degree to which evidence and theory support the interpretation of test score entailed in the proposed uses of tests which implies that validity has to do with both attributes of the test and the uses to which it is put. Validity measures how accurately the contingent valuation of the good estimates, the goods' true value to society has been captured. This is comparable to accuracy in statistics. The methods used for the analysis were found to be valid.

3.3.3 Data Requirements

For this study, primary data was used. Primary data were gathered through a combination of well-structured questionnaire and in-depth personal interviews in selected cases. The structured questionnaire guarantees that questions asked the respondents are uniformly worded which permits an objective comparison of collected data, while it demands minimum interviewing skill than does unstructured interviewing. Face-to-face interview, on the other hand, gives the respondents the opportunity to express his/her view more clearly and also permits the interviewer to explain areas which are not clear or where respondent is not sufficiently knowledgeable. Information elicited from the respondents was in three categories. (Appendix I)

- i. Information on respondent community
- ii. Information on cocoa production
- iii. Information on respondent socio-economic characteristics.

CHAPTER FOUR

4.0 ANALYSIS AND RESULTS

4.1 Trends in Production Volume Between 1950 and 2010

Trends in production in both the pre and post-oil boom eras were compared. In the pre independence period, the production was between 100,000 and 150,000 tons per annum. In the post-independence period 1960-70 it was between 100,000 and 318,000 tons per annum. In the 1st decadal period 1970-80, there was gradual decline from 318,000 tons (1970) to 100,000 tons (1980). This declining trend continued in the 2nd decadal period, 1980-90 to between 150,000 to 170,000 tons (1990). 1990-2000 recorded 150,000 to 139,000 tons while the volume was between 140,000 to 250,000 tons in 2000 – 2010, the 4th decadal period (Figure 4.)

The presented statistics show that production was high between 1950-1970, average between 1971- 1990, low in the early 2000's but gradually increased from 2006 to 2009.

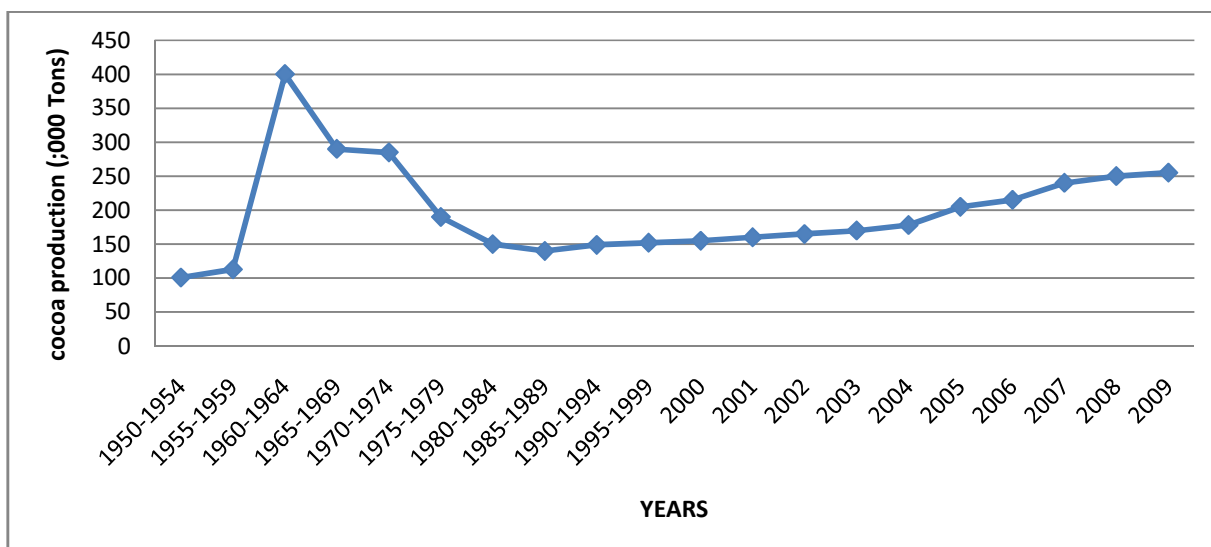


Fig 4: Volume of cocoa production in Nigeria (1960-2009).

Sources: Extract from CBN (2009), F.A.O. (1985, 1993) .F.O.S. (1972, 1993, 1997)Olayide and Olayemi (1977).

Test of Hypothesis 1

H₀: There is no significant decline in the volume of production between the pre-oil boom to the post-oil boom era in South-West Nigeria.

Data generated from the volume of cocoa crop production in the pre and post-oil boom eras were analyzed using independent Sample t-Test and the results are summarized in Table 5.

Table 5: Result of T-test Analysis on Cocoa Production Volume in the Study Area

	Status	Mean	Std Deviation	Tcal	Df	Sig
Cocoa Production Volume	Pre-Oil Boom	471.00	275.89	2.85	7	0.05
	Post-Oil Boom	68.50	43.57			

*t is significant at < 0.05.

From table 5, we observe the mean rating value of the pre-oil boom and post-oil boom on cocoa production; Pre-oil boom/Cocoa Production Mean = 471.00, Sd= 275.89 and Post-Oil Boom/Cocoa Production Mean= 68.50, Sd= 43.57, thus the mean difference between the two periods was significant at 0.05. To test for significance of difference, the data was subjected to t-test and the results indicate a calculated t-value of 2.85 as against a critical value of 1.96 given 7 degree of freedom at 0.05 alpha level. Since the calculated t-value is greater than the theoretical t-value of 1.96, therefore, H_0 is rejected and we accept and conclude that there is significant decline in the volume of production from the pre-oil boom era to the post-oil boom era.

Comparative cocoa exports from Nigeria to the world figures for 1960-1974 is shown in figure 5. It shows that the Nigerian export figures in 1965 was 310,175 tons compared to world export of 1,304,000 and Nigeria export in 1967 was 248,000 tons compared to world figures of 1,051,000 tons. It dropped considerably in 1974 with Nigeria export figures of 197,125 tons to world export figures of 1,152,000 tons.

Production of cocoa in Western state Nigeria 1966/67-1975-76 is in Table 6. It shows that production volumes were higher in the pre-oil boom era 1966/67 and 1970/71 which had 228,117 and 297,560 tons, respectively. As also shown, in the table, production volume dropped to 153,151 tons in 1975/76, the post-oil boom era.

The monetary value of Export in Nigeria Cocoa Beans (1960 – 2004) is shown in Table 7. The Table shows value of export earnings of Nigeria Cocoa beans of ₦3.86m and ₦4.49m in the periods 1960-1964 and 1965-1969. It dropped to ₦0.81m and ₦1.26 m in the post-oil boom periods of 1995-1999 and 2000-2004 respectively.

Table 8 shows the growth of Nigeria cocoa beans in 1960-1969 period to be 86.53%. This dropped sharply to negative figures -1.09% and -42.95% in the post-oil boom periods of 1970-1979 and 1980-1999, respectively. It later increased to 19.33% in 1990-1999 but reduced to 2.46% in 2000-2004

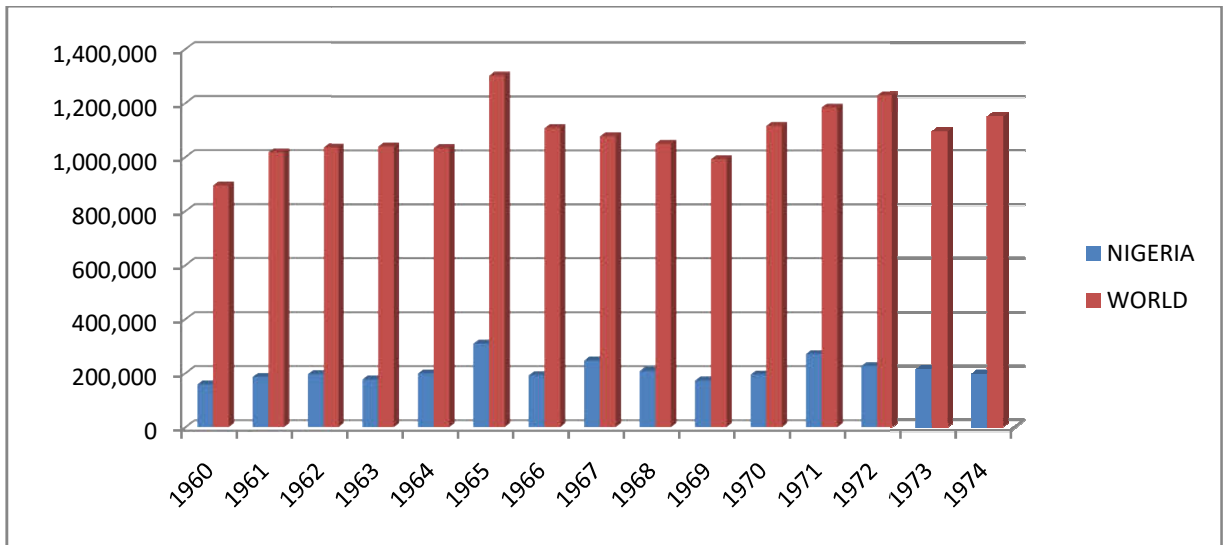


Fig 5: Comparative Cocoa Exports from Nigeria and World Figures 1960-1974(Tons)

Source: Gill and Duffus Market Report Jan 1977.

Table 6: Production of Cocoa in Western States, Nigeria 1966/67-1975-76 (tons)

Years	Oyo State	Ondo State	Ogun State	Total
1966/67	116,608	87,741	23,828	228,117
1967/68	110,649	97,189	22,038	229,876
1968/69	118,139	73,905	12,044	204,088
1969/70	93,844	92,463	9,369	195,67
1970/71	129,496	137,962	12,102	279,560
1971/72	110,462	109,777	11,800	232,039
1972/73	100,633	n.a	7,759	216,446
1973/74	96,900	81,473	9,485	187,858
1974/75	90,886	84,794	12,992	188,672
1975/76	73,025	70,310	9,816	153,151
Total		1,040,642	943,668	131,233
Percentage		49,19%	44.61%	6.20%
Average Annual Production		104,064.20	94,366.80	13,123.30

Source: Cocoa Research Institute of Nigeria, Cocoa Development Programme in Nigeria cited in Adegbola, M.O.K. and Abe, J. O. (1982).

Table 7: Monetary Value of Nigerian Cocoa Beans Export in Comparison with Total and Major Agricultural Export in Nigeria, (N million) 1960-2004

Period	Total Export Earnings (A)	Major Agric. Export Earnings (B)	Cocoa Beans Export Earnings (C)	C/A x 100	C/B x 100
1960-1964	1,831.72	293.88	70.70	3.86	24.06
1965-1969	2,646.74	270.58	118.86	4.49	49.93
1970-1974	11,663.32	248,26	157.42	1.35	63.41
1975-1979	35,682.46	375.42	336.74	0.94	89.69
1980-1984	41,736.33	287.44	261.10	0.63	90.84
1985-1989	47,707.80	2,669.84	1,794.58	2.07	67.22
1990-1994	341,554.77	6,069.52	4,219.18	1.24	69.51
1995-1999	468,974.7	6,539.17	3,820.95	0.81	58.43
2000-2004	597,390.58	17,950.98	7,520.45	1.26	41.89

Source: CBN (1997 and 1999) FOS (1990, 1993 and 1997); EDFMAN (1997,1999, 2001 and 2004)

Table 8: Growth of Nigerian Cocoa Beans Production and Export 1900-2004 (Metric Tons)

Period	Total Export Earnings (A) Amount (N)	Major Agric Export Earnings (B) Amount (N)	Cocoa Beans Export Earning (C) Amount (N)	Growth	(C/A) 100
1960-1969	205.78	83.57	202.94	86.53	98.62
1970-1979	221.30	7.54	200.73	-1.09	90.70
1980-1989	117.25	-47.02	114.51	-42.95	97.66
1990-1999	148.20	26.39	136.64	19.33	92.19
2000-2004	175.00	18.08	2.46	80.00	

Source: Gill and Duffus (1997 and 1999); EDFMAN (1997, 1999, 2001 and 2004).

4.1.1. Perception of Respondent Farmers

The perception of respondent farmers in the states are presented in Figure 6. 200 respondent farmers from each state on the variation in the trends of production observed comparatively around 1950 - 1970, 1971 - 1990 and 1991-2010. In Ekiti, 171 farmers (representing about 85.5% of the sampled respondents) agreed that the production was high in the 1950 – 1970 period, 16 (8%) said that it was average while 13 (6.5%) said that it was low. In the 1971 – 1990, about 52.5% said it was high, 94 farmers (47%) said it was average while 1 farmer (0.5%) agreed it was low. In the period 1991 – 2010, some 45 farmers (22.5%) agreed it was high, while 56 (28%) of them believed it was average and 99 (49.5%) said it was low.

For Ogun State, all the 200 farmers sampled noted that production was high in 1950 - 1970. In 1971 – 1990, 4 farmers (representing 2%) said it was average, 104 (52%) noted it was average while some 92 farmers (46%) noted it was low. All the 200 farmers said it was low in 1991-2010.

In Ondo state, some 173 farmers making about 86.5% agreed it was high in the 1950 - 1970 while 3 farmers (1.5%) said it was average and 24(12%) of them said it was low. For 1971 - 1990 in the same state 46 (23%) agreed it was high, 150(75%) said it was average, while 4(2%) noted it was low. In 1991-2010, 32 farmers (16%) agreed it was high, 30(15%) noted it was average and 138 (69%) said it was low.

In Osun state some 190 farmers representing 95% of those sampled, agreed cocoa production was high in the 1950 - 1970, while 4 (2%) of them noted it was average, while 6(3%) of them said it was low in 1971-1990. In the 1991 – 2010, 40farmers representing 20% believed it was high, while 151 (75. 5%) believed it was average, and 9 (4.5%) of them agreed it was

low. In 1991 to 2010 some 34 farmers representing 17% agreed it was high, 5(2.5%) of them noted it was average, and 161 (80.5%) others said it was low.

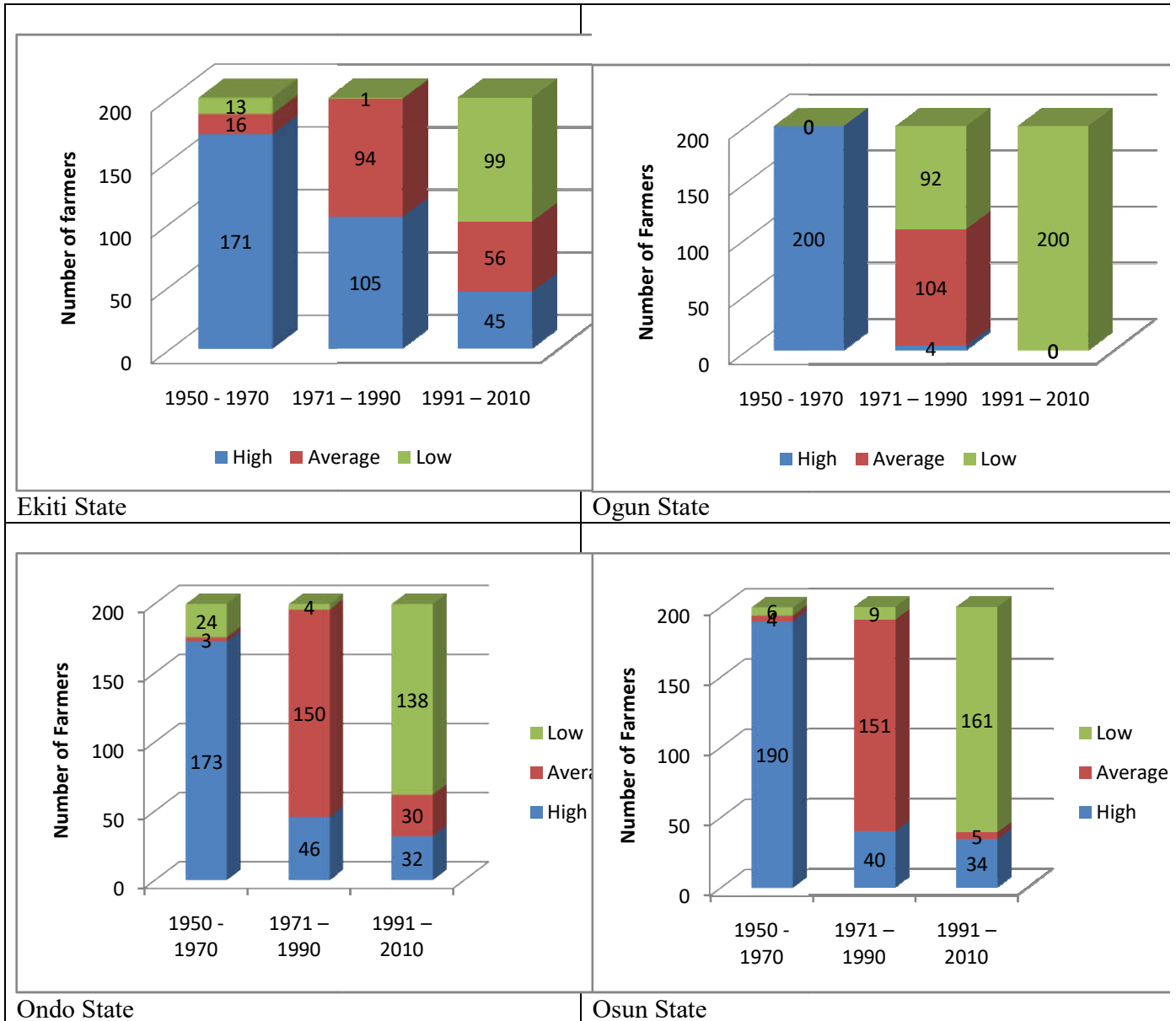


Figure 6: Farmers perception on the Trend of Cocoa Production in the Study Area
 Source: Analysis of field Data, 2010.

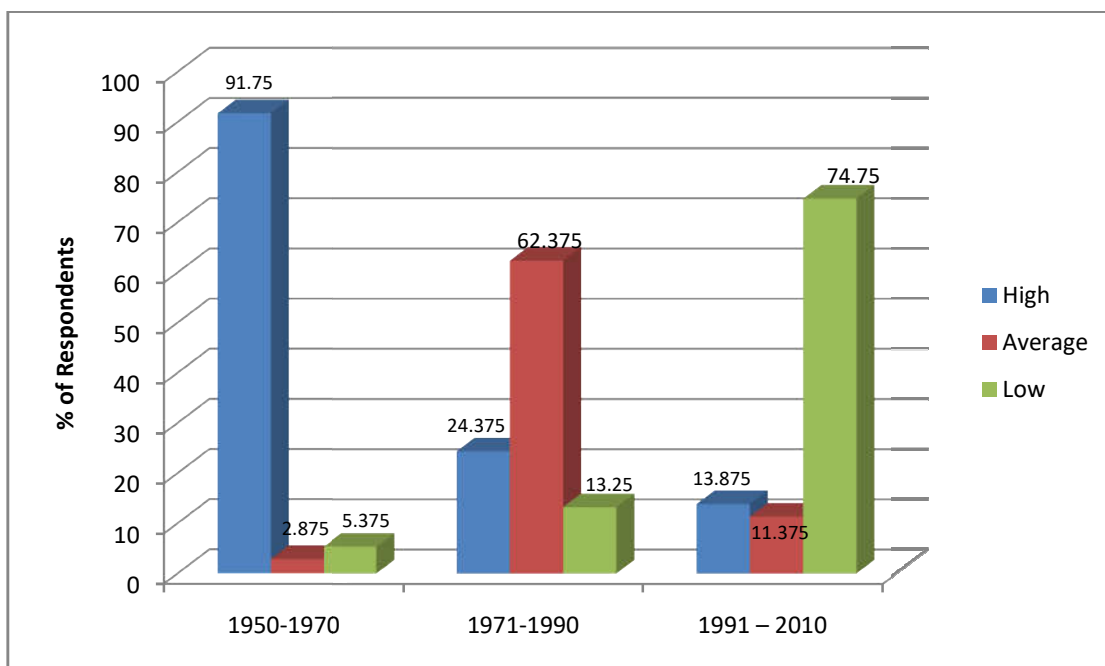


Fig. 7: Summary of Farmers' Perception of Periodic Cocoa Production within the Study Area.
 Source: Analysis of field Data, 2010

4.1.2 Cultivated Hectares in the States.

The breakthrough recorded in disease control following the research efforts of the then new Cocoa Research Institute of Nigeria, yielded good results in stemming the catastrophic event of diseased cocoa trees in the cocoa industry between 1960 and 1970. It was the economic climate of the oil boom era vis-à-vis the agricultural sector that resulted in the loss of tempo in land take between 1975 and 1985. Furthermore, the incentive of SAP, post – 1985, later exacerbated the land- take. This is however, largely dampened by constraints of land due to competition with other crops, and increased farming population and some degree of cautiousness. Thus producers' zeal to plunge afresh into cocoa expansion was lowered by uncertainty occasioned by the trend of policies (which have been characteristically unstable in Nigeria) and the family survival or security instinct, which put greater emphasis on

ensuring adequate food crop stock for home consumption. The total land under cultivation as at 1989, was roughly put at about 650,000 hectares which in 2009, increased to 1,145,500 hectares (CBN, 2009).

The result of the average cocoa farm cultivated per farmer in the pre-oil boom era was based on estimates obtained from the focus group discussion in the sampled communities. In the pre-oil boom period, the average farmer cultivated between 4 to 5 hectares of land. However, in the post-oil boom era, available data shows that the cultivated farms have dropped to between 2 to 3 hectares, posting a 50% reduction in cultivated farm per farmer when compared to the pre-oil boom era.

Table 9 shows the size of cocoa farms cultivated per farmer in each of the states studied. It also shows the maximum and minimum farm holding per farmer and the ranking amongst the states in the year 2010.

Table 9: Size of Cocoa Farms Cultivated in 2010 per Farmer in Each of the States Studied

	Average Size in (ha)	Maximum Size (ha)	Minimum Size (ha)	Rank
Ekiti	2.5	15.0	2	2
Ogun	2.0	3.0	1	4
Ondo	2.8	6.5	2	1
Osun	2.2	3.4	1	3

Source: Analysis of field data, 2010.

4.1.3 Cocoa Yield in the States of Study

Cocoa yields in the states studied in the year 2010 are shown in Table 10, with Ondo state ranked the highest and Ogun state the least with an average yield of 0.58 and 0.27 tons per

hectare respectively. It shows a reduction when compared with the pre-oil boom average yield of between 3.5 - 2.5 tons per hectare.

Several reasons have been given to explain the cause of reduction in yield per hectare. One of such reasons was the age of Cocoa tree. The Cocoa trees on most of the farms were above 30 years. Table 11 shows the estimated ages of the Cocoa trees in the sampled communities of study. In all the sampled communities, only 10% of the trees were less than thirty years. Most of the trees have exceeded their economic life use generally taken to be 30 years. (Oshinkalu, 1982).

Table 10: Average Cocoa Beans Yield in the States Studied, 1991- 2010

	Average Yield(ton/ha)	Maximum Yield (ton/ha)	Minimum Yield (ton/ha)	Rank
Ekiti	0.46	1.95	0.065	2
Ogun	0.27	1.56	0.065	4
Ondo	0.58	3.25	0.065	1
Osun	0.35	1.69	0.065	3

Source: Analysis of field Data, 2010

Footnote: 1000kg = 1ton.

Table 11: Estimated Ages of the Cocoa Trees in the Study Area

	Average Crop Age(Yrs)	Maximum Crop Age (Yrs)	Minimum Crop Age (Yrs)	Rank
EKITI	30	75	20	1
OGUN	31	80	3	3
ONDO	41.6	65	3	4
OGUN	34	110	3	2

Source: Analysis of field data, 2010.

4.2 Factors Affecting Crop Production

The established factors affecting the production of cocoa are presented in Figure 9. In Ekiti State, the analyzed questionnaires show the availability of Cocoa seedling, access to loan, storage of crops and pesticides in decreasing order of severity as the main challenges to Cocoa production within the 1950 – 70 pre-oil boom period. Between 1971-1990, fire outbreaks, poor storage, marketing challenges and pesticides in decreasing order of severity were most challenging to production. However, in the 1991 – 2010 oil boom era, it was observed that access to loan, lack of interest by the youths, ages of plants and fire outbreaks were the major challenges.

In Ogun State, as shown in Figure 8, within the 1950 – 1970 period, storage of produce was the major challenge. In the subsequent 1971 – 1990 and 1991 – 2010 periods, access to loans was the most serious challenge, while in the 1999 – 2010 time period, lack of interest by the producing youths was the most serious challenge to production.

For the three time periods of analysis (i.e. 1950 – 1970; 1971 – 1990; and 1991 – 2010) in Ondo State, the most serious challenges posed to production were access to loan, fire outbreak and the lack of interest by the youths, respectively. Similarly, in Osun State, availability of Cocoa seedlings, access to loan and age of plants/pesticides were the most serious challenges to production in the years 1950 – 1970, 1971 – 1990 and 1991 – 2010 periods, respectively. The details of the hierarchy of factors challenging productivity are as presented in Figure 8.

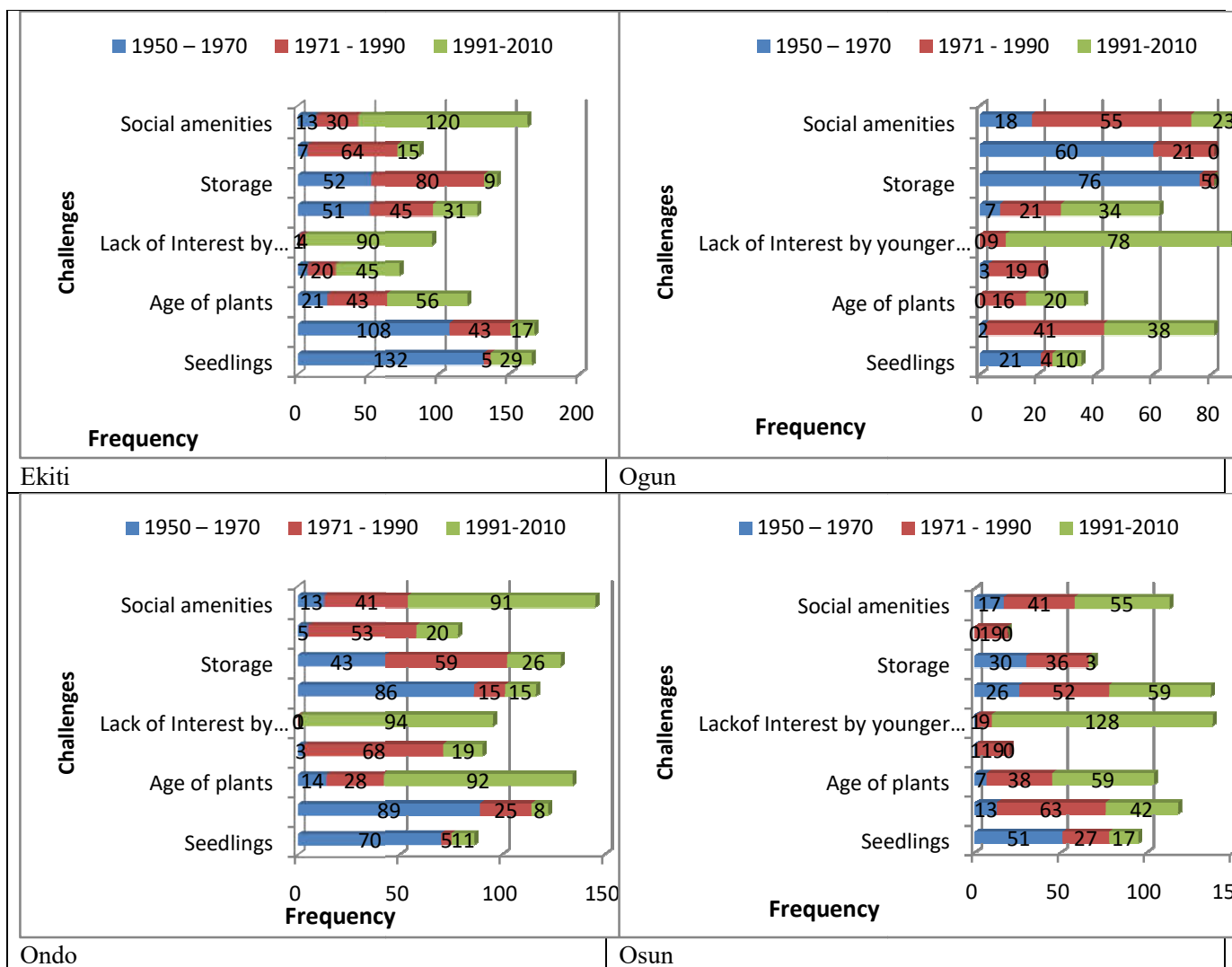


Fig. 8: Challenges to Cocoa Farming in the studied states
Source: Analysis of field data, 2010.

The cumulative analysis of the factors and their ranks over the study periods are presented in Table 12. About 26.2% of cocoa farmers said that cocoa farming was very challenging in 1950 - 1970 period due to shortage of seedlings: 20.2% viewed access to loan, 19.16% opined that storage problem, 16.2% chose pesticides while 6.86% believed that marketing were the major challenges to cocoa farming. 15.67% of the cocoa farmers agreed that cocoa farming was very challenging in 1971 - 1990 due to fire outbreaks, 15.25% said access to loan, 15.08% agreed on storage, 14.24% agreed on social amenities and 12.74% said marketing was a major challenge to cocoa farming. For the period 1991 – 2010 , 28.32% cocoa farmers said that lack of interest by younger persons was very challenging, 22% agreed on social amenities, 16.7% agreed on age of plants, 10.22% agreed on pesticides and 7.72% agreed on access to loan as major challenges to cocoa farming from 1991 till 2010.

Table 12: Cumulative ranking of challenges across study areas

	1950 - 1970			1971 – 1990			1991-2010			Total	
	F	%	Rank	F	%	Rank	F	%	Rank	%	Rank
Access to Loan	212	20.2	2	182	15.25	2	105	7.72	5	43.17	1
Social Amenities	61	5.81	6	170	14.24	4	299	22	2	42.05	2
Pesticides	170	16.2	4	133	11.14	6	139	10.22	4	37.56	3
Storage	201	19.16	3	180	15.08	3	38	2.79	8	37.03	4
Seedlings	275	26.2	1	41	3.43	8	67	4.93	6	34.56	5
Age of Plants	42	4	7	125	10.47	7	227	16.7	3	31.17	6
Lack of Interest by Younger ones	2	0.2	9	23	1.92	9	385	28.32	1	30.44	7
Marketing	72	6.86	5	152	12.74	5	35	2.57	9	22.17	8
Fire Outbreak	14	1.33	8	187	15.67	1	64	4.7	7	21.7	9

F- Frequency

Source: Analysis of field data, 2010.

Test of Hypothesis 2

H₀: There are no significant differences in the factors (Seedlings, access to loan, storage, pesticides, marketing, social amenities, age of plants, fire outbreak, and lack of interest by younger persons) that affect cocoa production in the study period.

The factor analysis technique was used to derive a cluster of relationship. Various tests for the appropriateness of factor analysis were done. These preliminary tests indicated that one success factor, namely, marketing was deleted from the set of challenges to cocoa farming over the period for factor analysis. This is when either their communalities or their factor loading in, at least, a component are not greater than certain values, these study variables should be ignored and factor analysis should be redone from the first step. As recommended in (Hair, Black, Babin, Anderson, and Tatham, 2006), factor loading of each factor should exceed 0.525% with sample size around 700-800 in this research.

Additionally, at least one-half of the variance of each variable's communality, representing the amount of variance accounted for by the factor solution for the variable should be equal to or more than 0.5 to have sufficient explanation (Hair, *et al*, 2006). Finally, the remaining 8 factors were found to be appropriate for factor analysis. The value of Bartlett sphericity is 561.186 and associated significance level is small ($p=0.000$). This suggests that the population correlation matrix is not an identity matrix (Hair *et al*, 2006). The correlation matrix shows that all variables have significant correlation at the 5 percent level. It implies that the deletion of any other success factors is not necessary. The value of the KMO MSA is 0.733, which is satisfactory for factor analysis. Based on this, H₀ that there are no significant differences in the factors that affect cocoa production in the study periods is rejected and we

accept that there are significant differences in the factors that affect cocoa production in the study periods.

Three components recorded Eigenvalue above 1, i.e. 2.689, 1.208 and 1.026 as presented in Table 14. These three components explain a total of 61.532% of all the variables.

Thus, in this analysis, three components have been identified as major challenges to cocoa farming. Routinely; the varimax orthogonal rotation of principal component analysis was used to interpret the components. (Table 13).

Table 13: Total Variance Table

Total Variance Explained									
Initial Eigenvalue			Extraction Sums of Squared Loading			Rotation Sums of Squared Loading			
component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.689	33.607	33.607	2.689	33.607	33.607	2.178	27.219	27.219
2	1.208	15.096	48.703	1.208	15.096	48.703	1.430	17.878	45.098
3	1.026	12.828	61.532	1.026	12.828	61.532	1.315	16.438	61.532
4	.838	10.471	72.003						
5	.703	8.793	80.796						
6	.600	7.499	88.294						
7	.471	5.887	94.181						
8	.456	5.819	100.000						

Source: Analysis of field data 2010

In this research, only the first three components recorded Eigenvalue above 1(2.689, 1.208, 1.026) as explained in Tables 13 and 14. These three components explain a total of 61.532%.

The Components 1, 2, and 3 capture all of the variance in the components. The components and associated variables (challenges to cocoa farming) are labelled as Component 1; component 2 and component 3. The results of factor analysis are as shown in Table 14 and factor analysis groupings are as shown in Table 15. Thus, three COMs have been identified as major challenges to cocoa farming.

Table 14: Results of the Factor Analysis on Challenges ofCocoa Production

Components	Eigenvalue	Percentage of variance	Challenges to cocoa farming	Factors Loading
1	2.689	33.607	Seedling	0.670
			Access to loan	0.063
			Storage	0.556
2	1.208	15.096	Fire outbreaks	0.691
			Social amenities	0.565
3	1.026	12.828	No Interest by younger ones	0.510
			Age of Plants	0.502
			Pesticides	0.500

Source:Analysis of field data 2010

Table 15: Factor Analysis grouping for Significant Challenges to Cocoa Farming during 1950-1970, 1971-1990 and 1991-2010

Principal Components			
Challenges to cocoa Components	Component 1 First COM-1950-1970	Component 2 Second COM-1971-1990	Component 3 Third COM-1991-2010
1	Seedlings	Fire outbreak	No interest by younger ones
2	Access to loan	Social amenities	Age of plants
3	Storage		Pesticides

Source: Analysis of field data 2010

4.3 Socio-Economic Characteristics of the Farmers

Most of the respondents (98%) are male while just 2% are female (Figure 9). About 97% of the respondents are married, 21% are singles while just 1% are divorced. On literacy level, 46% have no western style education, 37% have Primary School/Junior Certificates, 9% have Senior Secondary School Certificates while 8% have Tertiary Education, implying that some of the farmers are University graduates.

The occupational distribution shows that, primarily, about 84% of the respondent are farmers, some 14% are traders on cocoa farms and 2% are farm labourers. About 32% of the respondent farmers take trading as a secondary occupation, 29% take farming as secondary occupation while just 10% take farm labour as secondary occupation. On the aggregate, the pie chart in figure 9 summarizes the socio-economic variables of the respondents.

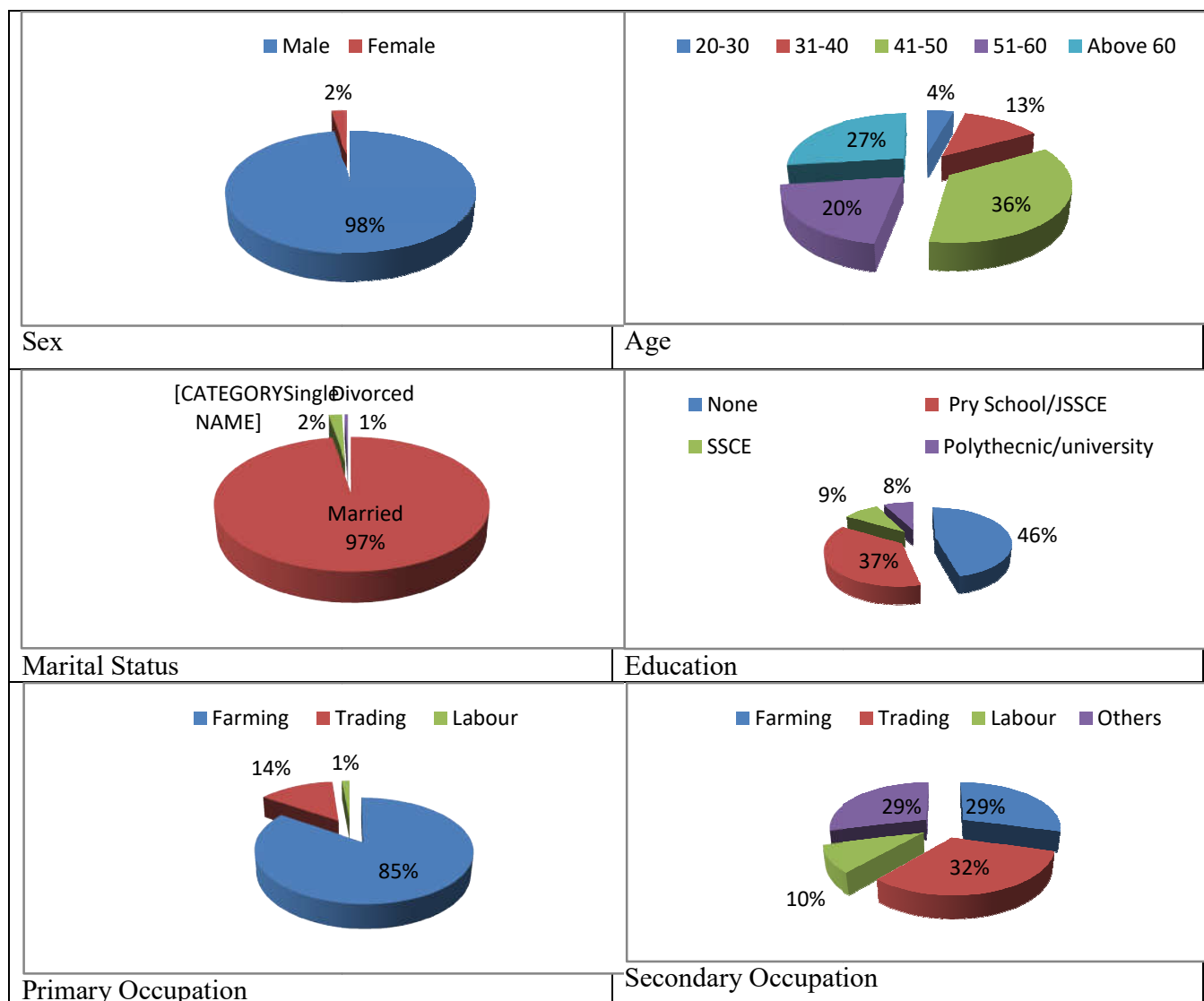


Figure 9: The Socio-Economic Variables of the Sampled Farmers
Source: Analysis of Field Data, 2010.-

Test of Hypothesis 3

H₀: There are no socio-economic variables (gender, marital status, educational level and occupational priority) that determine the level of cocoa production in the pre and post-oil boom eras.

The result of the regression analysis in Table 16 shows that out of five explanatory (socio-economic) variables used, only three variables were significant, these are educational level, age and occupation priority. Educational level of the respondent significantly affected the level of cocoa production in South-West Nigeria in the post-oil boom era ($p < 0.01$). This is due to the fact that, the more a farmer was educated, the more the ability to be efficient and hence the more would be the productivity of the person. Age of respondents significantly affected the level of cocoa production ($p < 0.01$). Occupational priority of the respondents was also found to significantly affect the production level of cocoa in South-West Nigeria ($p < 0.01$). This is so because the more you give priority to an occupation the more the output (especially if the farm is given the desired management practice as at when needed).

Other variables that did not affect the level of production significantly in the Western part of Nigeria are gender and marital status. R² value is 0.76 which indicates 76% variation in socio-economic variables that affect cocoa production in the periods studied with F-statistic of 20.99 at 0.05 level of significance. Hence, H₀ which says “there are no significant socio-economic variables that affect cocoa production in the periods studied” is rejected and we conclude that there are significant socio-economic variables that affect cocoa production in the periods studied.

Table 16: Regression Analysis of Respondents Socio Economic Variables

Variables	Coefficient	Std. Error	t-Statistics	Probability
Gender	-14688.16	30165.69	-0.486916	0.6306
Age	-11079.23	27163.45	-3.377341	0.0022
Marital Status	-12914.75	7731.372	-1.670435	0.1073
Educational Level	107834.7	13931.17	-7.740537	0.0000
Occupational Priority	-1217069	4061593.0	-2.996578	0.0061
Constant	41607237	13988728	2.974340	0.0064
R-squared	0.769823	Mean dependent variables	5193815	
Adjusted R-squared	0.732994	S.D. dependent variables	7672346	
S.E of regression	3964499	Akaike info criteria	33.37467	
Sum squared residual	3.930014	Schwarz criterion	33.60820	
Log likelihood	-495.6200	F-statistic	20.90299	
Durbin-Watson statistics	0.889483	Probability (F-statistics)	0.000000	
Significant at 99% level				

Source: Analysis of field Data, 2010.

4.4 Impacts of Policies, Institutions and Incentives by Stakeholder Groups and Associations.

The 1970s Policy intervention by government towards agricultural development in Nigeria in general and cocoa production in particular was established by the study to be minimal prior to the 1970s. It focused mainly on support activities in the areas of research, extension, crop marketing, exports and pricing (Manyong, Ikpi, Olayemi, Yusuf, Omona, Okoruwa and Idachaba, 2005). The attitude of government was borne largely out of the prevailing economic policy of *laissez faire* inherited from the colonial masters.

In realization of the relative importance of cocoa and other agricultural exports to the economy towards the late 1960s, the Nigerian government, like other developing countries, brought the input supply and produce marketing systems under the state monopoly.

Marketing Boards were set up to intermediate between the farmers and the international market. As argued by Delloitte, Haskins and Sells (1990), the objectives were to (i) stabilize the prices paid to the producers (ii) ensure public access and control over foreign exchange earnings (iii) strengthen the marketing mechanisms (iv) create an ideological antipathy to private traders and (v) impose constraints on multinational enterprises.

The structure served as a great disincentive to farmers in terms of production and replanting and the Commodity Boards were viewed as agencies for taxation while at the same time, the producer prices paid to the farmers were well below world prices (Idowu, 1986, Oni 1971; Olayide, Olatunbosun, 1974, Idachaba 1990, AkanjiandUkeje 1995). The other factors that influenced production and marketing negatively was argued by Delloitte *et al.* (1990) were the oil boom syndrome and relative over-valuation of the Nigerian currency. These were noted as accounting for the consistent decline in aggregate outputs for the periods of 1960 - 1980 and 1980 - 2000.

Various research efforts were then embarked upon in the study to assess the appropriate policy response towards restoring production to the prime position it used to enjoy before the advent of crude oil boom. The literature on the determinants of cocoa production and marketing including the analysis of Nigerian agricultural pricing policies had been classified under three general groups in this wise, including the pre-SAP, during SAP and post SAP studies. The pre-SAP studies included Olayide *et al.* (1974), Idowu (1986) Adegeye (1986) and Delloitte and Haskins (1990), among others. They established a strong relationship between the aggregate cocoa output and producer prices. Based on this, the policy recommendations tended to favour price incentive strategies in the form of administrative upward review of producer prices and input subsidization as panacea to sustaining increased

aggregate output of cocoa. Other important factors identified as influencing production and marketing were bureaucratic problems associated with Commodity Boards, socio-economic and agronomic factors like age of the farmers, age and size of plantation, institutional inadequacies of Research Institutes and the Cocoa Development Units.

In spite of price increases however, Adegeye (1986) still noted that the aggregate output of cocoa in Nigeria showed a consistent decline. The inability of price increases to enhance cocoa production was then linked to the structural weakness in the Nigerian economy especially as dictated by the global economy depression of the 1980s. There were both internal and external imbalances created as a result of price distortions (CBN/NISER, 1992). Various austerity measures were then adopted at the beginning of the 1980s. These included the stabilization measures of 1982 along with the restrictive monetary policy and stringent exchange control measures of 1984 which also proved ineffective (Ojo, 1994). The situation then called for a complete economic re-design that would ensure economic stability, restructure the pattern of production and consumption and ensure reasonable growth.

In 1986, the Federal Government of Nigeria announced the adoption and implementation of the Structural Adjustment Programs (SAP) with the four cardinal objectives of (i) Restructuring and diversifying the productive base of the economy in order to reduce dependence on oil exports; (ii) Reducing the dominance of unproductive investment in the public sector; (iii) Encouraging non-oil exports especially agricultural ones; and (iv) improving the sectors' efficiency and intensify the growth potential of the private sector. SAP embraced exchange rate deregulation, liberalization of export trade, reduction in extra budgetary expenditure, withdrawal of subsidies and the privatization of public enterprises. Thus, deregulation placed much emphasis on the market force in determining the price of

goods and services and allocating the resources within the economy. Therefore, the policy measure as they affect agriculture ensured as follows: (i) The abolition of commodity Board and the privatization of many agricultural enterprises previously controlled by the government (ii) Market liberalization of agricultural exports and; (iii) Foreign exchange liberalization and currency devaluation. These policy measures affected the cocoa industry but did not improve aggregate yield in volume of cocoa production in South West Nigeria.

It is perhaps instructive to briefly catalogue the range of agricultural policies which the government has pursued since the attainment of political independence fifty-seven years ago.

They include the following;

- a. Farm settlement schemes directed largely at school leavers;
- b. Government-owned plantations usually established by what were then known as Development Corporations;
- c. Government-owned Food Production Companies, all of which have now been disbanded;
- d. Operation Feed the Nation in which so many resources were expended on a mindless importation of fertilizers;
- e. National Green Revolution Programme which is contributory factor to the present day economic crisis;
- f. River Basin Development which has had to be ordered to withdraw from direct agricultural production
- g. World-Bank Assisted Agricultural Development Projects and
- h. A Programme for private, large-scale foreign and local participation in agricultural production whose fortune still hangs precariously in the balance.

- i. National Cocoa Development Committee.

All of these programmes absorbed tremendous amount of the national resources available for rural transformation within specific periods. They also engaged a substantial proportion of the relevant national professional manpower and raised undue expectations about their outcome. Yet, even at that time it was easy to see that they were misconceived and misdirected. Most of the programmes hardly addressed the configuration of problems which the majority of rural peasant farmers had to confront. Where they did address these problems, there was little' indication that the proffered solution was likely to be enduring or self-sustaining. Mabogunje(2011)

4.4.1 Agricultural Sector Development Programmes

Agricultural sector development programmes should normally be a product of specific policies put in place. During the colonial era, government policy in Nigerian agriculture was considered to be fairly stable, since the colony of Nigeria (like other similar colonies under the British) was slated to be a producer of raw materials for the ever-growing and “sophisticated” industries of the cosmopolitan kingdom of the colonial master. (Akande, Olomola, Adefila, and Ezenwa, (1999)

Essentially decentralized government programmes were simply geared towards “massive” production of cash crops such as cocoa, cotton, groundnut, palm oil and rubber for exports to the metropolitan countries of Europe and America, from which the colonies (including Nigeria) derived practically all their foreign exchange earnings.

These were the days of largely subsistence agriculture, when food was enough to go round.

In 1945, after the Second World War, the colonial administration drew up a ten-year development plan to encourage settlement schemes. Agricultural production was to be increased through settlement of peasant in areas of hitherto virtually empty lands. But since independence in 1960, Nigeria has gone through a number of changes, not only in government philosophy but also policy, especially in the areas of agricultural development. Akande, *et al* (1999)

4.4.2 The Roles and Performance of Agricultural Policies.

It is important to discuss the roles and performance of government policies on agriculture as reported by Akande, *et al* (1999) which have also had impacts on cocoa production and other agricultural produce.

From 1960 and 1970, agricultural development in Nigeria remained largely decentralized, whereby the Federal Government was playing only a supportive role to the regions or states which were the centers of agricultural development. The strategies adopted were not uniform, but were a combination of private sector/small farmer and government direct production approaches. After this period, the country started to experience insufficiency in nearly all areas of agricultural production, in the face of a rapidly growing population. This drift had been largely attributed to the “oil boom” in the early seventies, an era concomitant with unprecedented drift in human resources from the rural areas to the urban centers in search for perceived easy “oil money” and riches. Earlier in the First National Development Plan Period (1962-1968), the regional government had attempted to check the growing rural-urban drift by school leavers through the farm settlement scheme, with emphasis on the expansion and modernization agriculture, and the provision of social infrastructure in the rural areas.

The period between 1970 and 1985 witnessed a much greater involvement of government (especially the Federal Government) in agricultural development efforts. Despite this, it was a period of serious deterioration in the country's agricultural activities. In response to these problems, government launched new policies, programmes and projects at rates that were unparalleled in Nigeria. In this regard, between 1970 and 1980 more special programmes and projects were created than in any other corresponding period in the history of Nigeria. These include;

- (i) The Nigeria Agricultural and Cooperative Bank (NACB) and other special agricultural credit schemes:
- (ii) The National Accelerated Food Production Programme (NAFPP).
- (iii) The Integrated Agricultural Development Projects (IADPs)
- (iv) The River Basin Development Authorities (RBDAs)
- (v) The National Seed Service (NSS)
- (vi) The reorganized commodity Marketing boards; and
- (vii) The new Food Crops Commodity Marketing Boards (e.g. the Nigerian Grains Board)

The Federal Government in addition took over the procurement and distribution of fertilizers, launched ambitious inputs subsidy schemes and guaranteed minimum price scheme for grains. The institution and implementation of most of these programmes and projects were done under the "Operation Feed the Nation" (OFN) of 1976-1979, which metamorphosed into the Green Revolution Programme" of 1979-1983. From 1970-1986, three National Development Plans were drawn up by government which contains some broad agricultural development programmes. These were: The Second National Development Plan (1970-74)

had as its objective the creation of employment opportunities to absorb additional population and reduce under employment of the human resources in rural areas. The focus was on the agricultural sector via farm settlements and other schemes. But the plan ended up in creating great disparities between the rural and urban sectors, as the sectional planning (at the expense of physical and environmental planning) failed to extend urban services to the rural areas. Akande, S. O. et al. (1999)

The Third National Development Plan (1975-80) focused attention on development of rural areas to check rural-urban disparity, and as a sharp contrast to the two previous plans, it designated each state as a “Regional Planning Unit” and each Local Government Area (LGA) as a “Micro-regional Planning Unit”. The Federal Government launched the OFN Programme in 1976, in order to reduce drastically its bills on food importation and to direct attention to domestic food production. In the same year a decree established eleven River Basin Development Authorities (RBDAs).

The Second Republic Federal Government of Nigeria (FGN) of 1979-83 reactivated the OFN Programme, but renamed it “the Green Revolution Programme” (GRP). The FGN launched the “Back-to-Land Scheme” which was adopted by the Rivers, Lagos and Oyo State Governments as a strategy aimed at making young school leavers to become full-time self-employed farmers. After a while the scheme was incorporated into the National Directorate of employment (NDE) programme. The Fourth National Development Plan (1981-85) adopted the two prominent strategies of integrated Rural Development (IRD), which were the Agricultural Development projects (ADPs) and the Directorate of Food, Roads, and Rural Infrastructure (DFRRI) programmes. Through these programmes, government attempted to

translate into action its recognition of the rural sector as a priority area, under which agriculture and rural development were linked together.

In spite of the series of “improved” development plans between 1970 and 1985, there were still a number of factors militating against orderly development in the agricultural sector in Nigeria. To address these problems, the Federal Ministry of Agriculture drew up and produced “Agricultural Policy for Nigeria” which was the first attempt at a well-designed and articulated agricultural policy for promoting agricultural growth and development. This was a comprehensive package of policy instruments expected to remain valid for fifteen years from 1985 to 2000 AD. The Agricultural Policy for Nigeria (1985-2000 AD) was designed to address the following issues:

- Evaluation of the roles and past performance of the agricultural sector and the highlights of the major problems
- Presentation of a number of macro-policies which affect agriculture;
- Outlines of agricultural sector policies and strategies, especially policies that are relevant to the production of food crop, livestock, fish, industrial raw materials, forest products and wildlife.
- Examination of policies on support services for agriculture and
- Outlines of the roles and responsibilities of all the three tiers of government in Nigeria, and the mechanisms for the periodic review of agricultural policies.

Shortly after the approval of this elaborate policy. “A Perspective Plan for Agricultural Development in Nigeria (1990-2005)” was commissioned. This was produced in several volumes, to reflect and deal in details with the various aspects and components of Nigeria

agriculture. The plan provides a long term development blueprint from which short and medium term plans (Rolling Plan) can be carved out to ensure flexibility in development planning in agriculture.

Following insufficient availability of food productions from the agricultural sector, the first attempt made by the FGN was to address this problem. Thus, in 1973, it launched the National Accelerated Food Production Programmes and institutions created between 1970 and 1980, mentioned earlier. These included the Special Programme for Boosting Food Production in 1979, the Special Rice Production Programme of 1981; and the Special Programme on Maize and Cassava Production of 1982.

Complementing all these were the various World Bank (IBRD) assisted projects in the states which were designed to promote crop production. But in spite of all these efforts (in an environment of rapid increases in population growth rate, the universal economic recession and devastating effects of natural disasters, such as droughts), the gaps between food supply and demand in Nigeria continued to widen. This led to inevitable increase in the prices of basic food items and avoidable food importation.

The general picture was that, despite the huge investment in agriculture by government, the performance of the sector deteriorated visibly in the period 1970-1985. The evidences of this included.

- (i) A decline in the agriculture share of the Gross Domestic Product (GDP) from an average of about 50% in the 1960-69 period to about only 20% in the 1981-85 period;

- (ii) A systematic decline in the state of the country's total Labour force in agriculture, at an average annual rate of 1.3% since 1960 without a corresponding increase in productivity
- (iii) Increasing shortage of food, with increasing food imports and high rate of increase in food prices, especially since 1975;
- (iv) the virtual disappearance of agricultural commodities from the country's export trade; and
- (v) The increasing shortage of agricultural raw materials required by industries.

The constraints to the development of agricultural and rural sector in Nigeria had been identified to include a wide range of technical, socio-economic, organizational and institutional problems. However, considered to be more fundamental than all other problems is the frequent change in government policies and strategies for agricultural and rural development. It is in the recognition of this core problem that the "Agricultural Policy for Nigeria (1985-2000 AD)" and "A Perspective Plan for Agricultural Development in Nigeria (1990-2005)" have been put in place to address observed constraints and problems.

The main thrust of agricultural policy especially since the onset of the SAP in 1986, has been on;

- (i) self-reliance in food and fiber production;
- (ii) improved farm income and employment, to arrest rural-urban migration
- (iii) attainment of food security at the community, local, state and national levels and
- (iv) Conservation of the environment and natural resources.

This policy thrust, by and large, is in consonance with the concept of Sustainable Human Development (SHD) and the UNDPs' support based on poverty alleviation, employment creation through capacity building, gender equity and the protection of the environment.

However, because of the limited progress made and the problems identified in the implementation of the Agricultural Policy for Nigeria (in spite of SAP), the Federal Ministry of Agriculture came up with a number of "action plans" especially since 1993. The plans and programme designs include deliberate efforts to enhance the vital linkages between agriculture, industry and other sectors; and emphasis on improved participation of the private sector in agricultural production.

The action plans were preceded by a study on "Food Security and the Nigerian Agriculture; A National Agenda" which focused on food production, transportation, supply and household consumption patterns. The study reviewed policies and programmes that affect food security situation in Nigeria (macroeconomic, microeconomic and food consumption policies) and recommended policy reforms, as well as programmes for enhanced food security in the short term, medium term and long term, including the encouragement of the private sector (e.g. in food storage processing) and poverty reduction programmes.

All the various government roles and policies on agriculture have not impacted on cocoa production for increased aggregate yields to the pre - oil boom level.

4.4.3 Monetary, Credit and Financial Policies towards Agriculture.

From independence in 1960 to the mid-1980s, government has been the major force propelling economic activities in Nigeria given its large size relative to the private sector and resources at its disposal, it has acquired big shares in commercial and merchant banks, established huge public enterprises and development financing institutions and engaged in direct production, especially in agriculture. In its efforts to achieve rapid economic and rural development, government felt the need to channel financial resources to the agricultural sector, which by nature is generally seen as a major rural economic activity capable of providing enough food to the population, raw materials to the industry and incomes to rural dwellers to improve their welfare.

In order to achieve the broad objective of making adequate credit available to farmers at the right time to ensure increased agricultural production, various monetary, credit and financial policies and programmes have been designed and executed. As stated by Akande *et al* (1999), during the period of direct monetary control, monetary policy had emphasized concessionary interest on agricultural loans as a form of incentive. The strategy for executing policy involved compelling banks and other financial intermediaries to support agricultural activities through credit quotas and ceiling on interest rates, with implicit subsidies.

For instance, the stipulated minimum credit for agriculture grew from 4.0% to about 18.0% in 1996. At the same time, a rate of 4-6% was prescribed for loans guaranteed by the Agricultural Credit Guarantee Scheme Fund (ACGSF) and 6% for other agricultural lending in contrast to respective minimum and maximum lending rates of 7 and 11% for other economic activities. This was based on the fear that left on their own, the banks were likely

to discriminate against agriculture which generally is considered more risky than other enterprises. With the reform of the financial sector, interest rates were however, decapped in 1993, reintroduced in 1994, and by October 1, 1996 interest rate caps were completely removed.

The credit policies operated prior to the adoption of the Open Market Operations (OMO) in 1966, were aimed at compelling banks to comply with various government directives on agricultural lending. The most coercive instruments were the sectorial credit guidelines credit issued to banks since 1969 and terminated in 1997. Commercial and merchant banks were issued credit targets and a minimum percentage of the targets and the credit that should be extended to the agricultural sector, classified as a priority sector. The credit target fluctuated between 10 and 15 % between 1986 and 1996, while minimum allocation to the agricultural sector ranged from 8 to 15%.

In an effort to augment the credit provided by non-institutional lenders to the agricultural sector and the rural economy, government credit policy moved in the direction of increasing the number of expanding activities of institutional sources of credit. For instance, the Nigerian Industrial Development Bank (NIDB) was set up in 1964 to provide credit to enhance the development of large, medium, small scale firms and cottage industries in the country. Similarly, the Nigerian Agricultural and Cooperative Bank (NACB), established in 1972 to provide credit for agricultural production, commenced operation in 1973. These development finance institutions rely mainly on government and multinational institutions for their funding. In addition, the People's Bank of Nigeria (PBN) was launched in 1989 to provide credit to the poor.

Apart from increasing the volume of credit from institutional sources, government has consciously designed terms of borrowing which are more liberal than under the informal credit system. For instance, there has been relaxation, in some cases, of conditions governing the use of collaterals. Besides, in order to absorb the risk associated with produce marketing and pre-empt situations in which farmers' produce would not be marketed promptly with adverse effect on production, the Federal Government financed marketing boards, through Central Bank of Nigeria to effect guaranteed minimum prices to farmers.

In addition, the commercial and merchant banks were programmed to increase the number of their branches, especially in the rural areas so as to be in a position to expand branches, especially in the rural areas of the country. In the bid to extend banking facilities to rural areas for investment in agro-allied enterprises, a rural banking programme was drawn up and implemented in phases beginning from 1977. Commercial banks were required to open a total of 766 rural branches in three phases. To ensure that savings mobilized are channeled to rural development, banks were mandated to lend not less than 50% of the deposits mobilized from the rural area as credit to the rural borrowers. All the public sector credit institutions also on their own endeavored to decentralized their operations into as many areas of the country as possible.

To induce lending institutions to expand their credit operations in the agricultural sector, the ACGSF was launched in 1997. Under the ACGSF, the risks involved in lending to agriculture has been reduced substantially through the system of partial guarantee (75%) by the Central Bank of Nigeria (CBN). In order to ensure that not only that the banks are protected against risk of lending to the sector, the Federal Government established a Nigerian

Agricultural Insurance Corporation in 1988 to insure farmers against the risks of loss of crops and livestock.

Since the inception of Structural Adjustment Programme (SAP) in 1986, financial market reforms have been given prominence. Interest rates have been deregulated while credit controls and allocative policies have been phased out and replaced by Open Market Operations (OMO). For instance, the classification of the economy into sectors for purpose of credit allocation was revised and reduced from eight in 1985 to four in 1986 and further to two in 1987 with agriculture and manufacture still rated as high priority sectors.

By October 1, 1996, the mandatory bank credit allocation to rural borrowers and small scale enterprises was abolished in 1997.

However, the grace periods on agricultural loans which were streamlined in 1995 to reflect the differences in gestation period within each category of agricultural projects remain, this varies from 6 months for broilers to 7 years for cattle ranching/diary. Nevertheless, banks are enjoined to continue to provide adequate credit to the productive sectors of the economy, including rural borrowers and small scale enterprises.

On the whole, financial policies to the agriculture sector have varied from 1.8% of total capital budget in 1994 to 18.0% in 1981. As part of the efforts to increase productivity in the agricultural sector, annual subventions/allocations are made to the research institutes and river basin development authorities. Further, counterpart funding is provided for the agricultural development projects, while the provision of rural infrastructure was funded through some agencies such as Directorate for Food, Roads and Rural Infrastructure (DFRRI) and Family Support Programme (FSP).

Overall, the various monetary, credit and financial policies of government adopted to stimulate agricultural production through increased flow of credit have not been substantially reflected in the performance of the sector's contribution to the Gross Domestic Product (GDP) which declined between 1976 and 1986. The sector only recovered to its pre- 1971-75 level in the period 1990-1996, following price liberalization measures entrenched in the SAP which commenced in 1986.

4.4.4 National Cocoa Policy

This document outlines the National Cocoa Development Policy (NCDP) framework which sets the strategic directions for cocoa Development in Nigeria to the year 2016. In line with the New Agricultural Policy Thrust (2001), this policy framework has been articulated to guide future investments in cocoa economy in order to ensure that its strategic role in national development is sustained and enhanced in the light of new and emerging challenges facing agricultural development in general. The substantial macroeconomic and social reforms being implemented by the Federal Government since 1999 are engendering significant changes in the national economy. In December 1999, the Federal Government of Nigeria established a broad-based stakeholder committee, the National Cocoa Development Committee (NCDC) to promote cocoa production. The committee has provided a platform for stakeholders including private sector operators and farmer groups to engage in meaningful discussions about the development and growth of cocoa economy. However, the committee has operated without a clear policy direction to guide its debates and deliberations. This policy framework aims to put in place the enabling and supportive measures for all stakeholders - governments at all levels, research organizations,

development investors, private sector operators, producer and trade groups - to debate, articulate and chart a growth pathway for the Nigerian cocoa economy.

CHAPTER FIVE

5.0 SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1. Summary of Findings

Cocoa production in Nigeria between the 1950s and 1970s was between 150,000 and 318,000 metric tons per annum. Production started in the 1940s, peaked between 1960 and 1970 and declined in the mid-1970s-2000. The 1970s - 2000 coincided with higher foreign exchange earnings from oil and was equally the peak of the production in what was termed 'the oil boom' era. However, since the 70s, attention was subsequently diverted to crude oil production to the negligence of cocoa and with the revenue from cocoa production becoming relatively insignificant Revenue from crude oil production ever since revenue has accounted for much of the government revenue budgets both in terms of capital and recurrent expenditure. Increasing urbanization and prospects for less excruciating jobs led to rural-urban migration. The hectares cultivated by an average cocoa farmer in the post-oil boom era are smaller than in the pre-oil boom era. Generally, it was found that the representative cocoa farmer in South-West Nigeria is a small scale producer.

The study established that provision of cocoa seedlings, problem of access to loan and problem of storage facilities were the major challenges to cocoa production in the pre - oil boom era while lack of interest by the younger persons in cocoa farming, lack of social

amenities in the cocoa communities and old age cocoa trees are the major problems during the post-oil boom era.

The inferences from these findings in the post-oil boom era are that most of the trees in the farms have exceeded their economic life use, generally taken to be 30 years, that new plants were not adequate enough to replace the ageing ones effectively since there was hardly any mass replanting since around the 1990s-2010. The ‘Dutch Disease’ which is the focus of the government on one sector of the economy to the detriment of others had negative effects on cocoa production. These reduced income generation and provision of basic social amenities by the government to the dominant cocoa rural producing areas in South-West Nigeria.

Findings from the Focus Group Discussion of the study revealed that the deregulation policies of the Babangida regime in 1986 and the consequent scrapping of the Cocoa Marketing Board compounded the challenges facing the cocoa producers since the market was left entirely in the hands of illegal traders and cocoa production in the hands of small holders. The ugly situation led to mass abandonment of cocoa farms.

Related to the above is the shortage of farm labour in the typical cocoa farming labour intensive human activities. The farmers and members of their families often constituted the labour force which is grossly inadequate. But the problem is compounded when young able-bodied men and women particularly school leavers at all educational levels are not interested in farming. This coupled with the unattractive rural environment motivate migration to urban centres in search of white-collar jobs that are hardly readily available. Perhaps a most disturbing problem is the rarity and high cost of agro-chemicals such as fungicides, insecticides, fertilizers, herbicides and other farm inputs such as cocoa hybrid seedlings and

sprayer machines. Sometimes, the agro-chemicals are too costly right from the factories and sometimes beyond the reach of peasant cocoa farmers since it passes through many intermediaries before it gets to the farmers in the village who are the final consumers.

More young farmers were involved in cocoa farming in the pre-oil boom era than the post-oil boom era. The age distribution of the cocoa farmers in the post-oil boom era show that most of them are above 60 years of age. Similarly, there were more household members involved in cocoa farming. The implications of this is that most of the farmers were getting too old and would not be able to meet the rigour of intensive care of cocoa trees required on their farms. Similar findings were established significantly for occupation priority and educational level of farmers on the level of production in the post-oil boom era.

The amount of effort put into economic activity, the risk bearing and the readiness to adopt new farming technology depended on age and literacy levels. This assertion makes age and education of cocoa farmer's important variables.

Creation of marketing boards served as a disincentive to cocoa farmers as it represented an agency for taxation as the producer prices paid to farmers by the board were well below world prices. The oil boom also negatively affected production as greater focus was on revenue generation from oil rather than farm produce. The recommendation under the SAP policy initiative was to create structures that favoured price incentive strategies in form of administrative review of producer prices and input subsidization as means of initiating and sustaining increased aggregate output of produce. This did not achieve its set objectives however.

The problem of government policies as expressed by the farmers during the Focus Group Discussion is centred on the inconsistency of policies following instability of government in power. Essentially, successive governments before Obasanjo's regime (1999 to 2007) gave little attention to the problem facing the cocoa industry in the country but rather focused on the development of the oil and gas sector, this in turn largely affected the cocoa industry. Also, although the establishment of Sustainable Tree Crop Production (STCP) and Agricultural Development Programme (ADP) by the government allowed for a fairly strong information flow between the farmers, the National Cocoa Development Committee (NCDC) and the Cocoa Association of Nigeria (CAN), it nonetheless did not achieve the necessary impact on the farmers for improved crop yields.

5.2. Conclusion

The study has done a comparative assessment of the trend in cocoa production spatially and temporarily in the pre and post-oil boom eras in South-West Nigeria and its impact on the socio economic development in the region.

The second position of Nigeria in world cocoa production in the 1960s to early 1970s was lost to other nations and currently the country is far behind many competing nations in its production. Government has made some efforts at revisiting the production through some intervention programmes using its agencies such as the Cocoa Research Institute of Nigeria (CRIN), National Cocoa Development Committee (NCDC), Cocoa Development Unit (CDU), Agricultural Development programs (ADPs), and Non-Government Organizations (NGOs) such as Justice of Peace Development Commission (JPDC), and Farmer Development Union (FADU) all to no avail.

5.3. Recommendations

The declining yields of cocoa in Nigeria, which has led to frustration and mass exodus of producers from the industry to other more promising area of the economy, could be reversed if efforts are geared towards implementing the following recommendations: (i) Intensification of replanting programs; removal of the old and diseased trees and replanting on suitable soil, with high yielding diseased resistant materials. (ii) Planting in new areas to produce fresh trees that will bear cocoa pods. (iii) Provision of storage facilities. (iv) Granting subsidy to farmers on cost of labour and other inputs such as fertilizers, pesticides, fungicides, herbicides and farm equipment. (v) The communication system in the Research – Extension – Farmer set-up should be overhauled completely to enhance free flow of Research information to the farmers on the latest technological advances. (vi) Adequate market information are made available to farmers and the provision of infrastructures in the rural areas to attract young person's to go back to cocoa farming.

It is important that government improve the infrastructural facilities particularly access roads to the cocoa producing areas which are generally in a poor condition especially during the rainy season. Since transportation plays a vital role in the evacuation, distribution, and marketing of farm produce until they get to the final consumers, good road networks are necessary needed to link production and collection centres.

Since educational level was found to have significant effect on the level of production, the farmers should be encouraged to improve their level of education, especially with regards to being able to read and write to some extent by attending adult literacy programmes which would assist in increasing their efficiency.

There is need to improve the market share of cocoa farmers by linking them directly with larger markets so as to reduce exploitation by the middlemen. With this, the cocoa farmers would be enabled to earn higher income as well as sustain themselves and their families. It would also aid food security and sustainable development in the cocoa producing areas.

The downstream activities of the cocoa sector are known to have huge potential for employment generation and wealth creation. Some of the areas of strategic entry are commercial storage, storage technology development and marketing, e-information development and dissemination, outsourcing of industrial components like wrapping/packaging, blending, oil extraction and, of course, market infrastructure development. Pockets of best practices by different institutions and stakeholders, especially the critical ones like CRIN, STCP, NCDC indicate the recent identification and development of about 20 cocoa products by CRIN ready for immediate uptake and commercialization. These include cocoa bread, cocoa juice, coca cola, chocolate, CRIN vita, liquid detergent, body cream, hair cream, soichoco, chocogarri, black soap and choco husk feeds.

Government and Non-Governmental Organisations should assist the farmers with soft loans so as to enable the farmers be able to expand the hecterage of their farms. Also, it is recommended that government policy on agriculture especially cocoa production and export should be reinvigorated for increased revenue generation.

5.4 Contributions to Knowledge

Some of the important contributions of the study to of knowledge are as follows:

1. The thesis has brought into bold relief the spatio-temporal pattern of Cocoa production in south-west Nigeria which is a critical departure from other previous attempts.
2. The thesis employed the time series analysis technique which provides an understanding of the trend in Cocoa production in the study areas.
3. The study has identified, explained and exposed the strengths of socio-economic variables responsible for Cocoa-production in south-west Nigeria.
4. The thesis provides the nexus between traditional culture, domestic economy and rural livelihood and socio-economic sustainability and underscores how government policies impact production within the study area.

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APPENDIX I

**UNIVERSITY OF LAGOS
DEPARTMENT OF GEOGRAPHY
QUESTIONNAIRE FOR COCOA FARMERS**

We are carrying out a Doctorate Degree (Ph.D) research on Cocoa Production Trends in South West, Nigeria from 1950 – 2010. Kindly assist us in answering the questions here-in. thank you.

- Kayode BINEY (Telephone: 08023192043)

SECTION A: THE COMMUNITY OF RESPONDENT

1. Name of Community: 2. LGA:
3. Constituency:..... 4. Ward:
5. Date Established:..... 6. Population:.....
7. Easting:..... 8. Northing:.....
9. Rationale for Establishment:.....
.....
10. Rank the main occupation from 1 – 6 in order of significance (a) Farming () (b) Hunting () (c) Trashing () (d) Cocoa Merchandise () (e) Trading () (f) Any other () indicate
.....

SECTION B: COCOA PRODUCTION IN THE COMMUNITY

11. Complete this table for the cocoa farms you manage presently.

S/N	Location	Size (ha)	Crop Age (Yrs)	Ownership	Mode of Ownership	2010 Yield (bags/tons)
1						
2						
3						
4						

5						
6						
7						
8						
9						
10						
11						
12						
13						

Note Mode of ownership – Leased (indicate condition/s), purchased (indicate how inherited, etc.

12. Have you ever abandoned any of your cocoa farms recently? (a) Yes () (b) No ()

13. If Yes, give details (e.g. location, period and reason(s))

14. Have you ever changed from cocoa to food crop, on any of the farms? (a) Yes () (b) No ()

15. If yes give details

16. How does government assist cocoa farmers in your community? (a) Pesticides/fertilizers () (b) Loans/Marketing () (c) Field extension services () Any other ()

17. Describe briefly the most common of the assistances by the government (e.g. the arm of government targeted farmers, frequency, conditions, results achieved so far etc):.....

18. Beyond farming, in which other aspects of employment opportunities is cocoa production noted for in the community? (a) Transportation () (b) Marketing () (c) Agro-processing () (d) Security () (e) Any other ()
-
-
19. Which have been the most serious challenges to cocoa farming generally during these years?

S/N	(a) 1950 – 1970	(b) 1971 - 1990	(c) 1991 – 2010
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

(e.g. seedling, access to loans, age of plants, fire outbreaks, interest by younger ones, pesticides, storage, marketing, social amenities, etc.

20. How do you think the present challenges can be solved?
-
-

21. Describe the trend in cocoa production over these periods?

Trend (i.e. High, average or low)		
(a)1950 - 1970	(b) 1971 – 90	(c) 1991 - 2010

22. Provide any two reasons for your observation on trend between 1991 and 2010
- (i)
- (ii)

SECTION C: THE RESPONDENT SOCIO-ECONOMIC CHARACTERISTICS

31. Your Home Town:..... 32. State:..... 33. LGA:.....
34. For how long have you been farming here? Years
35. If you are not an indigence, what is the most important reason for your relocating from your hometown? (a) General farming () (b) Farm Labour () (c) Cocoa farming () (d) Any other ()
36. No. of children:..... 37. No. of wives (for males only):.....
38. Indicate the number of children you have in these age ranges: (a) Less than 5 years () (b) 5 – 15 years () (c) 16 – 25 years () (d) more than 25 years ()
39. How many of the following relations assist you on your cocoa production chain and in what aspects(s)?

Relation	Aspect of Assistance	Mode of Understanding
Spouse(s)		
Children		
Aged/Parents		
Nieces/Cousins		
Labourers		

40. Which of these best describe you as a farmer? (a) Professional (large scale) farmer
 (b) Part time farmer (c) Seasonal farmer (d) Full time wage labourer
(e) Seasonal wage labourer (f) Part time wage labourer (g) Others
(specify).....
41. What other 2 main crops do you cultivate with cocoa on the same farm presently? (a)
Colanut (b) Walnut (c) Plantain/Banana (d) Coffee (f) Any other
.....
42. Gender: (a) Male (b) Female 12. Age: Years
43. Marital Status: (a) Marital (b) Widow (c) Single (d) Divorced
44. Highest Education; (a) None (b) Pry School/JSCE (c) SSCE (d)
Poly/University
45. Primary Occupation: (a) Farming (b) Labour (c) Trading (d) Any other
.....
46. Secondary Occupation: (a) Farming (b) Labour (c) Trading (d) Any other
.....
47. Free comments on Cocoa production and Development in the state:
.....
.....
.....
48. Enumerator's Comment:
49. Enumerator's Signature and Date:

APPENDIX II

CUMULATIVE OF COCOA ESTABLISHED IN THE WESTERN STATE (1900 – 1958) BY PROVINCES (TONS)

Year	Oyo state		Ogun state		Ondo state	
	Ibadan	Oyo	Abeokuta	Ijebu	Ondo	Total
1900	260	1	164	-	-	425
1910	3,908	747	1,392	134	105	6,286
1920	45,930	16,457	9,758	1,085	1,927	75,157
1925	76,528	37,391	20,323	3,361	7,591	145,194
1930	145,439	85,711	50,796	14,367	52,192	348,505
1935	182,123	106,864	80,230	21,397	183,633	584,247
1940	210,518	128,252	105,236	27,764	122,020	793,790
1945	218,862	136,268	110,748	29,092	418,961	913,913
1950	221,297	140,608	115,491	30,034	442,355	949,785
1955	221,911	144,770	120,231	30,884	451,251	969,044
1958	222,580	146,603	121,902	31,540	458,466	981,091

Source: Cocoa Research Institute of Nigeria, Cocoa Development Programme in Nigeria M. O. K. Adegbola & J. O. Abe 1982.

APPENDIX III

NIGERIA'S COCOA OUTPUT, EXPORT FIGURES AND PRICE, 1950 - 2002

Year	Output	Export	Price (BP)	Price (DP)
1950	102	105,671	202	193.2
1951	123	101,606	281	235
1952	116.98	122,943	257	333
1953	106.89	116,574	242	333
1954	100	106,352	368	327
1955	90.15	99,953	327	386
1956	119.25	89,833	225	384.6
1957	138	118,994	203	286
1958	89.5	137,473	312	300
1959	145.995	88,645	288	303
1960	1160	145,098	230	303
1961	189.2	159,506	180	271
1962	199.8	186,865	168	213
1963	177.5	197,774	173	209
1964	220.3	177,441	189	220
1965	318	199,976	149	219
1966	194	310,176	139	170
1967	264	193,267	203	165
1968	235	248,186	235	292
1969	187	211,122	320	192
1970	220	173.6	339	302
1971	303	195.9	272	302
1972	251	271.7	238	302
1973	237	227.5	395	450
1974	215	213.9	633	660
1975	214	171.2	673	660
1976	216	162.4	855	660
1977	170	223.7	1757	1030
1978	205	169.7	1927	1030
1979	139	197.7	1781	1200
1980	169	124.5	1342	1200
1981	155	138	1034	1300
1982	181	75.9	1066	1300
1983	156	114.9	1171	1400
1984	115	128.8	1666	1500
1985	151	97.9	1901	1500
1986	110	104.2	1670	35800
1987	80.9	58.7	1410	8000
1988	145	80.8	1140	11000
1989	160	141.3	934	10100
1990	170	152	776	8500
1991	170	135	668	10158
1992	100	142	653	12745
1993	132	96	719	25278
1994	140	131.2	921	61180
1995	140	132.2	970	73402
1996	155	134.5	988	80222
1997	162	146.8	1007	86697
1998	155	150	944	79600
1999	165	NA	596	85766
2000	170	NA	NA	90000
2001	171	NA	NA	100944
2002	175	NA	NA	130670

Source: CBN: Annual Report and Statement of Account (Various Issues)

CBN: Statistical Bulletin (1996), NCB: Statistical Bulletin (Various Issues).

ICCO: Cocoa Newsletter (Various Issues)

APPENDIX IV

NIGERIAN PRODUCTION AND EXPORT OF RAW COCOA BEANS (METRIC TONS) (1900 – 2000)

YEAR	PRODUCTION	EXPORT	YEAR	PROD.	EXPORT
1900	NA	0.028	1951	NA	101.606
1901	NA	0.120	1952	NA	122.943
1902	NA	0.212	1953	NA	116.574
1903	NA	0.317	1954	NA	106.352
1904	NA	0.291	1955	NA	99.953
1905	NA	0.548	1956	NA	89.833
1906	NA	0.648	1957	NA	118.994
1907	NA	0.747	1958	NA	137.473
1908	NA	0.973	1959	NA	88.645
1909	NA	1.410	1960	NA	145.098
1910	NA	2.410	1961	159.503	159.400
1911	NA	3.026	1962	186.865	189.200
1912	NA	4.543	1963	197.774	193.800
1913	NA	3.519	1964	177.774	177.200
1914	NA	5.738	1965	199.978	220.300
1915	NA	5.099	1966	310.176	298.000
1916	NA	9.245	1967	193.267	184.000
1917	NA	9.245	1968	264.000	248.186
1918	NA	15.241	1969	235.000	211.122
1919	NA	10.161	1970	187.000	173.600
1920	NA	26.418	1971	220.000	195.900
1921	NA	17.273	1972	303.000	271.700
1922	NA	48.289	1973	251.000	271.500
1923	NA	34.498	1974	237.000	213.900
1924	NA	33.53	1975	215.000	171.200
1925	NA	37.594	1976	214.000	162.400
1926	NA	41.658	1977	216.000	223.700
1927	NA	36.578	1978	165.000	169.700
1928	NA	36.578	1979	205.000	197.700
1929	NA	46.739	1980	139.000	124.500
1930	NA	53.851	1981	169.000	138.000
1931	NA	52.835	1982	155.000	75.900
1932	NA	52.835	1983	181.000	114.900
1933	NA	72.14	1984	156.000	208.800
1934	NA	61.98	1985	115.000	97.900
1935	NA	79.253	1986	151.000	104.300
1936	NA	89.413	1987	110.000	85.700
1937	NA	82.301	1988	80.000	80.800
1938	NA	104.654	1989	145.000	141.300
1939	NA	98.554	1990	160.000	152.000
1940	NA	115.831	1991	170.000	135.000
1941	NA	91.445	1992	100.000	142.000
1942	NA	106.686	1993	130.000	96.000
1943	NA	60.964	1994	130.000	141.300
1944	NA	88.397	1995	140.000	132.200
1945	NA	71.124	1996	145.000	134.500
1946	NA	78.237	1997	155.000	146.500
1947	NA	101.606	1998	162.000	150.000
1948	NA	112.783	1999	155.000	NA
1949	NA	92.461	2000	165.000	NA
1950	NA	105.671			

SOURCE: **CBN:** **Annual Report and Statement of Account (Various Issues)**
CBN: **Statistical Bulletin (1996), NBE: Statistical Bulletin (Various Issues)**
ICCO: **Cocoa Newsletter (Various Issues)**

APPENDIX V

WESTERN STATE GOVERNMENT REVENUE FROM COCOA 1959/60-1957/68

Year April/March	Revenue Contribution Cocoa (a)	By	Total Revenue (N) (b)	Percentage of (a) to (b)
1959/60	11,957,168		39,365,092	30.3
1960/61	10,387,612		41,105,024	25.3
1961/62	8,273,616		47,840,340	17.3
1962/63	8,396,022		48,892,912	12.2
1963/64	8,413,352		40,807,304	20.6
1964/65	9,352,494		41,743,304	22.4
1965/66	9,919,352		44,791,786	22.1
1966/67	8,293,610		45,927,214	18.1
1967/68	17,670,706		46,071,214	38.4
Total	92,663, 938.0		396,542,588.0	211.7
Average	10,295,993		296,542,588.0	23.4

Source: Cocoa Research Institute of Nigeria, Cocoa Development Programme in Nigeria M.O.K. Adegbola and J.O. Abe 1982.

APPENDIX VI

Domestic Grindings of Raw Cocoa ('000 Metric Tons) 1967-2004

Period	Grindings(A)	%Growth	Production(B)	(A/B)%
1967-1969	18.00	-	227.66	7.91
1970-1974	25.30	40.56	239.60	10.56
1975-1979	18.00	-28.85	203.00	8.87
1980-1984	22.40	-24.44	160.00	14.00
1985-1989	16.20	-27.68	120.20	13.48
1990-1994	10.30	-36.42	146.00	7.05
1995-1999	12.90	25.24	150.40	8.58
2000-2004	13.96	8.22	175.00	7.98

Source: Gill and Duffus (1997) and 1999); EDFMAN (1997, 1999, 2001, AND 2004).

APPENDIX VII

Major Importers of Nigerian Cocoa (metric tons)

Country Year	USA	UK	Germany	Netherlands	USSR	N. Ireland	Others	Nigeria Total Export
1970	23325 (11.91)	53954 (27.54)	2445 (12.47)	30536 (15.59)	24064 (12.28)	2134 (1.09)	37467 (19.13)	195905
1973	41669 (19.48)	40840 (19.09)	22231 (10.39)	17113 (8.00)	43831 (20.49)	5383 (2.50)	42875 (20.05)	213897
1980	21485 (15.57)	25942 (1.80)	32747 (23.73)	26154 (18.95)	10,000 (7.25)	2475 (1.79)	19205 (13.92)	138,008
1986	1895 (3.23)	30881 (52.64)	4569 (7.79)	12941 (22.06)	4500 (4.67)	2978 (5.08)	900 (1.53)	58664
1996	3602 (2.46)	54279 (37.00)	19364 (13.20)	39609 (27.00)	113 (0.08)	Nil (-)	29733 (20.20)	146700
1997	3286 (2.40)	54498 (42.00)	19166 (14.00)	34225 (25.00)	Nil (-)	Nil (-)	22725 (16.60)	136900

Source: ICCO, Quarterly Bulletin of Cocoa Statistics various issues.

FOS, Nigeria Trade Summary various issues.

Figures in parenthesis are percentage import of Nigeria Cocoa Bean by each Country.