The Role of Access to credit in Cocoa Production in Nigeria

M.Sc. Thesis

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Business Economics Chair Group

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Disclaimer

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Abstract

The economic growth of Nigeria is based on agricultural production. Cocoa production has contributed to the foreign exchange earnings of the country. However, most of the cocoa farmers rarely have access to credit which has made it impossible for them to invest in cocoa business. Several credit programmes initiated by the government to enable farmers to have access to credit had little or no positive effect on cocoa production. The objective of the study is to assess the role of access to credit in cocoa production in Nigeria, a case study of Ondo State. Through a structured survey, data were collected from 138 farmers selected purposively from Odoe Idanre, Ondo and Abojupa districts in Ondo State using questionnaires. Descriptive statistics have been used to analyse the socio-economic characteristics of the respondents. According to results, farmers in the districts examined were mostly old, had a low level of education, with large household size and low income. Further analysis on the sources of credit available to farmers in the study area showed that they mostly have access to the informal source (from large buyers) and shy away from borrowing from formal sources because of lack of collateral, high-interest rates and fear of loan default. However, all the respondents confirmed that there was an increase in the production of cocoa after accessing credit from the large buyers but the credit was insufficient for the purpose for which it was obtained. Results from the binary logistic regression model to determine factors affecting cocoa farmers' access to formal credit from both marginal effects at means(MEM) and average marginal effects (AME) showed that farmers with high level of education, savings and age between 31-40 are most likely to have access to credit from formal institutions. The mediation analysis result also showed a positive and significant relationship between credit access and productivity but no mediation effect of savings on access to credit and cocoa production. Based on these results the formal institutions should endeavour to reduce the bureaucracy bottlenecks and minimize the demand for collateral securities involved in access credit from the institutions. In addition, the government should invest in the sector by providing subsidy on the interest rate charged by the banks and also provide a means of educating the illiterate farmers. More youths involvement is needed in the sector, therefore the government should create awareness on the importance of the cocoa to the economy and provide resources for start-ups. The policymakers also have a role to play by increasing and encouraging private-sector-led development in the cocoa sector. With access to formal credit, cocoa farmers have access to factors of production such as seeds, skilled labour, fertilizers to increase their

productivity. These study results are useful for formal institutions, policymakers, farmers and the government towards a sustainable cocoa production through access to formal credit in Nigeria.

Keywords: Productivity, credit, informal credit, formal institutions, accessibility.

CHAPTER ONE

1.1 Background

Cocoa production has contributed enormously to the economic development of Nigeria and it is considered as the most important non-oil export crop. The foreign exchange earnings derived from the export of cocoa is higher than any other agricultural product in Nigeria (Nkang, 2009). The available statistics showed that cocoa is the second highest source of foreign exchange after crude oil (Adegeye, 1996). The third top export of Nigeria is cocoa beans with a total export value of $741M (OEC, 2016). In the past, the sector played a crucial role in reducing the high rate of unemployment in the country both directly and indirectly. It is a major source of revenue to the governments of the cocoa-producing states and has contributed significantly to the Gross Domestic Product of the country (Central Bank of Nigeria, 2007).

However, a statistical data review by FAO (2016) on production and exportation of cocoa in Nigeria showed periods of decline and growth in both production and export. For instance, the period between 2010 – 2015 showed a decrease in production from 399,200 tonnes to 195,000 tonnes and a subsequent increase to 236,521 tonnes in 2016. Also, the number of cocoa beans exported was 226,634 tonnes in 2010 and declined to 76,197 tonnes in 2015 but had a sharp increase to 227,494 tonnes in 2016 (FAO, 2016). Its contribution to the foreign exchange earnings of the country is currently insignificant compared to crude oil (Mark, 2000). The volatility in production and export of cocoa can be attributed to several reasons. According to Fashina et al, (2001) and the Cocoa Research Institute of Nigeria (CRIN, 2003), most of the cocoa trees in Nigeria are almost 30 years of age with diminishing production trends and these trees are prone to pest and diseases. This is corroborated by (Olusuyi, 2016) who identified that the decline in production was because cocoa farms and the farmers are getting old, and due to a lack of infrastructure for production. In addition, the lack of funds from the government to young cocoa farmers reduces the production of cocoa in Nigeria (Iyama, 2016). These challenges have prevented the country from meeting the target set by the International Cocoa Organisation (ICCO), affected productivity and, consequently, resulted in huge loss of revenue amounting to $1 billion yearly (Eze, 2018).

Various strategies and reform programmes were put in place by the government in order to revive the cocoa sector (Oseni, 2011). One of the programmes is the National Cocoa

Rehabilitation Programme, which was set up by the Federal Government in 1999 in order to provide inputs and organise training for the farmers. The programmes also provided seedlings from the Cocoa Research Institute of Nigeria (CRIN) to cocoa farmers (Akande, 2012). Again, Cocoa re-birth programme was launched in 2005 by the Federal Government in order to promote the production of cocoa to meet the demand of the export market. The programme also aimed at enhancing the livelihood of farmers and reducing poverty in Nigeria (Federal Government of Nigeria, 2006). However, the programmes have had minimal or no contribution to the sector because of a lack of trust in the government by the farmers due to corruption (Daniel and Kanu, 2012).

Access to credit facilities in the form of loans by farmers can probably solve the issue of low yield. Kimuyu and Omiti (2011) proposed that agricultural loans serve as a basic component for agricultural and rural development in developing countries. Access to credit facilities by cocoa farmers can serve as a substitute for individual savings and can affect cocoa production in different ways. The most important is the easing of capital constraints on cocoa production. Credit constraints have a negative impact on investment behaviour of customers (Eswaran and Kotwal, 1990). Cocoa farmers incur a lot of expenditure during the cocoa husbandry process and get returns when the cocoa is harvested and commercialized. Hence, farmers will either use their savings or obtain credit in order to finance the purchase of equipment and inputs.

Although the farmers through their cooperative societies and small cocoa group contribute and lend funds to each other as loans, the amount they receive is too low due to the number of members that apply for loans. They ,therefore, resort to seeking financial assistance from formal institutions, however, the collateral requirement demand is a major constraint to farmers accesses to credit facilities.

1.2 Problem Statement

Although cocoa production and export are generally regarded as drivers of economic development in most cocoa producing countries, there are research out there on the assessment of the role of credit in cocoa production in Nigeria.

However, there are a lot of studies on the challenges facing the cocoa sector and its impact on productivity in Nigeria. Some of the challenges mentioned are the decreasing level of the labour force and the ageing of trees resulting in low yields (Cadoni, 2013). Others indicate that inconsistent production patterns, disease incidence, pest attacks and use of simple farm tools

lower productivity (Villalobos, 1989). Nwachukwu (2010) identified poor farm management practices, little agricultural mechanization as key factors leading to decreasing cocoa production in Nigeria. In addition, some studies have looked into the determinants of constraints to credit access among cocoa farming households (Lawal et al. 2009), while others have discovered that in rural areas, credit constraints have an adverse effect on farm yield (Sial and Carter, 1996) and farm investment (Carter and Olinto, 2003). Little was mentioned in the aforementioned references about its impact on productivity.

The research intends to fill this gap by analysing the various sources of credit facilities that are available to the farmers and measuring their impact on cocoa production in Nigeria. This study is important because it will provide information to the stakeholders in the cocoa sector on ways to increase production.

1.3 Research Objective and Questions

The main research objective is to determine the role of credit facilities on cocoa production in Ondo State, Nigeria. In order to achieve the objective, the following research questions will be answered:

Main Research Question

What is the role of credit access in cocoa production in Ondo State, Nigeria?

Research Sub questions

1. What are the socio-economic characteristics of cocoa farmers in Ondo State, Nigeria?
2. What are the sources of agricultural credit available to these farmers?
3. What are the factors that determine the accessibility of credit by cocoa farmers?
4. What is the relationship between access to credit and the annual cocoa output of farmers and how does the relationship affect the savings level of the cocoa farmers?

1.4 Research Hypothesis

Three hypotheses were tested in this study

Hypothesis 1: The socio-economic factors of the farmers in the study area do not affect their access to credit.

Hypothesis 2: There is no relationship between access to credit and cocoa production in the study area.

Hypothesis 3: There is no relationship between access to credit and the savings level of farmers in the study area.

1.5 Organisation of the thesis

The rest of the thesis is organized as follows: Chapter 2 provides a review of relevant past studies and theory, conceptual framework of credit and credit access, history of cocoa production in Nigeria, resuscitation programmes and credit scheme to revive cocoa production, sources of credit as well as empirical review of factors determining access to credit and relationship between access to credit and productivity. Chapter 3 presents the materials and methods use in answering the research questions which includes a review of the study area, sampling procedure, research instrument, data collection methods and data analysis methods. Chapter 4 describes the results of the study, while chapter 5 reports the discussion, conclusions and recommendations.

CHAPTER TWO

2.0 Review of Relevant Literatures

This chapter reviews relevant literatures on the role of access to credit on cocoa production in Nigeria. The first section reviews the definitions of the key concepts in the topic. Section two gives answer to research question two by reviewing the various sources of credit available to cocoa farmers in Nigeria. The third section reviews the existing theory that relates with the topic of the research . The research question three was addressed in section four through the review of previous research work on the factors that determine farmers access to credit and the relationship between credit access and agricultural productivity. The section five gives a brief history of cocoa production in Nigeria based on the rate of production and export. Section six reviews the addresses government interventions in reviving the cocoa sector in Nigeria through the establishment of resuscitation programmes. The section seven which is the final section of the chapter gives a detailed information about the credit schemes introduced by the government and the challenges of the schemes.

2.1 Review of Concepts.

2.1.1 Definition and Concept of Credit and Credit Access

The word credit has been given several and different meanings in literatures. Some people refer to it as “loans” while others refer to it as “borrow”. Thus, Ellis (1992) defined credit as “a sum of money given in favour of a person to whom control over it is transferred and promises to pay back at a specified time”. From this definition, it can be inferred that credit provides the means by which money or assets is temporarily transferred from someone that has it, to someone that has not. However, Baker and Hopkins (1979) made a clear distinction between loans and credit. He was of the opinion that credit is an asset or a financial reserves which farmers can use when needed, provided he has not used his credit ‘asset’ by exchanging it for a loan, then he starts incurring an interest charge. Also he uses up part of his capacity and hence part of his ability to acquire additional liquidity in the future by borrowing. Kuwornu et al. (2012) also defined credit as the present and pro term transfer of purchasing power from a person who own it to a person who wants it, allowing the latter the opportunity to command another person’s capital for agricultural purpose but with his willingness and ability to pay back at an agreed date. Credit is also defined a transaction between two parties (borrower and lender), in which money, goods or services is transfer with a promise to pay at an agreed future date.

Access to credit on the other hand occurs when there is no non-price or credit rationing (Perderson & Khitarishvili, 1997). Access to credit also refers to the possibility that famers or enterprises can access financial services, including, credit, deposits, payment, insurance, and other risk management services (Beck and Honohan, 2008). The World Bank (2008) defined access to credit as the absence of price and non-price barriers in the use of financial services.

2.2 Sources of Credit Available to Farmers in Nigeria

There are typically three types of credit available to individual (farmers) in most developing countries like Nigeria. These are the formal sources, which is also called institutional sources (commercial banks, micro-finance banks), the semi- formal sources (NGOs, cooperative societies) and the informal sources also referred to as non-institutional sources(money lenders, contributions, family and friends) (Badiru, 2010).

Formal financial institutions are registered institutions that are licensed to provide financial services and they operate under the Central Bank of Nigeria rules and regulations. However, such financial institutions demand for collateral with high interest rate charges on loans obtained and the process of obtaining the credit is very tedious (Miah et al., 2006). Though, the interest rates are sometimes subsidized by the government.

The informal credit institutions provide loans and deposits which takes place outside the monetary system and this requires activities of intermediaries such as friends, money lenders and family (Kashuliza et al., 1998) and the procedure for obtaining the credit is less cumbersome. In Nigeria, the informal sources is basically the leading provider of agricultural credit despite their exploitative ways of charging high interest rates and the offer of a little amount of credit which is not sufficient to meet the cash constraints of the farmers for agricultural production process (Komicha, 2007). The reason for these is because the criteria needed to obtain credit does not include pledging collaterals. In fact, the World Bank (1994) and (2000) confirmed that there are three most important sources of credit in Nigeria and they are all informal: (i) the rotating savings and credit association (RoSCAs) locally known as “esusu” or “Ajo”,(ii) family and (iii) friends.

The Semi-formal credit institutions are registered to provide financial services such as loans, but they are not controlled by a central monetary authority (Steel and Andah, 2004).

In a research study conducted by Ijioma et al. (2015), they observed that the major sources of credit available to the respondents in a region in Nigeria were personal savings, friends or relatives and co-operative societies. It was discovered that the credit from non-institutional sources were more appealing to the farmers because there is little or no demand for collateral securities. Mgbakor et al. (2014) in a study conducted to find out the major sources of credit available to the farmers in a particular region in Nigeria, affirmed that, farmers mostly prefer to obtain credit from informal sources, like relatives, neighbours and moneylenders. The reasons for their preference is centred on the easy accessibility of the sources, minimal formalities attached to accessing the credit and the timely disbursement of the loans. Another study conducted by Olatinwo et al. (2012) on the analysis of rural farming households' access to credit in kwara state, Nigeria, showed that farmers in that region have access to credit from cooperative society, personal savings and rotary loan scheme. It can be inferred from the study that farmers face difficulty in accessing loans from formal institutions due to lack of collateral security and interest rate. Adebayo and Adeola (2008) also reach same conclusion except they found cooperative society as the most popular source of credit to the region they observed. Matthew and Uchechukwu (2014) also reached same result but found out that more than half of the respondents had not access to credit.

In conclusion, the various scholars that analysed the sources of credit available to farmers in Nigeria observed that the informal credit source serves as a survival tool for farmers in all the regions observed. Collateral and interest rate were the major reason for depending on the informal sources. It is therefore important to examine the pecking order theory to determine the preferred sources of credit to farmers.

2.3 Theoretical Review

2.3.1 Pecking Order Theory

For the purpose of the research work, the pecking order theory will be used to measure the ability of cocoa farmers to independently finance their production without external finance or whether they lack access to credit facilities.

The Pecking Order Theory was developed by Myers (1984). According to the theory, firms prefer to finance their activities from internal sources rather than requesting for external finance. However, when the internal sources are exhausted, then firms can go for debt and

finally equity as the last resort. This theory posit that there is a pecking order, that is a ranking of preferred sources of finance and identified two strategic sources of finance in which an investor can use to pursue his/her investment project. In the context of cocoa farmers, if retained earnings/savings from previous proceeds is not enough to expand the production in the current period, external credit can be explored either formally or informally. The ability of the farmer to raise required credit is subject to the sources, availability and cost of such credit.

2.4 Empirical Review

2.4.1 Factors that Determine Farmers Access to Credit

Great emphasis has been given that access to agricultural credit in developing countries plays a significant role in the production process and improves household welfare of the farmers. In addition, with access to agricultural credit, famers can invest in the production of farm produce in order to ensure continuity and sustainability. With reference to this, most studies focus their attention on the factors that determine farmer's access to credit and have identified several socio-economic and demographic factors, which is reviewed in subsequent paragraphs.

In a recent study conducted by Ijioma et al. (2015) on the determinants of credit acquisition by farmers in a local government in Nigeria, it was found out that age, household size, marital status, membership of cooperative societies, education level, farms size and amount of loans repaid are the major predictors of the amount of credit a farmer acquires. In addition, Dzadze et al. (2012) revealed that education level, savings habit and extension contact are factors that influences farmers access to agricultural credit. Using descriptive statistics and a stepwise linear regression model, Etonihu et al. (2013) observed that education, distance to sources of credit and types of credit available were the major factors affecting farmers' accessibility to agricultural credit in Nigeria. Oboh and Ekpebu (2011) also studied the effect of socio-economic and demographic factors on the rate of credit allocation to the farm sectors by arable crop farmers in Benue state, Nigeria. The result from the study showed that age, education, farm size, household size, delay in accessing loans and visitations by the moneylenders are the factors that affect the rate of credit allocation to farmers. Ibrahim et al. (2012) also analysed the factors that influence rural farmers access to formal credit in Nigeria. The result from the findings shows that level of income, collateral, educational attainment and marital status has factors which positively influence farmers' access to formal credit while age and sex have insignificant positive influence on farmers' access to formal credit. In another

study conducted by Ajagbe et al (2012) to examine factors influencing the amount of credit demanded by small-scale farmers in Oyo State, Nigeria, showed that lack of information, lack of required collateral and terms and conditions of the loan were major hindrances preventing small-scale farmers from seeking credit. Further findings revealed that informal source of credit provides easier access to their credit facilities; however, the demand for credit from this source outweighs the supply. Baffoe and Matsuda (2015) also observed the determinant of farmers' access to credit facilities using the binary method (Probit). They found out that the most important variables that significantly affects farmers access to credit are household productivity, savings accounts, livelihood diversification and household size.

In contrast to the factors mentioned by various scholars above, Devkota (2006) observed that access to finance is mostly dominated by male because females were largely illiterate and hence, were not involved in financial activities, which needs specific knowledge and skills, and require information. He concluded that being a female with a secondary education level and a farm operator could probably increase credit accessibility. Nwaru (2011) also stated that financial, economic, cultural and legal obstacles most times affect females at individual, households and community level. In a study by Kaino (2005), it was observed that there was a positive influence of gender in accessing credit facilities. However, Kedir (2007) in a study conducted in Ethiopia observed that the formal financial institution offered more agricultural credit to female-headed households than the male-headed households. Ugbomeh (2008), also investigated the determinants of loan repayment performance among women self-help groups in Nigeria. The findings from the research shows that women as household heads, interest rate, household size, price stability of farm proceeds and commitment to self-help groups significantly affected the loan repayment of women in the group.

Most farmers with years of experience in farming are quite aware of the risk involved in the agricultural enterprise within the context of their physical environment and they try to manage such risks using several strategies. For any risk management techniques employed, the experience of the farmer is a prerequisite for a good result (Bankakademie Micro Banking Center, 2005). This experience might enable farmers to be sure that the returns from their farms will be sufficient to pay back the credit obtained and the interest. Thus, this leads them to frequently use credit from formal sources and makes them more creditworthy (Oluwasola

& Alimi, 2008). Yehuala (2008) also stated that, farmer's experience in credit use from formal sources played a significant role in accessing formal credit.

The table 1 below gives a summary of the factors affecting farmers access to credit by various authors.

Table 2. 1: An overview of the factors affecting farmers access to credit.

Authors	Factors affecting access to credit														
	Age	Household Size	Marital Status	Education Level	Farm Size	Membership of Association	Amount of loan repaid	Savings Habit	Distance to sources of credit	Types of credit available	Level of Income	Collateral	Level of information	Household Productivity	Gender
Ijioma et al. (2015)	√	√	√	√	√	√	√								
Dzadze et al. (2012)				√				√							
Etonihu et al. (2013)				√					√	√					
Oboh and Ekpebu (2011)	√	√		√	√										
Ibrahim et al. (2012)			√	√							√	√			
Ajagbe et al (2012)												√	√		
Baffoe and Matsuda (2015)		√						√						√	
Devkota (2006)															√
Kaino (2005)															√

2.4.2 Relationship between Credit Access and Agricultural Productivity

Credit is an important tool to increase agricultural productivity. This is because credit is a support service that enables farmers to procure inputs, hire labour and equipment (Ugbajah and Orji, 2006). Credit is also perceived as an aid to agricultural transformation and economic development (Yusuf et al., 2015). Agricultural credit is needed in order to hasten the transformation of traditional farm practice to modern commercial farming (Ahmad, 2011).

Several research have recognised that there is a positive relationship between agricultural productivity and availability of credit facilities to farmers. According to Awotide et al. (2015), farmers with credit facilities have higher productivity than farmers without it. Using a stratified sampling techniques, grouping farmers into beneficiaries and non-beneficiaries of credit, Bolarinwa et al. (2011) confirmed that a higher percentage of farmers benefit from informal sources of credit than the formal sources. Furthermore, the farmers with access to credit facilities recorded higher cocoa production compared to farmers without access to credit facilities. Olagunju and Babatunde (2011) examined the impact of access to credit on poultry productivity in Nigeria. The result from the study showed that credit acquisition by farmers had a significant impact on their productivity level. In a study conducted by Ammani (2012) to investigate the relationship between agricultural production and formal credit supply in Nigeria, it was found that formal credit is positively and significantly related to the productivity of livestock and fish sectors of Nigerian agriculture. Nwaru (2004) further affirms that constraint to access to credit is a major factor that attributed to decline in agricultural productivity in most developing countries. Obuobisa (2015) argues that access to credit facilities significantly affects farmers' decisions in adopting cocoa research innovations. In addition, access to microcredit improves the productivity of farmers and contributes to the uplifting the livelihoods of rural farming communities. (Nosiru, 2010). Ayegba and Ikani (2013) give the challenges faced by farmers in accessing formal agricultural credit which are, high interest rate, late approval of loans, bureaucratic bottlenecks, collateral and unnecessary request for guarantors. In addition, Filli et al. (2015), stated other hindrances in accessing credit such as formalities involved in obtaining the credit and the amount required for production process. Badiru (2010) stated that semi-formal and informal credit institutions are the major sources of credit for the small-scale farmers despite the high volume of credit facilities available at the formal institutions. He also emphasized that access to credit helps in improving the well-being of the farmers. Bashir et al. (2010), emphasized that the access to

credit facilities is essential for the transformation of agricultural sector and increasing the participation of farmers in production process. According to Akinbode (2013), availability of credit facilities to the farmers ensures that production is economically sustainable because resources will be available to the farmers to procure modern farm tools, improved seeds and hire skilled labour. Asides productivity, Petrick (2004) indicated that access to subsidized credit has a significant role in determining the investment behaviour of farmers. He observed that the average marginal effect of credit on investment was smaller than one, which means that credit is partly used for purposes asides productivity investment. Access to credit will also increase the willingness of farmers to adopt new and more risky technologies (Eswaran and Kotwal, 1990). Thus, lack of credit serves as a barrier to investment and income growth of poor households in developing countries of the world (Park et al.,2003). Contrary to the opinion of previous scholars on the effect of access to credit on investment behaviour of farmers, Foltz (2004) findings on credit market access and productivity in Tunisia showed that credit constraints significantly affects farm profitability but does not affect investment.

In conclusion, from the literatures reviewed, no doubt access to credit has a positive effect on agricultural productivity and the investment behaviour of farmers. Most of the farmers who have access to credit irrespective of its sources, usually record high level of productivity. However, the farmers usually have access to the informal sources of credit than the formal sources. Therefore, adequate provision of credit to farmers (both formal and informal) will go a long way in increase cocoa production, improving farmers livelihood and enhance the economic development of the country. Based on the literature, we can hypothesis that: There is a relationship between access to credit and cocoa production. However, further analysis based on the data collected will either refute or confirm the hypothesis.

2.4.3 Relationship Between Access to Credit and Savings

Savings is defined as the act of setting money aside in order to reinvest or consume at a future date. It is setting aside of some items for future use (Shipton, 1990). Money saved can be reinvested in a business for expansion, deposited in a savings account or kept at home. Savings can be inform of formal (i.e. in banks), informal(i.e. to friends, family and money lenders) and semi-formal (i.e. to cooperative society, and savings association).

Few research have recognised the relationship between savings and access to credit. Ike and Umuedafe (2013), in their study of determinant of savings and capital formation among rural

farmers in Nigeria using multiple regression analysis found out that the volume of savings is determined by the rural farmers' income, non-farm income and access to credit from formal institutions. Income increases the chances of having access to credit and savings services in developing countries. A farmer with a reliable source of income is likely to have one savings account to accumulate capital(Fernando,2007). In addition, they can have access to credit from formal institutions using their sources of income as collateral. It of the opinion that low income farmers find it difficult to save. However, an empirical studies suggest that, once financial instruments are available to this group of people, it motivates them to save (Aportela,1999). In another study conducted by Ugwuanyi and Omeje(2013) on the impact of credit on households welfare in Nigeria found out that saving level of households have positive impact on access to credit from formal financial institutions in Nigeria. Based on the literatures we can hypothesis that: There is a relationship between access to credit and the savings level of farmers. However, further analysis on the data collected will either refute or confirm the hypothesis.

2.5 Cocoa Production in Nigeria

Squiss Ibanningo introduced Cocoa (Theobroma cacao) to Nigeria from the Spanish Island Fernando Po (which is the present Equatorial Guinea) in 1874 (Ayorinde, 1966). There are other sources through which cocoa was introduced to Nigeria, which are, Ministry of Agriculture, farmers' associations, cooperatives and the Cocoa Research Institute of Nigeria (CRIN). However, the government intervention in cocoa cultivation in Nigeria was in 1887 through the distribution of cocoa seedlings which was taken from the old botanical garden at Ebute-meta and was sent to Ibadan, Oyo State for trial (Opeke, 1987; Ojo & Sadiq, 2010).

The production and exportation of cocoa in Nigeria started in the year 1910. The favourable condition of rainfall, sunshine and humidity accounted for the production of cocoa in fourteen states out of the thirty-six states in Nigeria (Amos and Adeleke, 2011). Out of the fourteen states, Ondo, Ekiti, Osun and Oyo state produced about 80% of the total cocoa produced in Nigeria (Idowu et al., 2007) It is estimated that about 500,000 cocoa farmers are engaged in cocoa production in Nigeria (CRIN, 2006).

Its contribution to the total agricultural export earnings is massive. For instance, it has average contribution of 70.6% between 1971 and 1975, 89.8% between 1976 and 1980, 84.6% between 1987 and 1985, 76.8% between 1986 and 1990, and 53.3% between 1992 and 1996.

The declining trend in the figures is a reflection of the less dominate role in which the cocoa sectors has played in export earnings due to the advent of the oil boom. The expression of the 'Dutch Disease' in neglecting the agricultural economy while focusing on oil resulted in the oil boom of 1970, which became the major foreign exchange earner till date. The neglect of the agricultural sector became detrimental to the economy due to the glut in the oil market, causing volatility in the prices of crude oil which led to the economic recession in 1987 and 2016. The economic recession in 1987 resulted in the establishment of several resuscitation programmes, some of which are defunct or abandoned while others are still in place, to revive the cocoa sector (Olomola,1998).

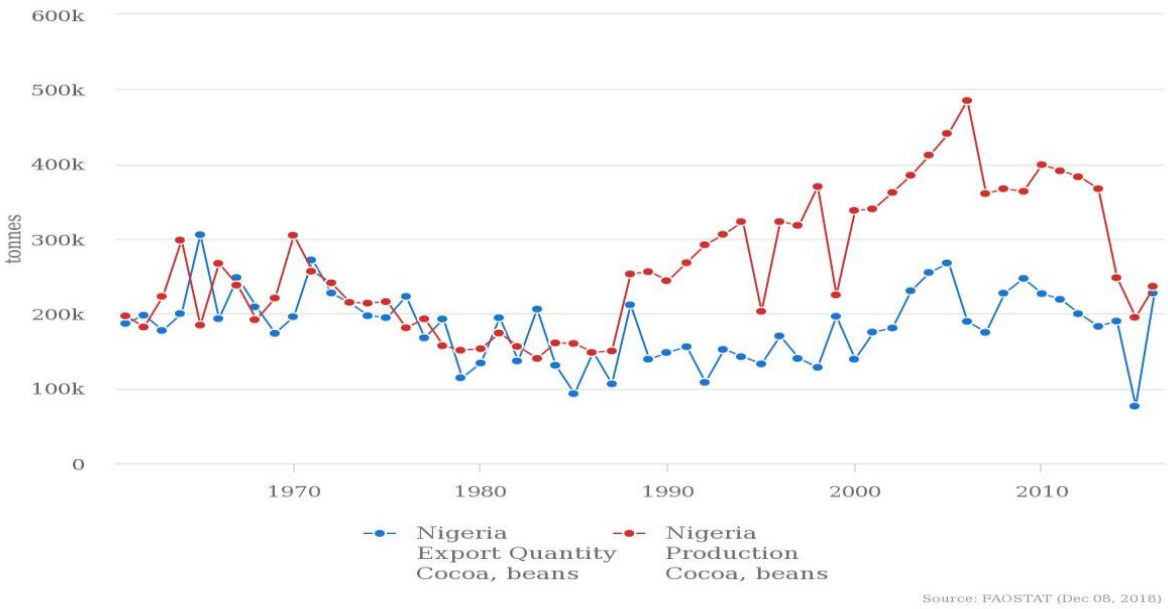
2.6 Resuscitation Programmes to Revive Cocoa Sector in Nigeria

The government in 1986, as an economic survival strategy, during the economic recession that started in mid 1980s, instituted the structural adjustment Programme (SAP). The focal point of SAP are (i) to reduce the over-dependence on oil by diversifying the productive base of the economy (ii) to provide stimuli for non-oil exports especially cocoa (iii) to reduce the dominance of unproductive investment in the public sector and (iv) to improve the agricultural sector's efficiency and intensify the growth potentials of the private sector (Bamidele, 2005). The programme somewhat achieved few of the purposes for which it was set up, as the production level of cocoa raised from 100,000 metric tonnes to 256,000 metric tonnes in 1989 (Akanji, 1992) and placed the country as the fourth largest producer of cocoa (Titilola, 1997). However, the success of the programme was short-lived because most of the expectations were not met and industrial exports did not get the expected boost. Furthermore, there was a backward investment towards the production of cocoa; cocoa farmers are faced with increasing costs of pesticides, which is an important necessity for production asides labour, with inadequate funds to purchase agro-chemicals and with poor access to credit facilities (Sanusi and Lawal,2006), and these had a negative effect on the development of the cocoa sector.

The failure of SAP to promote sound economic development through cocoa production and export prompted the Federal Government to set up the National Cocoa Development Committee (NCDC) in 1999. The committee was saddled with the responsibility to provide a blue print for reviving the cocoa sector and stimulating value added in order to increase export. In an effort to develop the blue print, the committee collaborated with the

International Institute of Tropical Agriculture (IITA) and Cocoa Research Institute of Nigeria (CRIN) in 2003 with their focus on rehabilitation. CRIN however centred its research on genetic potentials and development of technology packages and techniques to improve farm practices that address constraints to cocoa production. Other contributions made by the NCDC were organising trainings on cocoa rehabilitation, provision of various seedlings and pods through the Cocoa Development Units (CDUs) of the cocoa producing states(Akande,2012). In spite of the effort of NCDC, the cocoa farmers continued to adhere to their old practices (Aikpokpodion et al., 2005) and the reason given was a lack of resources such as funds and labour to apply the technologies (Aneani et al., 2012).

The President of Nigeria later launched the Cocoa Rebirth Programme in 2005 in order to restore the cocoa industry to its past eminent position in the economy. The policy thrust of the programme was to create awareness of the wealth creation potential of the crop, to promote the production of cocoa to meet the needs of the international market, to create awareness on the importance of youths' involvement in cocoa cultivation, and to create jobs in order to enhance farmers, income and minimise poverty in the country (FGN, 2006). Some of the programmes achieved its laid down objectives of providing credit to the farmers, and these had a positive impact on the production of cocoa in 2005 (Titilayo, 1997) as shown in fig 1. However, its impact on production and exportation was short-lived due to several reasons such as inadequate release of funds meant for the resuscitation programmes, poor logistics support for field extension staffs and poor timeliness in providing working material (Akinnagbe, 2015). Figure 1 below shows the volatility in the production and export of cocoa in Nigeria between 1960 and 2016. From the graph, there is a sharp increase in the production of cocoa in the year 1999 and 2005. As earlier stated, the sharp rise is attributed to the resuscitation programmes established during those periods. However, after the cocoa rebirth programme in 2005, there has been a downward trend in the production and exportation of cocoa in Nigeria.



Source: FAOSTAT Data Base

Figure 2. 1: The production and exportation of cocoa between 1960 and 2016.

2.7 Credit Schemes established by the Government for Agricultural Purpose

Majority of the cocoa farmers in mostly the rural areas in Nigeria have low level of income and low saving capacity (Audu et al, 2007); therefore, makes it difficult for them to incorporate modern technology that would have led to an increase in their farm income (Agom and Idiong, 2002). Credit is widely recognised as one of the most important tools for sustainable agricultural production; hence, its accessibility and demand is among the prerequisites for reaching the set economic goals of reducing poverty and ensuring the production of sufficient food in the country (Akudugu, 2012).

In order to ensure availability of funds to the agricultural sector and to boost economic development, the government of Nigeria established in the past several financial programmes. In the table 2 below, an overview of the various credit scheme and purpose of its implementation is described.

Table 2. 2: An overview of the credit schemes established by the government.

Credit Schemes Established by the Government	Established date	Purpose of the scheme
Nigeria Agricultutral Cooperative Bank (NACB)	1973	1.To provide credit in the form of medium and long term loans to farmers and cooperative societies in order to increase production.
Agricultural Credit Guarantee Scheme Fund (ACGSF)	1977	1.The scheme was responsible for providing guarantee cover in respect of loans provided by commercial banks to the agricultural sector in order to motivate the banks to increase the supply of agricultural credit to framers.
Agricultural Credit Support Scheme (ACSS)	1977	1. To assist farmers to tap from the potentials in the agricultural sector in Nigeria. 2. To make credit available to the farmers. 3. To produce surplus for export, increase the foreign exchange earnings as well as diversify the country's revenue base. 4.To reduce the cost of agricultural production. 5. To reduce inflation.
Nigerian Agricultural, Cooperative and Rural Development Bank (NACRDB)	2000	1. To providing agricultural finance for both small and medium scale enterprises. 2. To promote agricultural production and rural development through improving the income and welfare of farmers.
Commercial Agricultural Credit Scheme (CACS)	2009	1.To increasing the lending rate of the commercial banks in order to fast-track the development of the agricultural sector by providing credit facilities to farmers 2. To reduce the cost of credit in agricultural production 3. To generate employment. 4.To diversify the revenue base. 5. To promote commercial agriculture.
Nigerian Incentive-based Risk Sharing for Agricultural Lending (NIRSAL)	2011	1. To address the challenges of poor agricultural financing by lending to all the actors of the value chain.

2.7.1 Challenges of the Credit Schemes

In spite of the amount of funds invested in the agricultural sector by the federal government through the schemes discussed above and with the assistance of various formal financial institutions, the agricultural sector is still performing below expectation. The cocoa produced within the country is not sufficient for domestic processing of the product and it is not enough to generate adequate foreign exchange through exports (Awe, 2013; Olomola and Yaro, 2015). Most of the farmers are unable to secure the required equity capital for the expansion of their business and to adopt modern techniques for production because of volatility in the prices of goods they produced, which affects the level of their income. Also, the banks are unable to lend to the farmers, despite the policies put in place by the government to address the issue, because of the unpredictable risk associated with farming (Olomola and Yaro, 2015). In addition, the rate of loan default by farmers is one of the challenges preventing banks from lending to the farmers. It was reported that high default rate crippled the credit schemes introduced by the Agricultural Credit Corporation of Oyo State and Lagos State (Adejobi, 1999; Lawal et al., 2009).

Furthermore, several literatures reviewed the deficiencies of the credit schemes and identified numerous reasons such as delay in the disbursement of loans to the farmers by the financial institutions attached to the schemes due to the distance of the banks to the beneficiaries (Saheed, 2014). In addition, the poor administration of the credit, high transaction cost, loan default by the farmers, reluctance on the part of the formal institutions to lend to the farmers and inapt legal securities are other reasons for the deficiencies of the schemes (Nwosu et al., 2010). Most of the schemes were also faulted by a lack of awareness (Oguoma, 2002), lack of trust in the government by farmers because most of the money set aside for the schemes do not get to the farmers, it was either used as political patronage or hijacked and kept in fixed deposit for interest, so farmers generally developed a wrong perception about programmes initiated by the government (Meludu et al., 2017).

In conclusion, the credit schemes introduced by the government had little or no positive effect on the agricultural system of the country due to several factors stated above.

CHAPTER THREE

3.0 Materials and Methods

In this chapter, section one gives a detailed description of the conceptual framework of the study. The second and third section describes the research instruments needed and how the data necessary for answering the research questions will be collected. Section four explains the how the data collected will be analysed with respect to the different research questions. A brief description of the study area under investigation is given in sections five and the last section give an overview of the selection process for respondents.

3.1 Conceptual Framework for the Study.

3.1.1 Conceptual Framework for Research Question Three

From the previous chapter, the past related researches indicated that the socio-economic and institutional factors were the major factors affecting access to credit. Based on that, this study focuses on the socio-economic and institutional variables that could affect cocoa farmers access to credit in the study area. The socio-economic and institutional characteristics that were hypothesized to affect access to credit by cocoa farmers in the study area are gender, age, education level, farm size, membership of cocoa association, household size and savings level. This is better illustrated in the figure below.

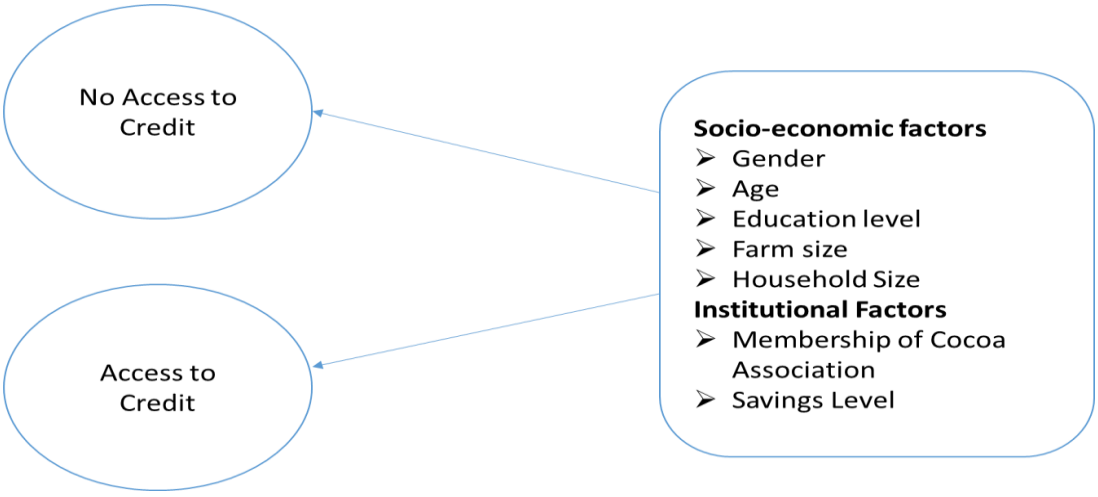


Figure 3. 1: Schematic diagram designed for the study

Operationalization of the Conceptual Framework

Socio-economic variables

Gender: this would be measured using nominal measurement and categorizing the gender into male and female.

Age: this would be measured using nominal measurement.

Educational Level: this would be measured using nominal measurement and categorized into primary school, secondary school, university/polytechnic institution and vocational training.

Farm size: this would be measured using continuous measurement.

Household size: this would be measured using interval measurement such as 3-5, 6-8, 9-11, and 12-15.

Membership of cocoa association: this would be measured using nominal measurement.

Savings Level: this would be measured using nominal measurement.

3.1.2 Conceptual Framework for Research Question Four

According to the review of previous studies on the relationship between the variables access to credit and productivity, access to credit and savings done in the previous chapter, there is a positive relationship between the variables. Based on that, this studies conceptualize that there exist a relationship between the variables in the conceptual framework diagram below. The conceptual framework in fig 3 describes the connection between access to credit for the cocoa farmers and their potential productivity. Explicitly, the dependent variable is the annual cocoa production by farmers which could be measured in metric ton, kilogram and number of baskets (depending on choice measuring unit). Meanwhile, the independent variables is access to credit for the farmers. Here, it is measured in relation to the amount obtained in Naira(₦) by individual farmers. The intervening variable is the savings level of the cocoa farmers in the financial institutions.

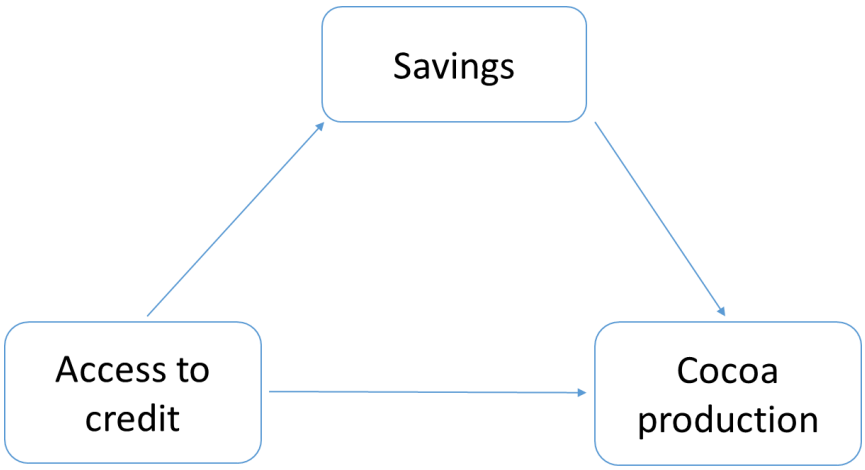


Figure 3. 2: Schematic diagram designed for the study

Source: Author's compilation, 2018

Operationalization of the conceptual framework

There is a need to operationalise the key variables of the study in order to enable their measurement. The key variables as earlier mentioned above, are the independent variable, dependent variable and the intervening variable.

Independent variable

The independent variable in the study is access to credit. Credit in this context means all advances provided for farmers in order to satisfy farm needs at the appropriate time with the view to refund it later (Olayemi, 1998). The sources of credit available to the farmers are formal, semi-formal and informal. The formal sources are the financial institutions, the semi-formal sources are the microfinance and cooperative societies and the informal sources are family, friends and contribution (Ajo). Contribution(Ajo) is a contributory thrift saving scheme among group of people in which an amount is agreed upon to save every month, then at the end of the month, someone in the group takes all the money saved for that month, which is subsequently rotated among other group members. Closed questions inform of Likert scale will be used to examine the relationship that exist between access to credit and cocoa production. In addition, the questions will also examine the preference of the farmers in terms of the sources of credit available to them.

Dependent Variable

The dependent variable is the cocoa production. The cocoa production is measured in metric tonnes which is the international standard of measurement. However, the local standard of measurement is kilogramme, baskets and so on.

Intervening Variable

The intervening variable is savings level from income. From the conceptual framework, the amount of savings made in the bank by the farmers determines the amount of loan they can get from financial institutions, i.e. the provider of the credit must be well assured that the farmer's savings from the cocoa production can pay back the loan applied for. In addition, the savings level of a farmer can also influences the tonnes of cocoa produced. The more savings the famer has, the more the farmer can reinvest in the business in order to increase production.

3.2 Research Instrument

The instrument used for the primary data collection was a structured questionnaire. Each questionnaire consist of both open and closed questions, which are specifically directed to the

farmers. These questions are easy to understand and give respondents the opportunity to give maximum information on the study. Due to the high level of illiteracy among farmers, the questionnaires were translated into mother tongue “Yoruba”, in order to enhance easy communication between the researcher and the respondents (farmers).

The questionnaire is made of five sections. Section A includes information relating to socio-economic characteristics such as sex, age, gender, religion, etc. of respondents.

Section B includes questions relating to informal sources of credit available to the farmers, access to informal credit and the mode of repayment. Section C contains questions measuring the awareness of formal sources of credit, access to this type of credit, the amount obtained and the utilization of credit obtained. Section D includes questions related to the impact of credit on cocoa production and the impact of credit obtained on revenue generated. Section E includes questions relating to factors that determine the accessibility of credit by respondents.

3.3 Method/Procedure of data collection

The fieldwork was conducted between February and March 2019. The information about the farmers was obtained from the Cocoa Research Institute of Nigeria (CRIN). The data for this study was obtained through the use of the validated and pre-tested questionnaire, which was administered to each of the cocoa farmers by the researcher and collected for data analysis. An interviewer-administered and self-administered methods was used to administer the questionnaire due to the level illiteracy of the farmers. The purpose of the study was explained to the respondents before answering the questions. Out of the 150 questionnaires distributed to the farmers, 138 were returned for analysis.

3.4 Data Analysis Methods

To provide answers to the research questions and analyse the data collected, descriptive statistics, binary logistic regression analysis and mediation analysis are used. The first and second research question is answered using the descriptive statistics, the third research question is answered using the binary logistic regression model and the mediation analysis is used in answering the fourth research question.

3.4.1 Descriptive Statistics

Descriptive statistics such as frequencies and means were used to analyse the first research question, which is the socio-economic characteristics of the farmers in the study area. The second research question was answered using both literature review and descriptive statistics. An extensive literature review was done to determine the various sources of credit available to the farmers. Based on these result, a follow-up analysis is executed to determine the main sources of credit available to the cocoa farmers in the study area using the data from the questionnaire.

3.4.2 Binary Logistic Regression Model

The inferential statistical tool used to analyse the factors affecting cocoa farmers access to credit, which was constructed as a binary variable, is the binary logistic regression model. Logit model is a method for understanding the association between explanatory variables and a binary dependent variable (Greene, 2008). In this case, the binary dependent variable is the access to credit and the independent variables are the factors affecting access to credit.

Basic Assumptions of Binary Logistic Regression Model

1. Logistic regression assumes mean coding of variables. The convention for binary logistic regression is to code the dependent class of interest as 1 and the other class as 0.
2. The dependent variable must be binary/dichotomous and the independent variables could either be discrete or continuous (Gujarati, 2004).
3. Larger samples are needed than for linear regression because maximum likelihood coefficients are large sample estimates.
4. The error term should be binomially distributed and there should be an absence of multicollinearity.

The dependent variable Y=1 is the situation when the farmer has “access to credit” and Y=0 is the situation when the farmer has “no access to credit”. Therefore, F(Y) must always be positive (since P≥ 0) and F(Y) must always be less than 1 (since P≤1). P should be constrained such that 0≤P≤1. The logit probability function is written as:

$$P(y=1) = P = \frac{e^{(\beta_0 + \beta_1 X_1 \ldots\ldots\ldots + \beta_n X_n)}}{e^{(\beta_0 + \beta_1 X_1 \ldots\ldots\ldots + \beta_n X_n)+1}} \quad \ldots\ldots(1)$$

$$P(y=0) = 1 - P = 1 - \left\{\frac{e^{(\beta_0 + \beta_1 X_1 \ldots\ldots\ldots + \beta_n X_n)}}{e^{(\beta_0 + \beta_1 X_1 \ldots\ldots\ldots + \beta_n X_n)+1}}\right\} \quad \ldots\ldots(2)$$

The binary logit regression model in equation 3 below is derived from the two equations above.

$$ln\left[\frac{p}{1-p}\right] = \beta_0 + \beta_1 X_1 \ldots\ldots\ldots + \beta_n X_n \quad \text{.....(3)}$$

$ln\left[\frac{p}{1-p}\right]$ can be written as :

$$\left[\frac{Y_i}{1-Y_i}\right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \varepsilon$$

Where Y is the probability a farmer has access to credit and 1-Y is the probability that a farmer does not have access to credit and the i means the ith observation in the sample. β_0 represents the intercept, β_1- β_7 represents the coefficient corresponding to X_1.....X_7, εi is the error term.

Table 3. 1 *shows variables of factors that determine the accessibility of credit by cocoa farmers.*

Variables	**Variable Name**	**Variables measurement unit**	**Expected Sign**
Yi	Access to Credit	Access to credit=1, Otherwise=0	
X_1	Gender	Male =0 , Female=1	+ or -
X_2	Age	18-30 =0, 31-40 =1, 41 and above=2	
X_3	Education Level	No Education=0, Primary=1, Secondary=2, University/Polytechnic=3, Vocational Training=4	+
X_4	Farm size	Number of hectares	
X_5	Membership	No=0, Yes= 1	+
X_6	Household Size	No children=0, 1-2= 1, 3-4 = 2, 5-6= 3	+ or -
X_7	Savings	Amount of Savings	+

Multicollinearity Test

Multicollinearity is a situation in which the independent variables are themselves highly correlated. Multicollinearity also refers to the situation in which there is an exact linear relation among two or more of the predictor variables (Hawking, 1983) and it is checked by accessing the correlation matrix, regression of one independent variable on all other independent variables and variance inflation factor (VIF). The correlation matrix is used in this study to evaluate potential multicollinearity.

3.4.3 Mediation Analysis

The fourth research objective will measure the relationship between access to credit and cocoa production, while controlling for savings. Mediation analysis is used to analyse this objective. The model is specified as follows:

$$Y = \beta_0 + c' \mathrm{X} + \mathrm{bM} + \varepsilon_i$$

Where Y is cocoa production which is measured in metric tonnes

β_0 is the intercept

c' is the relation between sources of credit and cocoa production while controlling for savings.

X denotes the sources of credit available to the farmers

b is the relation between savings and cocoa production adjusting for sources of credit.

M is the intervening/mediating variable which in this case is savings.

3.4.4 Hypothesis Testing

From the previous literatures review, it is expected to have a positive and statistically significant relationship between access to credit and productivity. Also, a significant relationship is expected between access to credit and savings and finally, there should be a mediating effect of savings between access to credit and cocoa production.

Therefore, mediation analysis will be used to test the following hypothesis:

Hypothesis a: There is a positive relationship between access to credit and cocoa production.

Hypothesis b: There is a positive relationship between access to credit and savings

Hypothesis c: The relationship between the access to credit available to cocoa farmers and cocoa production is at least partly mediated by savings level of the cocoa farmers.

The tests were performed on the alternative hypothesis which states that, there are statistically significant relationship between the two variables. Testing of the alternative hypothesis is based on the fact that if *p* value of the mediation analysis test is $p>0.10$, then the alternative hypothesis will be rejected.

3.5 Description of the Study Area and Target Population

Ondo state is one of the 36 states in Nigeria and the state is located in the south-western zone of the country between latitude 7°52' North of the equator and longitude 6°5' East of the Greenwich Meridian. The state is bounded in the north by Ekiti and Kogi States; in the west by Osun and Ogun States; in the East by Edo State and in the South by the Atlantic Ocean. The state has a land area of about 14,793 square kilometres with a total population of 3,460,877 (NPC,2007) and a projected population of 4,671,700 in 2016. The choice of Ondo State as a case study is based the fact that cocoa production is the main occupation of the people in the state and it provides income and employment to over 75% of the population (IITA, 2007).

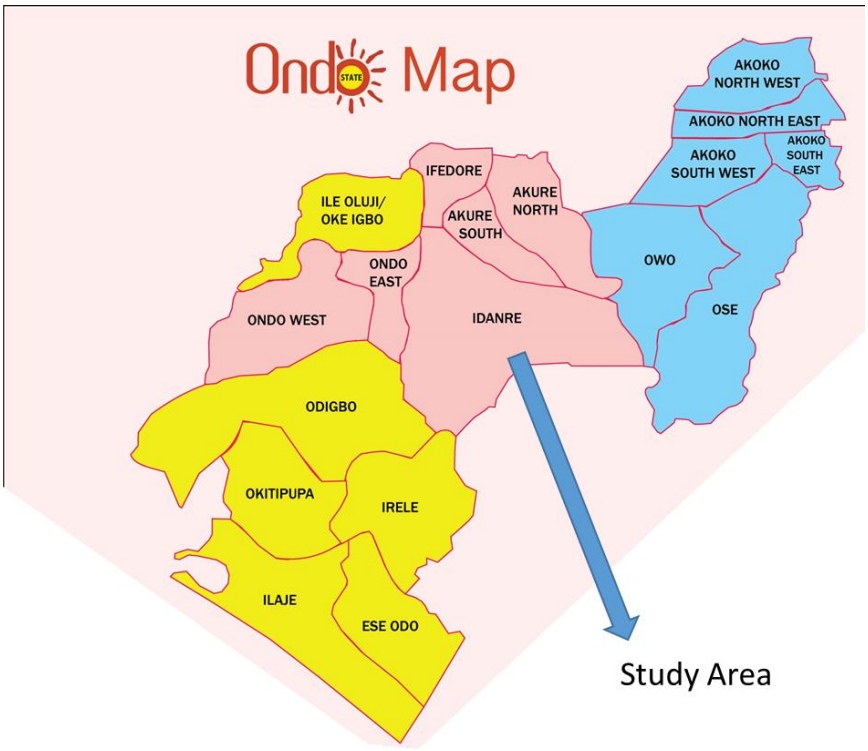


Figure 3. 3: Map of Ondo State showing all the Local Government Areas.

3.6 Sampling Procedure for Selection of Local Governments and Respondents

3.6.1 Selection of Local Governments

A multistage sampling technique was adopted for the selection of respondents. At the first stage, a purposive sampling method was used to select the three local governments based on the information from the Ondo State Ministry of Agriculture on cocoa production level (Appendix 1). From the three local governments, a simple random sampling technique was used to select one district from each local government. Table 4 below gives an overview of the selection process. In order to ensure an even participation of the target population in the survey, the same number of respondents was randomly selected from each of the villages under consideration, giving a total sum of 150 respondents.

Table 3. 2 shows the villages selected and the number of respondents (farmers) selected from each village.

Selected Local Governments	**Selected Districts from the local government**	**Selected Villages from the Districts**	**Number of respondents from each villages**
Idanre	Odoe Idanre district	Baale Ojumu	*25*
		Odo-Orisa	*25*
Ondo West	Ondo district	Araromi-Oke	*25*
		Ironsi	*25*
Odigbo	Abojupa district	Ayedarade	*25*
		Balewa	*25*
		Total	150 Respondents

CHAPTER FOUR

4.0 Results of the Study

This chapter discusses the results and major findings of the research in accordance with the research objectives, using the tools discussed in the previous chapter. Hence, it presents the socio-economic characteristics of respondents as well as the sources of credits available to them. In addition, it looked at the socio-economic factors influencing access to credit and the relationship between access to credit and cocoa production while controlling for savings.

4.1 Socio-Economic Characteristics of Respondents

Table 5 below shows the distribution of the surveyed respondents according to their socio-economic characteristics. It is clearly shown in the table 5 below that majority of the surveyed farmers are males. The male dominance in the survey may be because cocoa production, like any other crop production operations, is energy consuming and labour intensive especially in the rural areas.

With respect to age, about two third of the farmers are 41 or older. This result implies that most of the farmers are relatively old, and thus confirms the findings of CRIN (2003) and Amos (2007) that most of the cocoa farmers in Ondo state are old and that ageing may be one of the factors that could negatively impact productivity due to the drudgery nature of cocoa production.

Most of the respondents are married, while other respondents are either single, divorced or widower. Most farmers are married to one woman/man which means that monogamy is predominant in the study area. The high proportion of married respondents could also be linked to the availability of family labour for cocoa production activities in the study area. Hence, this justifies the high percentage (45.7%) of the respondents with a household size of more than six. Farmers in the study area make use of family labour over hiring labour in order to reduce production costs. This result is in agreement with findings of Muhammad-Lawal et al. (2009) and Osondu et al. (2014), who stated that in the presence of constraints in the supply of farm labour, famers with large household size make use of family labour and this reduces the money spent on labour.

The data in Table 5 further reveals that cumulatively, majority (72.5%) of the cocoa farmers in the study area have relatively low educational level, which could affect their access to credit from formal institutions. Further studies on factors affecting cocoa farmers access to credit in

subsequent section will confirm this. A high percentage of the farmers in the study area earn below ₦100,000 per month (€ 1= ₦405), and the average monthly income of the respondents is a little above ₦50,000.

Majority of the cocoa farmers in the study area were small and medium scale farmers. A large percentage (67.4%) of the farmers belong to a cocoa association in the study area.

Table 4. 1: Distribution of farmers according to their socio-economic characteristics

Socio-economic characteristics	Frequency	Percentage (%)	Mean	Socio-economic Characteristics	Frequency	Percentage (%)	Mean
Gender				**Household Size**			
Male	99	71.7	1.28	1-2	2	1.4	
Female	39	28.3		3-4	37	26.8	
Age				5-6	31	22.5	
18-30	5	3.6	2.63	>6	63	45.7	
31-40	41	29.7		**Family Income**			
41 and above	92	66.7		Below ₦10,000	0	0	3.53
Marital Status				₦10,000-₦20,000	27	19.6	
Single	5	3.6	2.17	₦21,000-₦50,000	42	30.4	
Married	118	85.5		₦51,000-₦100,000	40	29.0	
Divorced	2	1.4		₦101,000-₦150,000	27	19.6	
Widow(er)	13	9.4		₦151,000-₦200,000	2	1.4	
Education Level				**Family Structure**			
None	19	13.8	2.98	Monogamy	98	71.0	
Primary	21	15.2		Polygamy	35	25.4	
Secondary	51	37.0		**Registered Farmers**			
University	38	27.5		No	45	32.6	
Vocational Training	9	6.5		Yes	93	67.4	
Farm Size							
1-25	132	95.7	1.04				
26-50	6	4.3					

4.2 Sources of Agricultural Credit

The sources of credit available to the respondents are presented in Table 6. The main sources of credit facilities available to the cocoa farmers is 'large buyers' (60.3%). Other sources of credit are: contributions (11.5%), commercial banks (9.2%), cooperatives (8.0%), microfinance banks (6.3%), family (2.3%) and friends (2.3%).

Credit from large buyers is attractive to the farmers for several reasons; no interest needs to be paid and no collateral or documentation is required before accessing the credit.

Furthermore, large buyers provide credit to the farmers whenever it is required and they pay back during the harvest period with their produce.

Table 4. 2: Frequency Distribution of sources of credit available to farmers

Sources of Credit	Formal/Informal	Frequency	Percentage(%)
Family	Informal	4	2.3
Friends	Informal	4	2.3
Contribution (Ajo)	Informal	20	11.5
Others(Large Buyers)	Informal	105	60.3
Commercial Bank	Formal	16	9.2
Microfinance Bank	Formal	11	6.3
Government	Formal	-	-
NGOs	Formal	-	-
Cooperatives	Formal	14	8.0

4.3 Analysis of factor affecting cocoa farmer's access to formal credit

Figure 5 shows that 30% of the respondents have access to formal credit while 70% do not.

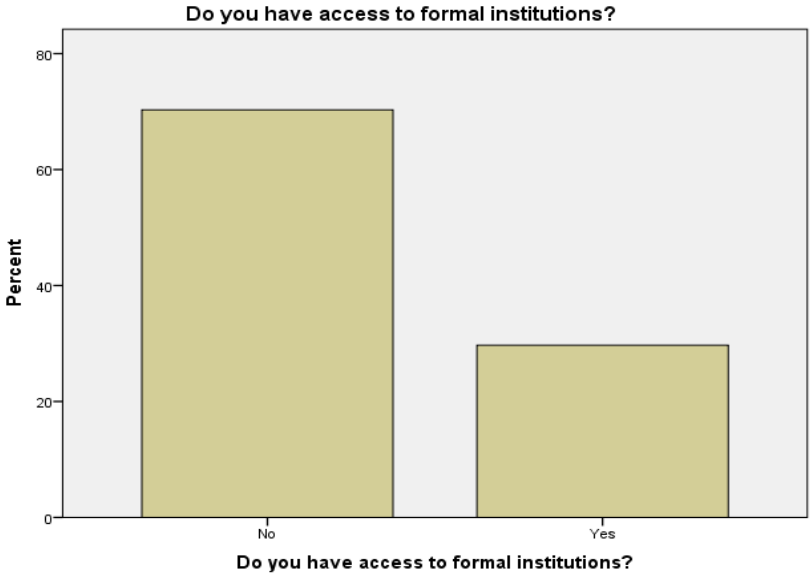


Figure 4. 1: Percentage of respondents who have access to formal credit in the study area.

The binary logistic regression was performed to ascertain the influence of gender, age education, farm size, membership of cocoa association, household size and savings on respondents access to formal credit. Before estimating the binary logistics regression model, the explanatory variables were checked by computing the correlation matrix. The diagnostics result of the correlation matrix of the coefficients shows that each of the continuous and categorical variables were found to be significantly less than the standard threshold of 0.9, which is an indication of the absence of multicollinearity between the variables (see appendix

A-1). Hence, all explanatory variables were included in the logit model. The result shows a pseudo R^2 was 0.7172 and a significant level of $p<0.01$ with a likelihood ratio $chi^2 = 120.42$ which tells us that the model as a whole fits significantly better than a model with no predictors.

Out of the seven variables included in the model in table 7, five are categorical variables and two are continuous variables. For each of the categorical independent variables, the reference category has a value of one and the values of the other categories are compared to the reference category. The result projects two out of the three approaches to marginal effects which are the marginal effects at mean (MEM) and average marginal effect (AME). The MEM is the partial effect of the dependent variable(y) conditioned on an independent variable(x) after setting all the other covariates at their means. That is, MEM is the difference in the X's effect on y when all other covariates are at their mean. On the contrary, the AME estimates the partial effect of the independent variable(x) on the dependent variable(y) while using the observed values of the variables and then the average of the partial effect is estimated. Hence, it conveys a substantial amount of information about the influence of each covariate on the outcome.

Out of the seven variables fitted into the model in table 7, the MEM result shows that three variables are statistically significant predictors of access to formal credit for farmers in the study area. These variables are education level, savings level and age. This implies that farmers with a university/polytechnic degree have a 95% probability of having access to credit from formal institutions than farmers with no education, holding other covariates at their means. Results suggest that as educational level of farmers increases, the chance of access to formal credit increases as well. This might be attributed to their exposure to external environment and their ability to comprehend information on the terms and conditions of credit facilities. Furthermore, a farmer with age between 31-40 years have a high probability of having access to formal credit than farmers who are above that age, when all other variables equal their means. Finally, the savings level has a positive and significant marginal effect on access to formal credit from formal institutions. This implies that an increase in the savings level of a cocoa farmer, increases the probability of access to formal credit by 26%. The probability of farmers' access to formal credit increases as the level of savings increases.

Contrary to the MEM result, the AME result shows five significant variables. These variables are age, educational level, household size, savings level and farm size. As explained earlier, the AME gives the average marginal effect across all observed values in the data. Therefore, the interpretation is quite different from MEM. The age (31-40), educational level(university/polytechnic) and savings level of farmers increases the probability of access to formal credit when other variables are held at their observed values. This implies that the probability of a farmer having access to formal credit increases by almost 20%, 84% and 9% as age, educational level and savings level increases. Surprisingly, the farm size and household without children shows a negative coefficient, which implies that the probability of a farmers having access to formal credit falls with an increase in those factors, given the fact that they are statistically significant.

Bringing together both results (MEM and AME), the result of the marginal effect at mean differ somewhat from that of the average marginal effects, thereby supporting the robustness of the results. The savings level, educational level and age are statistically significant in both results, which shows the level of importance of those variables to access to formal credit. In general, the MEM is more preferred to the AME because the latter considers effects along the entire distribution and not only on hypothetical case as with marginal effect at mean (MEM).

Table 4. 3*: The result of the logistic analysis and the effect of the explanatory variable on the probability of access to formal credit.*

	Marginal Effects at Means		**Average Marginal Effects**		**95% Confidence Interval**	
Explanatory Variables	**Marginal Effects**	**P>|z|**	**Marginal Effects**	**P>|z|**		
GENDER (Ref: Male)						
Female	-.173968	0.176	-.079026	0.286	-.4259049	.0779686
AGE (Ref: 41 and above)						
18-30	.382365	0.239	.138995	0.203	-.7037676	1.015828
31-40	.538395	0.036**	.198565	0.088*	-1.018768	.254038

EDULEV (Ref: No Educat)						
Primary	.000205	0.995	.000508	0.995	-.0656844	.0660952
Secondary	.016113	0.671	.035450	0.668	-.0581363	.0903621
University/Polytechnic	.951944	0.000***	.83999	0.000***	.8600687	1.04382
Vocational Training	-.003338	0.916	-.008525	0.916	-.0655959	.0589198
FARMSZ	-.018483	0.102	-.006634	0.059*	-.0406385	.003673
MEMASS (Ref: No)						
Yes	.057568	0.674	.021896	0.694	-.2105435	.3256792
HSZ (Ref: 5-6)						
No children	-.230657	0.298	-.142572	0.093*	.0717362	.6110068
1-2	.110715	0.648	.030938	0.652	-.082844	.2210069
3-4	-.161576	0.504	-.053446	0.455	-.2033697	.6646838
SAVINGS	.258537	0.092*	.092801	0.068*	-.0426605	.5597353
Pseudo R^2	**.7172**					
Chi^2 (13)	**120.42**					
Prob> chi^2	**0.0000**					
Number of Observations	**138**					
Log Likelihood	**-23.74676**					

*Corresponds to the grouping variable= Access to formal credit(yes=1; no=0), ***p<0.01; **p<0.05; *p<0.10. Ref: Reference category. Source: Own computation from survey result, 2019.*

4.4 Simple mediation analysis

The simple mediation analysis was used to estimate and examine the mediating role of savings in the relationship between sources of credit and cocoa production. An overview of the savings level and cocoa production(in tonnes) of the respondents is given in appendix A-4. In order to calculate the direct and indirect of this simple mediation, the Model 4 in the PROCESS macro of Hayes (2013) was applied. The path diagram of the simple mediation analysis presents four linear equations and the explanation of the symbols is given in chapter 3:

$$\boldsymbol{Y = \beta_{01} + c\,X + \varepsilon_1} \text{ .....(1) } c \text{ path}$$

$$\boldsymbol{M = \beta_{02} + a\,X + \varepsilon_2} \text{ ..... (2) } a \text{ path}$$

$$\boldsymbol{Y = \beta_{03} + b\,M + \varepsilon_3} \text{ ..... (3) b path}$$

$$\boldsymbol{Y = \beta_{04} + c'\,X + bM + \varepsilon_4} \text{ .....(4)} c' \text{ path}$$

In order to access each path in the proposed mediation model, multiple regression analysis was conducted and the results are presented in the tables below. The result consists of the association between access to credit and cocoa production (c-path), the effect of access to credit on savings (a-path), the effect of savings on cocoa production (b -path) and the association between access to credit and cocoa production, while controlling for savings (c'-path) as described in the model above and diagram below. Due to the differences in the units among the variables, standardized coefficients are used for analysis.

Table 4.4 shows that access to credit has a positive relationship with cocoa production (c-path) with a c = 0.886 t=2.8564 and p= .000. Hypothesis a is confirmed: an increase in access to credit would increase cocoa production by 89%.

Table 4. 4 : Total effect model (N=138)

Cocoa Production(Metric Ton)				
	Coefficient	Standard error	T-value	P-value
Constant	-27.482	2.815	-9.763	.000
Access to credit (c path)	10.8156	3.7864	2.8564	.000

R^2	.784			
F- Value	494.492			
Standardized Coefficient:				
Access to credit	.886			

From table 4.5, it is observed that access to credit is positively related to savings (a-path) with a = 0.799, t= 15.552. Further analysis of the a-path shows a significant (P=.000) relationship between access to credit and savings, hence, hypothesis b is confirmed: an increase in access to credit increases the savings level of the respondents by 80%.

Table 4. 5 *: Mediation Analysis : Mediator Variable Model (N=138)*

Savings				
	Coefficient	Standard error	T-value	P-value
Constant	.129	.113	1.137	.257
Access to credit (a path)	.446	.029	15.522	.000
R^2	.639			
F- Value	240.938			
Standardized Coefficient:				
Access to credit	.799			

Lastly, the result in table 4.6 shows that the mediation, savings is positively associated with cocoa production (b-path) at b = .248, t= 3.929 and P= .000. Further analysis also illustrates that a significant and positive ($c' = .688, \mathrm{p} = .000$) relationship exist between access to credit and cocoa production with the mediation of savings (c'-path), which implies that savings does not have a mediation effect on access to credit and cocoa production. Furthermore, the result of the indirect effect reported a value of 0.806 (81%) for R^2 when the mediation role of savings was considered between access to credit and cocoa production.

Table 4. 6: Mediation Analysis: Dependent Variable Model (N=138)

Cocoa Production(Metric ton)				
	Coefficient	Standard error	T-value	P-value

Constant	-28.508	2.689	-10.601	.000
Access to credit (c' path)	12.321	1.130	10.907	.000
Savings (b path)	7.950	2.023	3.929	.000
R^2	.806			
F- Value	281.212			
Standardized Coefficient:				
Access to credit	.688			
Savings	.248			

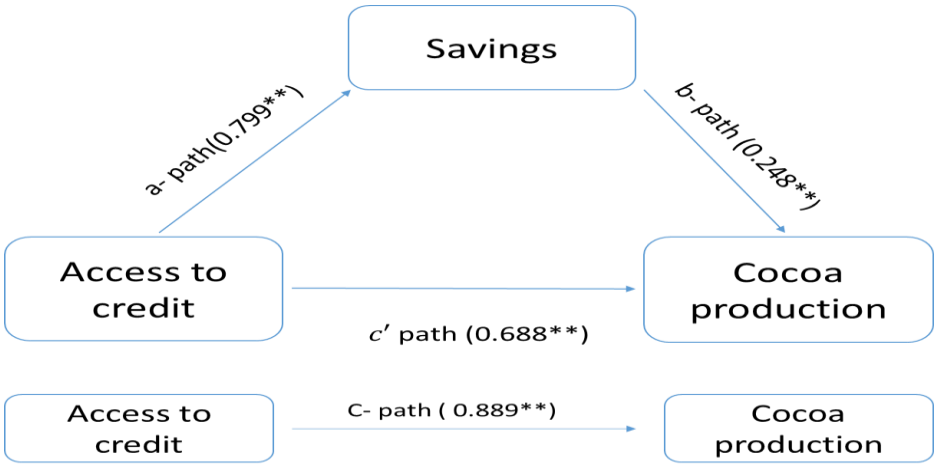


Figure 4. 2: Relationship between the variables

To further determine whether mediation exists, a 95% confidence interval of the indirect effect was obtained using 5000 bootstrap samples (Hayes, 2013). The results (Table 4.7) revealed that savings does not mediates the relationship between sources of credit ($\beta = 3.548$ and $p - value$ $between = 1.924$ to 5.487) and cocoa production, hence hypothesis c is not confirmed.

Table 4. 7: Total, Direct and Indirect Effects of Sources of Credit on Cocoa Production.

Variable	**Total Effect (c-path)**		**Direct Effect (c'-path)**		**Indirect Effect (c - c')**		
	β	p	β	P	β	BootLLCI	BootULCI
Savings	15.869	.000	12.321	.000	3.548	1 .924	5.487

CHAPTER FIVE

5.0 Discussion, Conclusions and Recommendations

5.1 The results of the study vis a vis the literature

The results of the study are in some way in support with findings in previous research, but also in contradiction to other research. This study has found that non-institutional sources of credit predominate the other sources of credit in the study area. This result supports findings of Ijioma et al. (2015), Mgbakor et al. (2014), Adebayo and Adeola (2008) and Olatinwo et al. (2012). However, unlike the previous research mentioned, where farmers have access to credit from informal sources – such as the relatives, personal savings, friends and money lenders – the present research shows that large buyers of cocoa products serve as the major source of credit to the farmers in the study area. The source 'large buyers' is a new way of providing for cocoa farmers who are in dare need of credit for production, as it has never been mentioned in literatures. 100% of the farmers who accessed credit from large buyers reported that there has been a tremendous increase in their cocoa production.

As far as the factors influencing access to formal credit is concerned, the results from the logistic regression models based on marginal effects at mean (MEM) show that education level, savings level and age were significant predictors. However, the results based on average marginal effects (AME) show five significant variables, which are age, educational level, household size, savings level and farm size. Membership of cocoa association and gender were not significant in both results.

These results support findings of Ijioma et al.(2015) and Baffoe and Matsuda(2015), who found that socio-economic characteristics and institutional factors of farmers play a vital role in access to credit from financial institutions. Furthermore, the financial institutions prefer to give credit to farmers with a higher savings account balance and a broad knowledge of the terms and conditions of the loan required to prevent information asymmetry and loan default. Results, however, contradict with findings of Kaino (2005) and Devkota (2006), who concluded that the probability of access to credit from financial institutions is influenced by gender.

The mediation analysis results showed a positive and significant relationship between access to credit and cocoa production. These result support the finding of previous researchers such as Awotide et al. (2015), Bolarinwa et al. (2011) and Nwaru (2004), who concluded having access to credit (especially from formal institutions) increases farm productivity. In addition,

statistically significant relationships between access to credit and savings, and between saving level and cocoa production were found. This implies that farmers with access to formal credit have the possibility of saving and the savings level of farmers can increase production of cocoa with or without external financial support from formal institutions. Savings does not have a mediation effect between access to credit and cocoa production.

5.2 Limitation of the Research

The study covered three districts in Idanre local government. Out of which 150 farmers were selected but 138 participated in the research. During the field research, several limitation were faced. While drafting the research questions, it was assumed that farmers receive credit from formal institutions and most of the questions in the questionnaire was based on that assumption. Therefore, some questions asked to the respondents were not analysed because it was considered not important to the study. So a more concise questionnaire might be taken into account in future research. A further limitation is on the construct validity of the research. The accessibility of the farmers due to lack of transportation and the remoteness of the their farms was a great challenge. It was difficult to reach the farmers on their fields and this accounted for the low total sample. In addition, most of the farmers were discreet about questions relating to their income, savings, government support and debts because of the fear that the information might be misused thereby having a negative implications for them.

5.3 Conclusions

Access to credit facilities is considered as one of the most important tools to improve agricultural productivity and reduce poverty among rural farmers in Nigeria. These credit facilities can be made available to the farmers via either formal or informal institutions. However, farmers in the rural area are either unaware of the formal institutions or face bureaucratic bottlenecks among other challenges in accessing credit from the institutions. The study was conducted on 138 farmers selected from three local governments in Ondo State, Nigeria. Based on the objectives of the study, the following conclusions were given:

The socio-economic characteristics of cocoa farmers

The descriptive statistics result have shown that majority of the cocoa production activities in the study area are carried out mostly by farmers who are old with a low level of education, large household size and relatively low income. These characteristics deprive them from having access to formal sources of finance as most financial institutions require farmers who

are knowledgeable about financial matters and able to manage efficiently the credit given in order to reduce credit default. In addition, having large household size might serve as a constraint to farm capitalization, as a larger part of the money earned that could have been saved and reinvested into cocoa production will be diverted to family upkeep. Likewise, the credit obtained for production purpose might end up in consumption expenditure.

Sources of agricultural credit available to the farmers

The results have shown that the most patronized source of credit in the study area is from the large buyer of cocoa produce. This is because credit from large buyers is more convenient and accessible with no collateral requirement. However, credit from this source is limited and most times not sufficient to cover expenses associated with cocoa production, thereby limiting the potential to produce more. The formal sources of credits were not utilised due to lack of knowledge about formal financial institutions, delay in approving a loan request, bureaucratic bottleneck and fear of losing the pledged collateral in case of default.

Factors affecting cocoa farmers access to formal credit

From the binary logistic regression results in the previous chapter, it is shown that farmers with small household size, university education, age between 31-40, farm size and high savings level are most likely to have access to credit from formal institutions. These factors are not favourable for most of the poor farmers in the study area because they are mostly uneducated and old. Although most of the farmers belong to one cocoa association, however, it is difficult to approach formal institutions for credit because of their limited knowledge of banking operations.

The mediating role of savings in the relationship between access to credit and cocoa production

In the study, an attempt was made to explore the mediating effect of savings level of farmers on the relationship between access to credit and cocoa production. Previous studies have examined the relationship of access to credit and cocoa production but ignored the fact that savings could also increase cocoa production. The result from the study showed that there exists a positive and significant relationship between access to credit and cocoa production. A positive and significant relationship was also observed between access to credit and savings,

and between saving level and cocoa production. This mean that there is no mediation effect of saving between access to credit and cocoa production.

5.4 Recommendations

In line with the findings of this study, the following recommendations are formulated:

1. Formal financial institutions should encourage farmers (especially the illiterate farmers) to access credit from them by reviewing the procedure for securing loan and reducing the interest rate charged. Financial institutions should be encouraged to open branches in the rural areas and also minimize their demand for collateral securities. In addition, farmers should be enlightened on the importance of savings and reinvesting through savings mobilization programmes in the study area.
2. The government needs to stop investing into credit programmes that are not worthwhile but rather invest in adult education for cocoa farmers and creating awareness on the importance of farm credit. It is also important to intensify on family planning programmes for the farmers in the rural area as this could result in increasing household savings and reducing demand for credit.

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APPENDICES

Appendix A-1: Cocoa Production(in metric tonnes) in the selected study area

The table1 shows the production of cocoa in metric tonnes from each local government and 3 local governments with the highest production level is selected based on the report from the Ondo State Ministry of Agriculture.

S/N	Local Government Area	Yield (Metric Tonnes)	Rating
1.	Akoko North East	290	12th
2.	Akoko North West	0	
3.	Akoko South East	215	13th
4.	Akoko South West	464	11th
5.	Akure North	0	
6.	Akure South	4469	6th
7.	Ese Odo	0	
8.	Ilaje	0	
9.	Idanre	20555	1st
10	Ifedore	647	9th
11.	Ile-Oluji/Okeigbo	4764	5th
12.	Irele	585	10th
13.	Odigbo	6967	3rd
14.	Okitipupa	0	
15.	Ondo East	3012	7th
16.	Ondo West	11292	2nd
17.	Ose	1686	8th
18.	Owo	5078	4th
	Total	**60021**	

Source: Ondo State Ministry of Agriculture data on cocoa production

Appendix A-2: Correlation Matrix

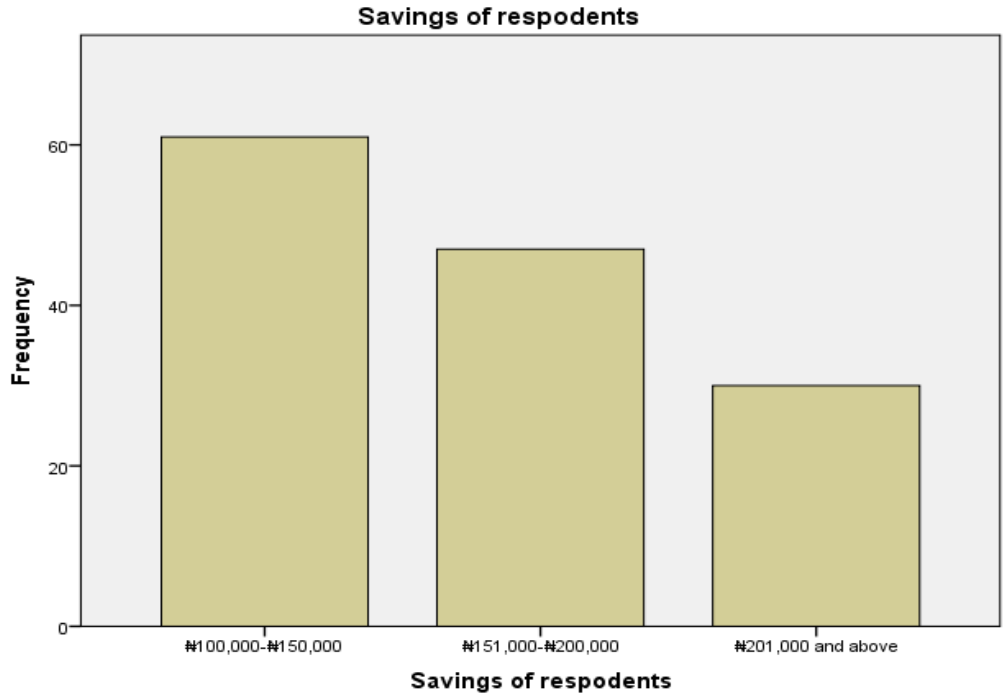
Correlation matrix of coefficients of logistic model

e(V)	access~l Age	Edulevel	HSZ	FAMINC	Reg_fa~r	farmsi~p	Gen	savings	_cons
access_for~l									
Age	1.0000								
Edulevel	-0.1739	1.0000							
HSZ	0.4260	-0.1068	1.0000						
FAMINC	0.0076	0.1910	0.0387	1.0000					
Reg_farmer	-0.2773	-0.0283	-0.1209	0.2338	1.0000				
farmsizegr~p	0.3050	-0.1196	0.1604	-0.2345	-0.2234	1.0000			
Gen	0.1017	0.0679	0.0574	-0.0488	0.0508	0.2370	1.0000		
savings	-0.2200	-0.2788	-0.1066	-0.3600	-0.0086	-0.3331	-0.1417	1.0000	
_cons	-0.6229	-0.2621	-0.3215	-0.3561	-0.1154	-0.3869	-0.4784	0.2481	1.0000

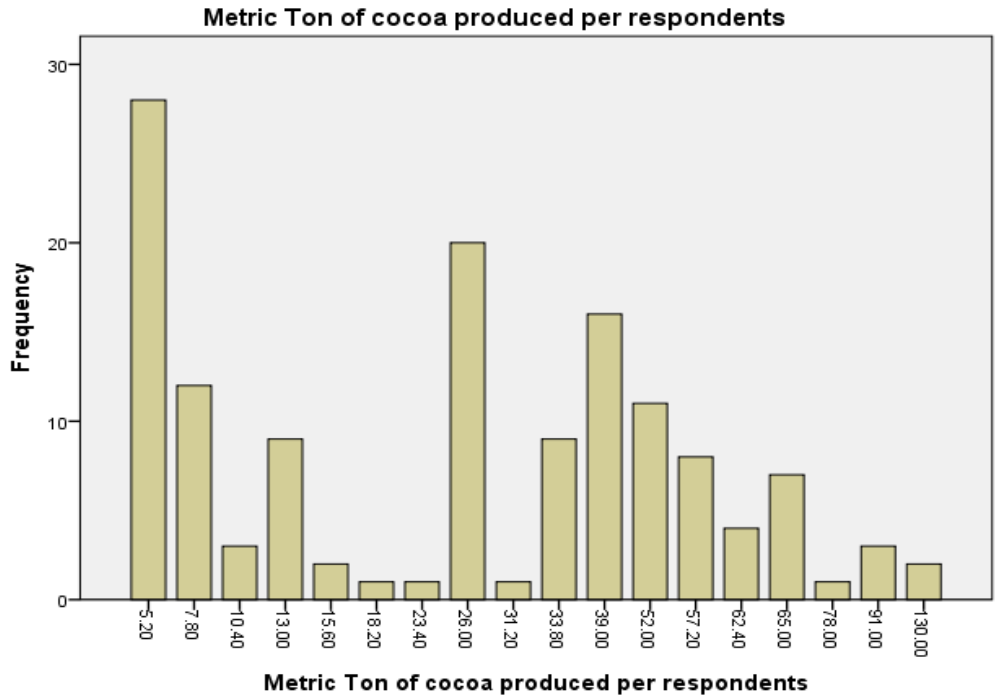
Appendix A-3: Adjusted Predictions at the Means (APM)

Explanatory Variables	Margin	Standard Error	Z	P>|z|	95% Confidence Interval	
GENDER						
Male	.230651	.0958927	2.41	0.016	.0427047	.418597
Female	.056683	.0645157	0.88	0.380	-.697657	.1831311
AGE						
18-30	.4407048	.3244478	1.36	0.174	-.1952012	1.076611
31-40	.5967349	.2372746	2.51	0.012	.1316853	1.061784
41 and above	.0583396	.040787	1.43	0.153	-.0216013	.1382806
EDULEV						
None	.0207217	.025943	0.80	0.424	-.0301258	.0715691
Primary	.020927	.0256964	0.81	0.415	-.029437	.071291
Secondary	.0368346	.0314311	1.17	0.241	-.0247692	.0984383
University/Polytechnic	.972666	.0326214	29.82	0.000	.9087293	1.036603
Vocational Training	.0173836	.0227397	0.76	0.445	-.0271853	.0619526
MEMASS						
No	.123127	.1020057	1.21	0.227	-.0768005	.3230545
Yes	.1806948	.0795673	2.27	0.023	.0247458	.3366439
HSZ						
No children	.009079	.0138554	0.66	0.512	-.0180769	.0362353
1-2	.350451	.1347577	2.60	0.009	.0863305	.614571
3-4	.078161	.0785173	1.00	0.320	-.0757304	.2320517
5-6	.239736	.2200803	1.09	0.276	-.1916132	.6710856

Appendix A-4: The Savings level of respondents in the study area



Appendix A-5: Metric tonnes of cocoa produced in a year per respondents



Appendix A-6: Survey Questionnaire to Cocoa Farmers

Section A: The socio-economic characteristics of correspondent

1. Sex: Male… Female….
2. Age: 18-30 ( ) 31-40 ( ) 40 and above ( )
3. Marital Status: Single… Married….. Divorced…… Widow(er) ……
4. Educational Level: None… Primary…. Secondary…. University/Polytechnic…. Vocational Training…
5. Household size: 1—2 ( ), 3—4( ), 5- 6 ( ), others (specify……..)
6. Family Income per month: below ₦10,000 ( ), ₦10,000-₦20,000 ( ), ₦21,000-₦50,000 ( ), ₦51,000-₦100,000 ( ), ₦101,000-₦150,000 ( ), others (specify…….)
7. Family Structure: monogamy (…..), polygamy (…)
8. Do you produce any other crop asides cocoa? Yes..... No.....
9. What is your farm size? (in hectares):.....
10. Are you a registered farmer?
11. If answer to question 10 is yes, under which cocoa association do you belong?
    .....

Section B: Informal sources of credit available to the Farmers

1. Which of the sources listed below do you get credit from? Multiply ticks (**√**) is allowed.

No	Informal sources of credit.	Tick (**√**)
1.	Family members	
2.	Friends	
3.	Contribution (Ajo)	
4.	Others (Specify)	

2. How many times have you benefitted from each of the sources you ticked in question 1, between years 2013 - 2018? **(State the number of times in a year)**

No	Number of times credit facilities was accessed	2013	2014	2015	2016	2017	2018
1.	Family						
2.	Friends						
3.	Contribution (Ajo)						
4.	Others (Specify)						

3. What is the mode of repayment of the source(s) of credit chosen in question 1? Tick(**√**)the appropriate column(s). (Multiply ticks is allowed.

No	Informal Sources of credit	None	Weekly	Monthly	Quarterly	Bi-annually	Annually
1.	Family						
2.	Friends						
3.	Contribution (Ajo)						
4.	Others (Specify)						

Section C: Formal Sources of Credit available to the Farmers

4. Are you aware of the formal institutions giving credit facilities to cocoa farmers? Yes… No…
5. If answer to question 4 is yes, which of the institution(s) listed below have you obtained credit from between year 2013 - 2018? Multiply ticks(**√)** is allowed.

No	Name of Institutions	Tick (**√**)
1.	Commercial Banks	
2.	Micro finance banks	
3.	Government	
4.	NGOs	
5.	Cooperative Society	
6.	Others (Specify)	

6. How did you obtain credit from the institutions: Tick(**√**) in the appropriate box (Multiply ticks(**√**) is allowed.

No	Name of Institutions	individual cocoa farmer	group of cocoa farmers
1.	Commercial Banks		
2.	Micro finance banks		
3.	Government		
4.	NGOs		
5.	Cooperative Society		
6.	Others (Specify)		

7. How many times were you able to access credit from the institutions between 2013 - 2018? Tick (**√**) the appropriate column(s).

No	Name of Institutions	1-3 times	4-6 times	7times and above
1.	Commercial Banks			
2.	Micro finance Banks			
3.	Government			
4.	NGOs			
5.	Cooperative Society			
6.	Others (Specify)			

8. How much credit were you able to obtain from the institution(s) you ticked(**√**) in question 5? Tick(**√**) the appropriate column.

No	Amount Obtained (₦)	Commercial Bank	Micro finance Bank	Government	NGOs	Cooperative society	Others (specify)
1.	< 10000						
2.	10001 - 50000						
3.	50001 - 100000						
4.	100001 - 150000						
5.	150001 -200000						
6.	> 200000						

9. What did you use the credit obtained for? Multiply ticks(**√**) is allowed

No	Use of credit obtained from institution	Tick(**√**)
1.	Purchase of Land	
2.	Purchase of Input (seedlings, Pesticides, chemicals and fertilizers)	
3.	Purchase of Agriculture Machineries	
4.	Payment of laborers	
5.	Payment of debts	

6.	Starting a new business	
7.	Others (specify)	

10. Was the amount (credit) obtained sufficient for what it was planned for? Yes... No...
11. If answer to question 10 is no, why? Give 2 reasons
    .....
    .....
    .....
12. What is the duration of pay back of the credit obtained (including the interest charged) ?

No	Duration of pay back of the credit	Commercial Bank	Micro finance Bank	Government	NGOs	Cooperative society	Others (specify)
1.	< 6 months						
2.	6 months – 1 year						
3.	More than 1year – 2 years						
4.	More than 2years – 3 years						
5.	More than 3– 4 years						
6.	More than 4 years- 5years						
7.	More than 5 years- 6years						
8.	> 6 years						

13. On the scale of 1 to 3, how will you rate the interest rate charged by the institutions you have obtained loan from?

No	Name of Institutions	Interest Charged on Credit Obtained		
		1. High	2. Moderate	3. Low
1.	Commercial Banks			
2.	Micro finance Banks			
3.	Government			
4.	NGOs			
5.	Cooperative Society			
6.	Others (Specify)			

14. Have you been able to pay back the credit (including the interest on the amount) obtained from the institution? Yes... No...
15. If answer to question 14 is yes, are you willing to obtain more credit from the institution(s)? Yes... No...
16. If answer to question 14 is No, why have you not been able to pay back? Give 2 reasons
    .....
    .....
    .....
17. If answer to question 15 is No, why are you not willing to obtain more credit from the institution(s)? Give 2 reasons
    .....
    .....
    .....

Section D: Effect of Credit Facilities on Cocoa production and revenue from cocoa production

18. In what way did the credit facilities obtained from the institutions contribute to the quality and quantity of cocoa production?

No		Very High	Above Average	Average	Below Average	Very Low
1.	Increase in Farm size					
2.	Access to the use of farm input(pesticides and fertilizers)					
3.	Increase in the use of modern farm machineries					
4.	Increase in yield					
5.	Hiring competent labour					
6.	Access to improved seedlings					
7.	Others(Specify)					

19. Was there an increase in your revenue from the sale of cocoa after you obtained credit from the institution(s)? Either formal or informal sources. Yes..... No.....

Section E: **Factors that determine the accessibility of credit by respondent**

20. What are the required conditions of getting the credit facilities by cocoa farmers? Tick(**√**) the appropriate answer in the box. Multiple ticks(**√**) is allowed.

Guarantors only [ ], Collaterals only[ ], Guarantors and Collaterals [ ], Others
(specify).....

21. Was collateral or guarantor a requirement for the credit you obtained from either the formal or informal sources? Yes... No...

22. If answer to question 21 is yes, specify by ticking(√) in the table below, which of the institutions required Collateral, Guarantor or both Guarantor and Collateral?

No	Sources of credit (formal and informal)	Collateral		Guarantor		Collateral and Guarantor	
		Yes	No	Yes	No	Yes	No
1.	Family members						
2.	Friends						
3.	Contribution (Ajo)						
4.	Commercial Banks						
5.	Micro finance Banks						
6.	Government						
7.	NGOs						
8.	Others(Specify)						

23. What was the forms of collateral required? Please, tick from the box below. Multiply ticks(√) is allowed.

No	Sources of Credit (Formal Sources)	Farmland		House Documents		Vehicle Documents		Farm Machinery		Others (specify)
		Yes	No	Yes	No	Yes	No	Yes	No	
1.	Commercial Banks									
2.	Micro finance Banks									
3.	Government									
4.	NGOs									
5.	Others(Specify)									

24. What are the other requirements to obtain credit from institutions by cocoa farmers?

No	Other requirements	Tick(**√**)
1.	Size of cocoa farm	
2.	Size of family	
3.	Revenue	
4	Member of farmers association	
5	Others (specify)	