AN ANALYSIS OF SAVINGS AND INVESTMENT BEHAVIOUR OF FARMERS IN GIWA AND SABON-GARI LOCAL GOVERNMENT AREAS OF KADUNA STATE

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BY

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A THESIS SUBMITTED TO THE POSTGRADUATE SCHOOL OF AHMADU BELLO UNIVERSITY, ZARIA, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN AGRICULTURAL ECONOMICS.

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SEPTEMBER, 2006.

DECLARATION

I hereby declare that this thesis work titled "An Analysis of Savings and Investment Behaviour of Farmers in Giwa and Sabon-Gari Local Government Areas of Kaduna State", is a record of research work undertaken by me. It has not been presented for any qualification before in any institution of higher learning. All materials used from other sources have been acknowledged by use of quotations and references.

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Member, Supervisory Committee

CERTIFICATION

This thesis entitled "AN ANALYSIS OF SAVINGS AND INVESTMENT BEHAVIOUR OF FARMERS IN GIWA AND SABON GARI LOCAL GOVERNMENT AREAS OF KADUNA STATE" by OSAKA, Joseph Ikechukwu meets the regulation governing the award of the degree of Master of Science (Agricultural Economics) of Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This work is dedicated to my Lord and Saviour Jesus Christ.

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First and foremost, my profound gratitude goes to my Lord and Saviour Jesus Christ. May his name be glorified, all praises and honour be to Him forever for all His endless love, care and protection throughout my programme.

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ABSTRACT

The need to have adequate record about savings and investment necessitated this study. The research was carried out in Giwa and Sabon Gari Local Government Areas of Kaduna State. The specific objectives of the study were to describe the socio-economic characteristics of the farmers; examine their savings profiles; identify the factors determining their rate of savings; determine their level of investment in both farm and off-farm activities, and examine the determinants of their investment behaviour. Information was obtained from a total of 160 farmers that were randomly selected, with 80 farmers each from the two local government areas. The analytical tools employed were descriptive statistics, multiple regression and correlation analysis. The study showed that the mean income, savings and investment per farmer were ₦204,118, ₦47,351 and ₦65,457 respectively. The regression coefficients showed that farm income, off-farm income, and family size were responsible for about 61 percent variations observed in the level of savings. Also, farm income, off-farm income and loan obtained were responsible for about 71 percent variations in the level of investment of the farmers. The correlation analysis revealed that farm income, off-farm income, age, education, household size, farm size and farming experience were statistically significant at 1% level of probability in their relationship with savings. For investment, the result revealed that farm size, loan, farm income, off-farm income, age and farming experience were statistically significant at 1% level of probability in their relationship with investment. The conclusion drawn was that saving potential exists in the two local government areas. Some of the

factors that exert significant positive influence on the level of savings and total investment include income, family size, loan and farm size, significant at 1% and 5% level of probability. Farm investments made were mostly recurrent investment, these include purchase of fertilizer, seeds, chemicals, hoes, cutlasses and hired labour with very little capital investment. The study recommended that price support for farmers and granting of soft loans will encourage farmers to make capital investments. There is the need for mass education and enlightenment campaign for mobilizing savings and intimating the farmers on investment opportunities.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

Agriculture still occupies a key position in Nigeria's economy. Up till the late sixties, it contributed on average about 65 percent of Gross Domestic Product. Its percentage contribution however has fallen drastically in recent years. 22 percent between 1976 and 1980, it rose slightly to 29 percent in 2001 (CBN, 2001). The fall in agriculture's contribution was attributed partly to the boom in the petroleum industries and the growth of the industrial sector. However, the oil boom not withstanding, the agricultural sector still provides employment for over 70 percent of the Nigerian population (Ogungbile and Olukosi, 1991; Ogunfiditimi, 1996; Joshua, 1999).

Agriculture plays an important role in employment and revenue generation as well as in the provision of raw materials for industrial development. However, the nation's agricultural potentials are far from being fully realized and this has serious implications for food security and sustainable economic development. The underdevelopment of agriculture is, indeed worrisome, given the fact that the country is naturally agriculturally well endowed.

Nigeria agriculture suffers greatly from low capitalization. It is dominated by millions of small peasant farmers who are predominantly subsistence in nature. They produce primarily for consumption (Ogungbile and Olukosi, 1991). Crop sale is usually to generate income to meet other family expenses or to purchase other goods that they do not directly produce. Low capitalization of farm sector had also been observed to translate into low income which in turn translates into low savings, low savings translate

into low investment which in turn translate into low return or income, thus forming a vicious cycle of poverty (Ogunfiditimi, 1996). Savings is the act of abstaining from present consumption in order to provide for larger consumption in future. Savings is residual after consumption out of available income during a period of time (Darby, 1979), that is, the difference between private income and consumer expenditures. Savings include tangible things such as landed properties, livestock, bags of grains and other assets.

Investment on the other hand means production or acquisition of real capital assets during any period of time, (Jhingan, 1997). Investment adds to capital equipments and leads to increase in level of income and production by increasing the production and purchase of capital goods. Investment can be described as the formation of real net capital through improvement of the productive capacity of an individual's farm or business set-up. Mobilization of savings should be an important source of funds for investment in the rural sector. The major factor limiting the tapping of rural savings is the meager disposable income of small-scale farmers. It is the level of income that determine the volume of savings and therefore, the amount of capital that could be channeled into investment.

Small holders in developing countries face the same problem. Their ability to accumulate sufficient capital for new and costly investment is rather limited. Thus, outside financial help is required to induce more capital investments in the agricultural sector (Barau, 1991).

1.2 Problem Statement

Agriculture in Nigeria, like in most other developing countries is predominated by small farm producers. Several constraints and barriers, which appear insurmountable, limit the overall farming activities. One of the predominant factors responsible for the stagnation of agricultural sector in Nigeria is low savings capacity of farm families. This is as a result of low income which in turn definitely leads to low investment in both farm add off-farm activities.

Savings is indispensable to economic development by virtue of its relationship with investments (Igben and Akande, 1988). Economic theory indicates a one-to-one correspondence between savings and investment so that the size distribution of savings indicates investment potentials and possibilities. If investment remains localized in accordance to size of savings generated in specific areas, there are likely to be more investments in areas of much savings than in those of meager savings. Savings according to Igben and Akande, (1988) is preferred more in the financial form which make funds readily available to investors and others needing money to expand their business operations. It has been shown that savers in developing countries, particularly in rural areas prefer to save their money in terms of physical or tangible assets such as land, building, livestock etc. This practice leads to scarcity of monetary saving for investment purposes. Savings as a determinant of income growth and economic development was emphasized by classical economists. However, there has been no consensus on factors which actually affect the proportion of income that is saved. Several variables have been indicated as influencing savings and these include current income, permanent income,

wealth, interest rates, the price level, demographic characteristics and a host of other variables.

Very little research had been done especially in the area of savings and investment in the study areas. There is, therefore, a lot of important information to be gathered which would be essential for planning and policy making.

This study intends to answer the following questions:

1. What are the socio-economic characteristics of the farmers in the study area.
2. What are the saving profiles of the farmers in Giwa and Sabon-Gari Local Government Areas?
3. What are the factors responsible for savings by these farmers?
4. How much of their savings goes into investment?
5. What are the determinants of their investment behaviour?

1.3 Objectives of the Study

The broad objective of the study is to determine the savings and investment behaviour of farmers in Giwa and Sabon-Gari Local Government Areas of Kaduna State. However, the specific objectives are to:

1. describe the socio-economic characteristics of the selected households
2. examine the savings profiles of the farmers in the study area.
3. examine the factors affecting the amount of savings among the farmers.
4. determine the level of investment of the farmers in both farm and off-farm activities in the study area.

5. examine the factors affecting the level of investment in the study area.

1.4 Justifications for the Study

It has been contended that the level of capital involvement in the agricultural production process is a clear index of the magnitude of its growth and development (Abalu et al; 1981). This reasoning is based on the fact that as agriculture becomes modernized, more off-farm technologies must be identified, procured and then injected into the production process. The fact still remain that large number of our populace who engage in agriculture are poor without necessary fund to invest into their agricultural ventures and other activities to increase their income. The bulk of capital injection by this category of farmers come from owner's equity and informal credit sources. The attractiveness of agricultural investment must be a major consideration, if it is going to compete with other industries or sectors for resources (Onucheyo, 1998). The importance of this study is to underscore the lack of empirical work on the savings and investment behaviour of farmers in the study area. This study, therefore, intends to reduce the gap in knowledge in this regard as it attempts to provide detailed empirical findings. The relevance of the study lies in its attempt to contribute to the information base necessary for objective decision-making.

1.5 Hypothesis

The null hypotheses (H_o) tested are as stated.

1. (i) There is no relationship between farm income and savings.
   (ii) There is no relationship between off-farm income and savings.
   (iii) There is no relationship between age of household heads and Savings.

(iv) There is no relationship between Education and savings.

(v) There is no relationship between Household size and savings.

(vi) There is no relationship between Farm size and savings.

(vii) There is no relationship between Farming experience and savings.

2. (i) There is no relationship between Farm size and investment.

(ii) There is no relationship between loan and investment.

(iii) There is no relationship between Farm income and investment.

(iv) There is no relationship between off-farm income and investment.

(v) There is no relationship between interest rate and investment.

(vi) There is no relationship between age of household heads and Investment.

(vii) There is no relationship between Farming Experience and Investment.

CHAPTER TWO

LITERATURE REVIEW

2.1 History of Savings by Peasant Farmers in Nigeria

It is obvious that researches at farm level in the developing countries have been quite substantial, but works done in the areas of savings and investment patterns of families in these countries are still scanty. The inability of researchers to carry out studies in these areas have been attributed to lack of data and conceptual problems (Adesimi, 1983).

However, a few studies in the area of savings have shown that rural communities in Nigeria have over the years evolved their own thriving savings schemes in the form of the traditional Esusu clubs (Ogunyemi, 1967). It is further asserted that these clubs "Adashi" (Hausa) 'Ugeha" (Idoma), 'Esusu' (Igbo) etc are the most prevalent indigenous methods of savings in Nigeria. Mbat (1985) pointed out the apparent shortcoming of this method of saving. He has noted that this cycle of savings does not give additional income to the participants but instead a capital loss due to depreciation in value of money contributed to the scheme, in addition members were usually charged extra amounts in order to keep the cycle going. It is used for entertainment purposes when members gather for meetings. However, Mbat (1985) agreed that the scheme has the advantage of providing participants with lumpsums of money at a time and in turn for use in effecting their planned expenditures (either for building a house or for purchase of a piece of land for farming).

Studies in development literature have shown that small-scale farmers have high propensity to save and actually do a lot of saving. It is along this line that one tends to

disagree with the assertion by Ater (1989) that …" most small-scale farmers are unable to accumulate capital due to their low margins of savings and are, thus caught up in a vicious cycle. Warinner (1964), pointed out that peasant farmers in all regions where a money economy is established tend to save a very high proportion of their income, even when the income is much smaller than that of a wage earner. This was aptly supported by Roberts (1972) in a three year study of 239 rural families in Zambia. The results of his study indicated a surprisingly high savings capacity among farmers in the samples who on average save more than 30 percent of their income in a two year period. At the same time, a sample of rural villagers with wage occupations had average propensities to save which were almost identical to that of sampled farmers.

Robert's (1972) conclusion from the analysis of the study shows that the volume of cash reserves within many of these household was greater than could be productively applied to on-farm investments. Mbat (1985) cited that, in 1975, it was alleged that an estimated 50.4 percent was said to be held in the rural areas.

Also, Adams (1978) argued persuasively that substantial voluntary rural savings capacities existed in the so-called third world countries. Hence, as stated by Mauri (1977), that what is really lacking in the rural areas is the efficiency in the process by which savings being accumulated in the economy are translated into savings usable for productive investments. Therefore, there is the need for careful observation(s) because analysis of studies on savings in developing countries have not produced any uniform criteria to confirm the theories that have been proved for the developed countries. This, therefore, suggests that the result of investigations relating to developed countries cannot be generalized to countries with very different economic and social characteristics.

2.2 Relationship between savings and income

The concept of savings and income are inter twined. They both complement each other. A household with high ability to save has the potential of earning more income if the savings are productively invested. Ceteris paribus, a household with high income earning capacity, has the potential of making substantial savings.

Adesimi (1983) stated that the larger the income, the greater the propensity to save.

2.2.1 Savings and Current Income

The relationship between savings and current income was studied as far back as 1936 by Keynes. Keynes (1936) postulated a hypothesis that indicated a stable linear link between savings and current income level. The model showed that both the marginal propensity and average propensity to save increase with the level of income.

Albeit, the obvious nature of this statement, suffice to say that, the increment in savings along with the income level will be at a decreasing rate, this could be attributed to the fact that greater interest may be accorded to types of modern consumption as income increases because as Deaton (1989) rightly observed, that saving is not only about accumulation but it is about smoothening consumption. However, Dasgupta (1974) observed that once there is a rise in income, people tend to consume less and save more.

2.2.2 Savings and Permanent Income

In an attempt to account for apparent errors that might arise in the relationship between savings and current income. Friedman (1957) assumed that current income could be divided into permanent and transitory income. On the basis of this typothesis,

two studies were carried out. Bhalla (1979) carried out one of the studies relating to rural India from 1968-1971 and covered 4, 118 households.

Musgrave (1979) carried out the other study which concerned urban areas and covered seven cities in Latin America. The two studies emphasized the estimating aberrations that must be taken into cognizance.

Out of the numerous conclusion drawn up, the following are worthy of note:

a. pure transitory income (Bhalla and Musgrave did not defined what constitute transitory income) appears to be very small and most residual income should therefore, be regarded as an estimating error.

b. permanent income can be accounted for by small number of variable such as education and age in Latin America.

c. the greater the number of physical assets possessed, the better is the balance between desired and present assets.

d. the possession of physical assets significantly affects household savings and,

e. in rural areas, average and marginal propensity to save increases with the amount of land possessed.

2.3 Relationship between Savings and Some Socio-economic Characteristics

2.3.1 Savings and Family Size

Household size is constituted by the number of wives, children, relatives and dependents living with the farmer in his household at the time of any investigation (Atala,

1984). Ogungbile and Olukosi (1991) reported that the average family size in Nigeria is about six to seven persons per family.

Yinusa (1991) found an inverse relationship between savings and household size in a study of farm households in Kaduna State. Similar results was reported by Ngang (1992) and Okanigbe (1987) in a study of household in Bamenda, Cameroon and some villages in Sokoto State respectively.

In some studies however, household size was found not to influence savings. Synder (1971) showed that the probability for positive savings for a sample of Sierra Leone households was unaffected by family size. Durojaiye (1991) reported similar findings in Ago-Iwoye, Nigeria.

Kelly (1976) observed that the effect of increased household size on savings may increase, decreased or remain unchanged.

2.3.2 Savings and Age of Household Head

Age is the number of years an individual had lived from birth. Not many studies include age in modeling household savings. Yinusa (1991), found a marginal negative influence of age on savings. Ngang (1992); Adebayo (2004) found age of household head to exert a positive influence on savings.

2.3.3 Savings and Education

The level of educational attainment of an individual is generally adjudged measurable in terms of the number of school years completed (Teixeira and Swaim, 1991).

In a study of bank savings behaviour of Ghanaian households by Akaah *et al* (1987), found education coefficient to be negative and insignificant. This was interpreted

to mean that household exhibited similar dispositions to save in banks regardless of their level of formal education.

Durojaiye (1991) found out that households head that had secondary education tended to consume more and save less.

2.3.4 Savings and Farm Size

Okanigbe (1987) suggested that savings performance among rural households might vary considerably, depending on farm size. Yinusa (1991) found out that the larger the farm size of a household, the higher the propensity to save.

2.4 Savings and Investment Patterns

Mauri (1977) viewed the problems of less developed countries and observed that one of the major factors militating against their rapid development was the growing imbalance between the mobilizing function of savings and the development of the investment function. This viewpoint can be attested to when one realizes that simple economic logic has it that, the level of savings and investment constitute one of the major or essential factors that decisively influence the rate of socio-economic development.

In traditional agriculture, in which most rural farmers in Nigeria are engaged in, the technology is rudimentary. This nature of the technology of production makes the farmers output to be stable or expand slowly giving rise to low investment. This Mauri (1977) agrees is not because farmers are too poor to save but because over time, they have acquired the quantity of capital which is consistent with their technology and their holdings of land and labour.

Akanji (1991) echoing this reasoning asserted that savings had been used by the individual farm families to generate capital that could be used to maintain or improve

production. This, she further argued, was done through the purchase of seed stock, fertilizers, insecticides, or tools, to cover the expenses for wedding, birth and funerals or to provide a cushion against hard time or emergencies.

Osuntogun and Adeyemo (1981) were of the view that farm families invested their savings in two major areas. These were the agricultural and non-agricultural sectors. Investment in the agricultural sector included purchase of fertilizer and chemicals, hired labour and buying more lands for farming. While investment in the non-agricultural sector were mainly centered on education, trade expansion, building houses, dowry obligation, and purchase of durables. The result of their study showed that about 50 – 96 percent of a farm – family's savings was invested in non-agricultural areas, while farm purposes accounted for 33 percent (hired labour, fertilizer and chemical), 16 percent was spent on clothing dowry obligation and ceremonies.

On the whole, the result of this study tends to confirm the assertion by Warriner (1964) that the effect of peasant ownership of land on investment is naturally to promote investment of the peasant's savings in his own farm, in the purchase of livestock and land and the possibility of doing these increases the volume of savings.

However, the study carried out by Fabiyi and Idowu (1991) on investment behaviour of farmers in South Western Nigeria showed that there was inadequate investment by the farmers in the area of capital improvements, with about 87 percent investing less than ₦2, 000 on their farms, with 56 percent actually investing less than ₦1,000. According to them, majority of the farmers did not invest beyond their own labour and one or two cutlasses that were in most cases up to three years old.

2.4.1 Monetized and Non-monetized Savings/Investments.

Monetized savings and investment refers to acquisition of assets by the household, which are used or exchanged for money. While non-monetized savings and investment refer to acquisition of assets by the farm family which are directly used by it or bartered but not exchanged for money. However, it must be pointed out that the various activities undertaken may determine whether savings and investment fall under monetized or non-monetized category.

Hakeem (1989) stated that in most rural areas of the developing countries, savings appear in the form of monetized and non-monetized forms. This he further attributed to the subsistence nature of the economy in the rural areas of the developing countries.

One of the major attributes of a subsistence economy is that the activities undertaken in it are predominantly the production of goods and services used by the producers or bartered but not exchanged for money (Hakeem, 1989).

Gosh (1986) held that in non-monetized economy, farmers save when they can in kind rather than in cash. This view is perhaps true when one observes Mbat's (1985) assertion that rural dwellers seem to attach more important to money as a store of value almost more than a medium of exchange.

Also, it is perhaps true that depending upon the underlying nature of transactions during the process of asset formation and acquisition, any particular type of asset can constitute a monetized and non-monetized form of savings and investment. This is because, according to Alagmir (1976) non-monetized savings and investment represent physical asset acquired through the use of family labour and exchange labour with or without non-purchased inputs. While he viewed savings and investment acquired through

the market or can be created through the use of purchased input like labour and capital services as constituting monetized savings and investment.

Marthur and Ezekiel (1961) carried out an investigation to analyse why farmers save in this way. They found out that the nature of uncertainty under which farmers operated was the reason behind this kind of saving behaviour. The two researchers stated that sales of food grain in a non-monetized economy tended to be determine by cash requirement independent of savings potentialities. This reference for saving in kind to savings in cash could be attributed to the uncertainty that prevails about weather and prices in the next year.

2.5 Level and Trends of Investment in Nigerian Agriculture

Two broad categories of investment in agriculture can be identified. They are the local and foreign sources. The local sources include public and private investment while the foreign sources include multilateral, bilateral and private investment.

Table 2.1 shows the total capital expenditure of Federal, State and Local Government in Nigeria for domestic public investment from 1996 to 2000. There was a steady increase in expenditure of the three tiers of government in the area of agriculture between 1996 and 2000 as shown in the table.

Table2.1: Real Domestic Public Investment (₦' million)

Year	Federal Government	State Government	Local Government	Total
1996	8071.2	1105.4	229.2	9405.8
1997	9235.8	1142.6	295.3	10673.7
1998	9812.6	2021.1	613.6	12465.3
1999	15053.0	1826.5	566.6	17446.2
2000	6998.6	4644.2	1608.7	13251.5

Sources: CBN (2000) Statistical Bulletin, Vol. 11 No. 2
CBN (2001) Annual Report and Statement of account.

2.6 Determinants of Agricultural Investment

There is no doubt that individually and collectively, the obstacles facing the small-scale farmers and rural poor in Africa, particularly in Nigeria are formidable. Most of the forces according to International Fund for Agricultural Development (IFAD, 1993) are essentially social. This reflect systems of resources allocation that are made by the societies. Investment decisions by farmers are not taken in isolation of the prevailing economic situation, which the farmers find themselves. Pricing policies, credit systems and social and productive services which neglect the poor as well as gender discrimination. The cost of the investment to be undertaken and general trends in expected economic situations in the country all combined to influence the level and pattern of investment undertaken by the farmers (Fabiyi and Idowu, 1991).

They also pointed out that the type of land tenure arrangements tends to influence long-term investment in land-improving and yield-increasing technologies. Investment decisions are closely related to "internal" accumulation of capital, that is, to the gross savings of firms (Kalachi, 1971). There will be a tendency to use these savings for

investment, and, in addition, investment may be financed by new outstanding funds on the strength of the accumulation of entrepreneurial capital.

According to Fabiyi and Idowu (1991), the gross savings of firms extend the boundaries set to investment plans by the limited capital market and the factor of increasing risk. The gross savings of firms consists, strictly speaking, of depreciation and undistributed profits along with the "personal savings" of the controlling groups invested in their own companies through subscription to new share issues.

Literature search also revealed that investment flow into the economy and the agricultural sector within the economy is determined by a wide range of factors or determinants.

Obadan (1982) confirm the importance of market size, trade policies, raw materials as well as exchange rate as determinates of investments. According to him external debt burden reduces investment.

Froot and Krugman (1990) supported the view on external debt. They explained that high debt service payment associated with a large external debt reduces fund available for investment.

Another determinant according to Osuagwu (1983) in his paper on determinants of investment demand in Nigeria from 1960-1975 was the expected rate of return.

Anyanwu (1998) in his submission highlighted openness of the economy and indigenization policy as also determinants of investment.

Ajakaiye (1995) noted that rising bank lending rate profile also determines investment.

At the farmer's level, the determinants of investment as pointed out by Fabiyi and Idowu (1991) include owner's equity or net worth, Farm size, total amount of loan obtained, Farm and non-farm income, interest rate charged on loans, age of the farmer etc.

2.7 Model Review

2.7.1 Multiple Regression

Regression analysis is geared toward establishing the functional relationship between a dependent variable and one or more independent variables. Independent means that the specific values of the variable are not influenced by the other variables, Regression analysis provides a convenient vehicle for determining the mathematical relationship between the dependent and independent variables. Regression analysis consists of five steps. The first steps consist of determining whether or not a linear relationship exists between the variables.

$$Y = a + bX$$

Where: y - Is the calculated value of the dependent variable

a- Is a constant and represents the intercept along the y – axis

b- Is the slope of the line

x- Is the value of the independent variable.

This is accomplished by constructing a scatter diagram of the pairs of observations for each line interval. The second step is to calculate the regression equation, that is finding the straight line that best fits the data. This line is defined by the least – squares criterion, this means calculating the straight line that minimizes the squared variations of the predictions. The third step is computation of statistical tests, that is to

explain a portion of the variation in the dependent variable on the basis of its association with the independent variable. The fourth step is the forcast using the calculated equation to predict. The fifth step is calculation of confidence interval for the forcast: This is done by first calculating an estimate of standard error of prediction

2.7.2 Correlation Analysis

Correlation is a statistical technique designed to measure how closely two or more variables are related. It consist of measuring the degree of relationship between one variable's value and those of another (or others). The statistic used to measure the degree of association between variables is termed the coefficient of correlation or simply, *r*. It has a maximum theoretical value of + 1.0 which means a perfect direct relationship and a minimum theoretical value of -1.0 which means a perfect inverse relationship.

If r = 0 it means that there is no association at all between the variables. The value of r is calculated in practice from the following equation.

$$r_{xy} = \frac{\sum_{i=1}^{n} (x_i - x)(y_i - y)}{\sum_{i=2} \sqrt{(x_i - x)^2 (y_i - y)^2}}$$

Where y and x are the variables.

Limitations of Correlation Analysis

1. It can only be applied when the relationship between the variables is linear.

2. It does not establish a functional relationship, that is it does not prove which is the dependent and which is the explanatory variable.

The functional forms *can* take several forms. The linear function was used for the purposes of this study because it is the one best suited for the analysis of the data. Also the linear function has the advantage of ease with which it can be fitted with the ordinary least square (OLS) regression model.

Descriptive statistic such as percentages, means, frequency distribution were used in this study to achieve some of the objectives.

CHAPTER THREE

METHODOLOGY

3.1 The Study Area

The study was conducted in two local Government areas of Kaduna State. These are Giwa and Sabon-Gari. The state is located between latitudes 9^{o} and 12^{o}North and longitudes 6^{o} and 9^{o}East. Kaduna State, is made up of 23 local government Areas. The state is bounded in the North by Sokoto, Katsina and Kano States, to the East by Bauchi State. It shares a common boundary with Niger State, to the West and Plateau State and the Federal Capital Territory Abuja to the South. The climate of the state varies from North to South. The rainfall pattern across the state extends between the months of April and October, annually.

Kaduna State is blessed with productive Agricultural land mass and therefore has a great Agricultural production potential (Federal Ministry of Agriculture and Natural Resources, 1997). The population of the state is multi-ethnic and on the basis of a census conducted in 1991 it was put at about 5, 568,368 (estimate) with a total land area of 46,016 square kilometers (Federal Office of Statistics, 1991). Giwa Local Government is made up of twenty-six (26) villages and Eleven (11) wards with a total population of 170,253 and land area of 2,041 square kilometers. Sabon-Gari on the other hand has thirty-seven (37) villages and eleven (11) wards, with a population of 212,671 and land area of 214 square kilometers (Kaduna State statistical yearbook, 1996). The majority of the people in these areas are farmers. The bulk of agricultural production is undertaken mainly by small-scale farmers. Family labour forms the main source of farm labour supply. Production is labour intensive. Hand hoe technology is the dominant mode of

cultivation, therefore, labour productivity is generally low (Ogungbile and Olukosi, 1991).

Crops grown include Maize, Guinea Corn, Soya beans, Cowpea, Millet, Potatoes, Pepper, Onions, Cotton, Sugarcane, Carrot, Tomatoes, Popcorn, Groundnut, Ginger, Rice, Yam, Cassava and Cabbage. Livestock species such as cattle, sheep, goats, poultry are kept and they also constitute a source of farm income.

3.2 Sampling Procedure

Two local government areas (Giwa and Sabon-Gari) were purposively selected for this study to present a balanced representation, with Giwa representing a typical rural agro-pastural setting while Sabon-Gari represent a semi-urban area.

A list of 550 farmers was provided by the officials in the Agricultural Department of the two local government areas (300 from Giwa and 250 from Sabon-Gari). This list was the sampling frame. A random number table was used to select 80 respondents from the 300 in Giwa and 80 respondents from the 250 in Sabon-gari. The sampling percentage was 29 percent.

3.3 Data Collection

Primary data were used for this study. The data were generated by use of questionnaire administered on the respondents. The interviews were conducted between April and June 2005, the data were collected based on year 2004 farming season/household activities. The data collected focused on farm and non farm activities, various crops grown, livestocks kept, output, consumption, volume of savings, how and why they save, amount and nature of investment, farm size, total amount of loan obtained, farm and off-farm income, type of land tenure, interest on loan, family size, age

of farmers, level of education, faming experience, problems affecting savings and problems affecting investments.

3.4. Analytical Tools

The following analytical tools were used to achieve the objectives of the study

3.4.1 Descriptive Statistics.

Descriptive statistic such as percentages, means, frequency distribution were used to achieve objectives 1, 2 and 4.

3.4.2 Multiple Regression

A multiple linear regression model was used to achieve objectives 3 and 5. In this study, only quantifiable factors, which were hypothesized to affect savings and investments, were included in the models.

3.4.2.1 Model Specification

a. The model used for savings was specified as:

$S = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, e)$ ……. (1)

Where:

S = Amount of Savings (₦)

X_1 = Total income from farm activities (₦)

X_2 = Total income from off-farm activities (₦)

X_3 = Age of farmer (years)

X_4 = Educational level (years)

X_5 = Household size (No)

X_6 = Farm size (Ha)

X_7 = Farming Experience (Years)

e = Error term.

b. The model used for investment was specified as

$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, U)$ …….. (2)

Where:

Y = Amount of investment in both farm and off farm (₦)

X_1 = Farm size (Ha)

X_2 = Total amount of loan obtained by farmer (₦)

X_3 = Farm income during the previous season (₦)

X_4 = Off-farm income during the previous season (₦)

X_5 = Interest rate charged on loan (₦)

X_6 = Age of farmer (years)

X_7 = Farming Experience (years)

U = Error term.

The general model can take several functional forms. The linear function was selected as the lead equation. The criteria for selection include:

(i) Magnitude of coefficient of multiple determination (R^2)

(ii) Appropriateness of the signs of regression coefficient

(iii) Significance of t-values and F-values.

In using the linear functional form, a linear relationship is assumed to exist between the dependent and the independent variables. The equation may be written as follows:

(a) $S = b_o + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6$

$+ b_7 X_7 + e$ … …….. (3)

Where:

S, e, X_1-X_7 are as defined earlier.

b_o = constant term

b_1 - b_7 = Regression coefficients

(b) $Y = b_o + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + U$. …. (4)

Where:

Y, U, $X_1 – X_7$ = are as defined earlier

b_o = constant term

$b_1 – b_7$ = Regression coefficients

The advantage of linear function is the ease with which it can be fitted with the ordinary least square (OLS) regression model. Its disadvantage is the assumption that all inputs are perfect substitutes of each other with constant rate of return.

3.4.3 Pearson Correlation Analysis

Pearson correlation coefficient examines the significance or otherwise of the association between two variables. Two variables may have a positive correlation, a negative correlation or may be uncorrelated. This analysis was done to achieve part of objectives 3 and 5. The basic tool of correlation analysis is the correlation coefficient, which measures the degree of linear association between two jointly distributed random variables.

The correlation coefficients were calculated using the formula.

$$rxy = \frac{\sum_{i=i}(x_i - x)(y_i - y)}{\sum_{i=2}^{n}\sqrt{(xi-x)^2 (y_i - y)^2}} \quad \text{.....(.5)}$$

Where X_i and y_i are the observations on x and y respectively; n is the sample means of the variables; y represent savings and investment respectively; X_i is explanatory variables as indicated in equation one.

Limitations of Correlation Analysis

It does not establish a functional relationship that is it does not prove which is the dependent and which is the explanatory variable.

3.5 The Variables and their Measurement

The variables selected and included in the multiple regression models are as follows:

1. **Savings**: The amount of savings accumulated over a period (a year). It was measured in naira (₦).
2. **Income**: This is the income (both farm and off-farm) accruing to the respondents over a period covered by the study. It was assumed that, the higher the income the more will be his willingness to save and or invest and vice versa.
3. **Age of the farmer**: This is the age of the household head in years. It was included in both savings and investment models to confirm or reject the assumption in the literatures that the older the farmer the better his savings and investment capacity.
4. **Education**: This is the number of years that the household head had spent in the school from the time he started to the time he finished, that is the highest level of

education attained. It was included in the model to confirm or reject the assumption that the level of education influence savings.

5. **Household size**: It is the summation of the number of wives, children, relatives and dependents living in a household at the time of investigation. It was included in the model to accept or reject the assumption that the larger the household the less it savings.

6. **Farm size:** This is the size of the farm land in hectares cultivated by the household head, included in the savings and investment models to confirm or reject the assumptions that the larger the farm size, the higher the propensity to save and also the higher will be the investment.

7. Farming Experience: This is the number of years the household head has been involved in farming. Its inclusion in both savings and investment models is to accept or reject the assumption that the more experienced the respondents is in farming the more he will be able to produce, which may positively influence his desire to save as well as his investment.

8. **Investment:** The amount of investment made by the household head in both farm and off-farm activities over a period (a year). It was measured in naira (₦).

9. **Loan**: This is the amount of loan (credit) obtained by the household head measured in Naira (₦). It was included in the model to accept or reject the assumption that the amount of credit available to the farmer will influence his investment.

10. **Interest rate:** This is the amount of interest charged on the loan, measured in naira (₦) Its inclusion is to accept or reject the assumption that interest rate will influence the level of investment.

11. **Error term:** The amount of savings as well as investment by household may not be completely accounted for by the selected quantifiable variables. The models may not account for some other unquantifiable factors. Therefore, the inclusion of the error term was to account for other variables which are not included in the models.

3.6 Limitation of the study

i. The study was limited to only 160 respondents drawn from two local government areas due to financial and time constraints, detailed study covering more local government areas would have been more representative for the entire state.

ii. Absence of accurate data concerning farmers operations and the reliance of the study on verbal information which was affected by memory lapses imposes serious limitation on the study.

These limitations not-withstanding, the findings of this research will go a long way in improving our knowledge about savings behaviour as well as investment among the rural farmers.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 SOCIO-ECONOMIC CHARACTERISTICS OF THE FARMERS

4.1.1 Distribution of Respondents According to Age

Table 4.1 showed that about 74 percent of the respondents were between the ages of 27 and 53 years, 10 percent were between the ages of 54 and 62 years, while 4 percent were between 63 and 71 years. The mean age of the respondents was 41 years. The result showed that the majority of the respondents fall within the active and productive age group. Age classification is relevant to this study in that physical ability and productivity depend on age and this will influence savings and investment positively or negatively.

Table 4.1: Age Distribution of Respondents

Age (Years)	Frequency	Percentage
18-26	19	11.87
27-35	41	25.63
36-44	32	20.00
45-53	45	28.13
54-62	16	10.00
63-71	7	4.37
Total	160	100

4.1.2 Educational Status

Table 4.2 showed that majority of the respondents (99%) had one form of education or the other. Only two respondents (1%) did not have any form of education. About 63 percent had formal education, this include Primary education (6%), Secondary education (23%) and Tertiary education (35%), while 36 percent had informal education (Adult education 7% and Koranic/Arabic 29%).

The level of educational attainment of an individual is generally adjudged measurable in terms of the number of formal school years completed (Teixeira and Swaim, 1991). The analysis of the results showed that 69 percent of the respondents spend between 10 and 19 years in school, 20 percent spent between 0 and 9 years while 5 percent spent between 25 and 29 years. The mean number of years spent was 13.44 years. Education plays a major role in creating awareness among the farmers and influence the adoption of techniques that will improve productivity. Education is included in the analysis to see its influence on savings.

Table 4.2: Distribution of respondents according to their level of education

Type	Level	Frequency	Percentage
	Primary	9	5.63
Formal Education	Secondary	36	22.50
	Tertairy	56	35.00
Informal Education	Koranic/Arabic	46	28.75
	Adult	11	6.88
Did not attend any		2	1.25
Total		160	100

Table 4.3: Distribution of respondents according to the number of years spent in school.

Years	Frequency	Percentage
0-4	8	5.00
5-9	24	15.00
10-14	68	42.50
15-19	42	26.25
20-24	10	6.25
25-29	8	5.00
Total	160	100

4.1.3 Household size

The result of the analysis showed that the mean household size of the respondents was about 10 persons. About 79 percent of the respondents had a household size of between 1 and 14 persons, 8 percent had between 22 and 35 persons, while two respondents (1.25%) had a household of between 36 and 42 persons. Household size is very important when savings is discussed because it determines the dependency ratio, as well as consumption rate. The classification of family size is relevant to this research in that the levels of a household's income and expenditure depends on the number of people in the family who can help work in the farms. According to Mbat (1985), work in the farms reduces the level of rural labour market expenditure on farming activities since members of the family will not be paid either in cash or in kind for the work they do. Moreover, a major percentage of the harvested items would be consumed by the households thereby reducing expenditure on consumer food items as well as income from

the sales of harvested food items and implicitly the flow of cash to the family from the principal economic activity of the household.

Table 4.4: Household size Distribution

Family size	Frequency	Percentage
1-7	86	53.75
8-14	40	25.00
15-21	19	11.87
22-28	8	5.00
29-35	5	3.13
36-42	2	1.25
Total	160	100

4.1.4 Farm Size

Farm categorization is justified only in the context of the particular environment. The measure of size to be used depends on the objectives of the farm size comparison (Adesimi, 1976; Baiyegumbi, 2003).

About 81 percent of the respondents had between 0.4 and 5.3 hectares of farm land, about 13 percent of them had between 5.4 and 10.3 hectares while 7 percent of the respondents has between 10.4 and 25.3 hectares of farmland. The mean farm size was 4.35 hectares.

The inclusion of farm size in this study is relevant because it allows for the assessment of savings performance as well as investment among rural households. Okanigbe (1987) suggested that savings performance among rural households might vary

considerably, depending on farm size. Yinusa (1991) in his study, found out that the higher the farm size of a household, the higher the propensity to save. That is the larger the farm size the more will be the output which will lead to increased revenue (income) as well as savings.

Table 4.5: Distribution of respondents according to farm size.

Farm size (Ha)	Frequency	Percentage
0.4 - 5.3	129	80.63
5.4 - 10.3	20	12.50
10.4 – 15.3	7	4.37
15.4 – 20.3	2	1.25
20.4 – 25.3	2	1.25
Total	160	100

4.1.5 Farming experience

32 percent of the farmers had between 3 and 11 years farming experience, 44 percent of them had between 12 and 29 years experience, while 22 percent and 2 percent of the farmers had between 30 and 47 years, and between 48 and 56 years respectively. The mean farming experience was 20 years. Farming experience is used as a measure of management ability, the more experienced the farmer is, the more his ability to make farm decision. This result showed that most of the farmers had experience, implying that such farmers are likely to make decisions that would increase their output, income, savings as well as their investment.

Table 4.6: Farming experience of respondents

Experience (Years)	Frequency	Percentage
3 – 11	51	31.87
12 – 20	44	27.50
21 – 29	27	16.87
30 – 38	23	14.38
39 – 47	12	7.50
48 – 56	3	1.88
Total	160	100

4.1.6 Land tenure system

To provide an overview of the land tenure system in the study area, Table 4.7 displays the percentage of how land was acquired. 41 percent of the farmers acquired their land through inheritance, 4 percent got theirs through purchase. Also, 4 percent make use of family land, while 21 percent accounted for both inheritance and purchase. Hire and others (inherited/hire/purchase/family/Gift) accounted for 14 percent and 16 percent respectively. The consequences for land use and soil management of these tenurial conditions is that for land acquired through inheritance, purchase and gift, the existence of a high degree of security of tenure creates incentives for farmers to make investments and use production techniques that are beneficial to long-term productivity of land. However, for land rented or borrowed, farmers are unwilling to incur short-term cost for the sake of benefits realized after tenurial date of their contractual agreement with the land owner.

Inclusion of land tenure in the regression analysis, would have enable one to see its influence on investment, but unfortunately this variable is not quantifiable.

Table 4.7: Distribution of respondents according to land tenure system.

Tenure system	Frequency	Percentage
Inherited	65	40.63
Purchase	7	4.38
Hire	23	14.38
Family land	7	4.38
Inherited and purchase	33	20.63
*Others	25	15.63
Total	160	100.03

*Inherited/hire/Purchase/Family/Gift

4.1.7 Occupation of the respondents

Rural household derive their income largely from two main sources. These are farm and non-farm sources. The farm incomes are the income derived from farm activities which may include crops, livestock and fishery. The non-farm incomes are derived from non-farming activities which include trading and all sorts of artisans. Table 4.8 showed that 30 percent of the respondents had farming as their only occupation. 38 percent of them were engaged in both trading and farming, while 25 percent; 6 percent; and 1 percent accounted for farming/civil servants; farming/transportation, and farming/sewing respectively. This classification is relevant to the study in that the economic activity of the household head influences both economic activities of the rest of the family members and the income of the family. The implication for this is that farmers

with other source(s) of income may be motivated to save and make investments as a result of the extra income compared to what farming alone would have provided.

Looking at the two local government areas, there are more people that take farming as their only occupation in Giwa (36%) as against 24% in Sabon-Gari. On the other hand, Sabon-gari has more in farming/Trading (40%); Farming/Transportation (8%) and Farming/Civil Service (28%) as against 36%; 4% and 23% respectively found in Giwa. This may be attributed to the ruralness of the local government areas. Giwa being more rural while Sabon-Gari is Semi urban. The implication for this is that as the area develop from rural to urban people tend to move away from fulltime farming to other occupation and taking farming as part time activity.

Table 4.8: Distribution of respondents according to their occupation.

Occupation	Frequency			Percentage		
	Giwa	S/Gari	Combined	Giwa	S/Gari	Combined
Farming alone	29	19	48	36.3	23.8	30.0
Farming/Trading	29	32	61	36.3	40.0	38.1
Farming/Sewing	1	1	2	1.3	1.3	1.3
Farming/Transpiration	3	6	9	3.8	7.5	5.6
Farming/Civil service	18	22	40	22.5	27.5	25.0
Total	80	80	160	100.2	100.1	100

4.2 Income

Rural households derived their income from both farm and off-farm sources. Table 4.9 showed that the average farm income of the respondents were ₦163,036,

₦104,053 and ₦133,545 for Giwa, Sabon-Gari and for the two Local Government Areas combined respectively while the average off-farm income were ₦75,719, ₦65,428 and ₦ 70,573 respectively. Considering the categories of occupation, household with only farming as their only source of income has the highest average farm income (₦175,523) followed by Farming/Civil service (₦ 133,563). For off-Farm income, household in Farming/Civil service has the highest (₦147,698), followed by Farming/Transportation (₦ 112,778). Farming alone has zero, that is no other sources of income.

Table 4.9: Average farm and off-farm incomes of the respondents.

Occupation	Sabon-Gari			Giwa			Combined		
	F	Average Farm Income (₦)	Average off farm Income (₦)	F	Average Farm Income (₦)	Average off farm Income (₦)	F	Average Farm Income (₦)	Average off farm Income (₦)
Farming alone	19	165513.16	0	29	182081.04	0	48	175522.92	0
Farming/Trading	32	90356.31	56818.94	29	113515.52	85020.68	61	101366.43	70226.33
Farming/Civil Service	22	61927.27	127318.18	18	221116.67	172605.56	40	133562.50	147697.50
Farming/Transportation	6	143450.00	92500.00	3	113500.00	153333.33	9	133466.67	112777.78
Farming/Sewing	1	65000.00	60000.00	1	150000.00	25000.00	2	107500.00	42500
Total	80	104053.15	65427.58	80	163036.25	75718.75	160	133544.70	70573.16

4.3 Savings Habit

One of the objectives of this study was to determine the savings profiles of the farmers in the study area. The study revealed that 89 percent of the respondents were saving while 11 percent did not save. Table 4.10 showed that 21 percent of them were saving with the banks, 21 percent saved at home; 3 percent saved in form of stored grains, while 8 percent saved through "Adashe" contribution. The remaining 37 percent of the farmers saved in various combinations of Bank, Adashe and Home, as indicated in the table.

The result also shows that more respondents (33%) are making use of Banks in Sabon-gari compared to 9 percent in Giwa, while more are saving at home (26%) in Giwa as against 15 percent in Sabon-gari. This may be as a result of availability of more banking facilities in Sabon-Gari. There are about seventeen Commercial Banks as well as few Community Banks operating in Sabon Gari while only two community banks are in operation in entire Giwa local government area, no presence of commercial banks there.

The reasons given for their savings habit was as discussed. Those that saved with the bank stated that they normally collect loan from the bank to execute some jobs, so it was required that they should have accounts with a bank. For some, being civil servants, their salaries are paid through bank and so, it was imperative for them to have an account. For those saving at home, they preferred their money to be handy for use when the need arose. This study shows that the farmers are actually saving and most of these funds are held outside financial institutions, confirming what Robert (1972); Mbat (1985) stated that more monetary funds are held in the rural areas. The implication of these finding is

that savings in these areas conform with the savings habit of rural population, that is saving at home as well as participating in the cycle saving scheme.

Table 4.10: Distribution of respondents according to where they save their money.

	Frequency			Percentage		
Sources	Giwa	S/Gari	Combined	Giwa	S/Gari	Combined
With banks	7	26	33	8.75	32.5	20.63
Adashe	4	8	12	5.00	10.00	7.50
At home	21	12	33	26.25	15.00	20.63
Both Banks & Home	25	12	37	31.25	15.00	23.13
Bank/Adashe/Home	8	4	12	10.00	5.00	7.50
Home and Adashe	1	5	6	1.25	6.26	3.75
Bank and Adashe	4	0	4	5.00	0	2.50
In form of stored grains	0	5	5	0	6.25	3.12
Did not save	10	8	18	12.5	10.00	11.25
Total	80	80	160	100	100	100.02

*Adashe/Esusu: Contributory or Rotatory Savings Scheme

4.4 Propensity to Save

In this study, the gross income of the household head was used in the analysis. The gross income consist of income from farm and off-farm activities. Off-farm income covers both income earned by the farmer from other auxiliary activities engaged in as well as unearned income which represent gifts from friends and family relatives in the urban areas and contributions from other members of the household. The farmers were asked to give what they were able to save from their farm and off-farm income; the

amount saved in various form (at home, Adashe at Bank and others) as well as their expenditure. From their response and information gathered; savings was computed for the various categories of farmers on local government basis and then for all the respondents combined. The average propensity to save (APS) was 0.232 implying that 23 percent of the gross income of the households were saved while 77 percent were either consumed or invested. Considering the two local government areas separately, Sabon-Gari has slightly higher APS (0.281), while that of Giwa was 0.197.

Table 4.11 Showed that households involved in farming alone had the least propensity to save (0.199), while those involved in Farming/Sewing had the highest (0.294).

The following formular was used.

$$\text{Average propensity to save (APS)} = \frac{\text{Average savings}}{\textit{Average}\ \text{Gross income}}$$

(i) $\frac{47124.63}{238755} = 0.197$ (Giwa)

(ii) $\frac{47577.50}{169480.73} = 0.281$ (Sabon-Garia)

(iii) $\frac{47351.06}{204117.86} = 0.232$ (Combined)

This study shows that savings capacity not only existed in the rural areas, but the farmers are actually saving. This analysis satisfy part of objective two.

Table 4.11: Distribution of respondents according to Average propensities to save

Occupation	Average Income						Average Savings						Average Investment						Average Propensity to save (APS)		
	Giwa		S/Gari		Total		Giwa		S/Gari		Total		Giwa		S/Gari		Total		Giwa	S/Gari	Total
	F	₦	F	₦	F	₦	F	₦	F	₦	F	₦	F	₦	F	₦	F	₦			
Farming alone	29	182081.04	19	165513.16	48	175522.92	29	30250.00	19	41984.21	48	34894.79	29	67970.69	19	70984.21	48	69163.54	0.166	0.254	0.199
Farming/Trading	29	198536.21	32	147175.25	61	171592.76	29	48834.48	32	44203.13	61	46404.91	29	78176.90	32	55139.22	61	66091.56	0.246	0.300	0.272
Farming/Civil Services	18	393722.22	22	189245.46	40	281260.00	18	66626.11	22	56727.27	40	61181.75	18	82794.44	22	44742.73	40	61866.00	0.169	0.299	0.218
Farming/Transportation	3	266833.33	6	235950.00	9	246244.44	3	75666.67	6	51333.33	9	59444.44	3	81933.33	6	52708.33	9	62450.00	0.284	0.218	0.241
Farming/Sewing	1	175000	1	125000	2	150000	1	50250.00	1	38000.00	2	44125.00	1	68000.00	1	17000	2	62500	0.287	0.304	0.294
Total	80	238755.00	80	169480.73	16	204117.86	30	47124.63	80	47577.50	16	47351.06	80	75529.75	80	55384.31	160	65457.03	0.197	0.281	0.232

F = Frequency

4.5 Saving Profile

This was done to achieve objective two. Savings was computed in monetary form, for those that save in form of grains, the market value was used in order to have a uniform computation. Table 4.12 shows the savings by various categories of farmers. Household involved in farming alone has the least average savings (₦34,895), while those involved in farming/civil service has the highest (₦61,182). Household involved in farming/Trading, Farming/Transportation and Farming/Sewing saved ₦46,405; ₦59,444 and ₦44,125 respectively. The average savings from farming as the only source of income although low was comparable to what other categories saved. The implication of this findings is that farming alone as an occupation can still be favourable for savings if properly managed. The average savings for Sabon-Gari, Giwa and the two local government areas combined were ₦47,578/Household; ₦47,125/Household and ₦47,351/Household respectively.

Table 4.12: Distribution of farmers according to their level of savings

Occupation	S/Gari		Giwa		Combined	
	F	Average Savings (₦)	F	Average Savings (₦)	F	Average Savings (₦)
Farming alone	19	41984.21	29	30250.00	48	34894.79
Farming/Trading	32	44203.13	29	48834.48	61	46404.91
Farming/Civil servant	22	56727.27	18	66626.11	40	61181.75
Farming/Transportation	6	51333.33	3	75666.67	9	59444.44
Farming/Sewing	1	38000.00	1	50250.00	2	44125.00
Total	80	47577.50	80	47124.63	160	47351.06

4.6 Determinants of Savings

Empirical results from factors determining savings were obtained by means of regression analysis. The linear function (equation) was estimated as:

$$S = 14195 + 0.5683X_1 + 0.5716X_2 - 1411X_3 - 1543X_4 + 6729X_5 + 3431X_6 + 354X_7 \quad (6)$$

The regression results (table 4.13) indicates that about 61.2 percent of the variability in savings was accounted for by the explanatory variables included in the model. The regression signs for Farm income, Off-farm income, Household size, Farm size and farming experience shows positive relationship with the amount of savings, while that of Age of farmer and Educational level shows negative relationship but they are not significant. Contrary to expectation, household size has a positive relationship with savings and it was significant at 5% level. It was expected that as the household size increases, consumption will increase leading to decrease in savings, but the reverse was the case here. The possible explanation for this may be as a result of contribution from the other consumers within the household. As pointed out by Igben and Akande (1988), "The hypothesis of savings and income states that savings behaviour of households depends not only on the income of the household head but upon the income of other consumers. The chances are that there are some members of the household who are income earners that contributed to the income of the family. The positive correlation also confirm the explanation given by Yinusa (1991) that due to the fact that, larger households have higher level of family labour, substantial amount is saved from farming expenditure. Farm and off-farm income were both significant at 1 percent level of probability. This confirmed the fact that income is a major determinant of household savings it also confirm the *a priori* expectation that households tend to save more as their income increase. Age was

expected to be positively correlated with the savings to some extent since older farmers tend to accumulated more investment which may possibly lead to increased savings but the result of the regression analysis shows negative relationship. Farm size although not significant was positively correlated with savings. This was in line with *a priori* expectation that the larger the farm size, the more the expected yield and hence the higher the income which might result into higher savings.

Farming experience also had a positive relationship with savings. This confirmed the *a priori* expectation that the more experienced the farmer is, the more will be his ability to manage his farm and accumulate investment that will influence his savings.

Based on the above analysis, the null hypothesis which states that "there was no relationship between savings and the stated variables" was rejected. The F value which measures the joint significance of all the explanatory variables in the model was 36.83 and it was significant at 1 percent level of probability.

Table 4.13: The regression coefficients of factors influencing savings.

Factors influencing savings	Coefficients of the factors	T-values
Constant	14195 (64369)	0.221
Farm income (X_1)	0.5683 (0.0919)	6.184**
Off-farm income (X_2)	0.5716 (0.1056)	5.413**
Age of farmer (X_3)	-1411 (2214)	-0.637
Education (X_4)	-1543 (2693)	-0.573
Household size (X_5)	6729 (2693)	2.506*
Farm size (X_6)	3431 (4373)	0.784
Farming Experience (X_7)	354 (1905)	0.186

R^2 = 0.6291
R^{-2} = 0.6120
DW = 1.954
F-value = 36.830**

** Significant at 1% level.
* Significant at 5% level.

Table 4.14: The result of the Pearson correlation coefficients between savings and the socio-economic characteristics.

Variables	SOCIO-ECONOMIC VARIABLES							
	Savings	Farm income	Off-farm income	Age	Education	Household	Farm Size	Farming Experiences
Savings	1.0000							
Farm income	07177* (0.0001)	1.000						
Off-farm income	0.5761* (0.0001)	0.4243 (0.0001)	1.000					
Age	0.3719* (0.0001)	0.3757 (0.0001)	0.2661 (0.0007)	1.000				
Education	0.2953* (0.0001)	0.3561 (0.0001)	0.3331 (0.0001)	0.2094 (0.0079)	1.000			
Household size	0.5529* (0.0001)	0.5507 (0.0001)	0.3527 (0.0001)	0.7359 (0.0001)	0.2486 (0.0015)	1.000		
Farm size	0.5763* (0.0001)	0.6973 (0.0001)	0.4006 (0.0001)	0.3724 (0.0001)	0.3364 (0.0001)	0.4910 (0.0001)	1.000	
Farm experience	0.3193* (0.0001)	0.3272 (0.0001)	0.1917 (0.0151)	0.8029 (0.0001)	0.1210 (0.1274)	0.6123 (0.0001)	0.3717 (0.0001)	1.000

*Coefficients significant at 1% level probability.

4.7 Amount of Investment carried out by the Farmers

Table 4.15 showed the average farm investment undertaken by the farmers annually. This was done to achieve objective four. The result revealed that farmers in both Local Government Areas are making recurrent investment and very little capital investment. Capital investment imply investment on durable assets. Table 4.15 showed that about 43 percent of the respondents invested on average ₦1,659 for acquiring new hoes and cutlasses, 97 percent invested ₦18,791 for the purchase of fertilizer, 69 percent spent ₦3,784 for chemicals and seeds while 84 percent and 21 percent invested ₦19,624 and ₦7,912 on hired labour and land hire/lease respectively. 8 percent invested ₦47,500 on irrigation equipments and plough/ridgers, while 6 percent invested ₦62,583 on land purchase. Land purchase, irrigation equipments (water pump, hose) and ridger/plough are the only, capital investments by these farmers. It was done by only very few (21 respondents, 13%). There was relatively low (farm) capital investment among the farmers. These may be attributed to their level of operation which is still very low, they are mostly small-scale cultivating small area of land. Also investment in this aspect (capital investment) is expensive and most of them cannot possibly afford these equipments.

For off-farm investment (Table 4.16), about 66 percent of farmers invested on average ₦26,796 on education of children, while 34 percent, 33 percent and 3 percent invested ₦82,169, ₦59,819 and ₦35,500 on building/maintenance of house, trade expansion and household equipments respectively. The study revealed a similar pattern of investments by farmers in both local government areas as shown in Tables 4.15 and 4.16.

Table 4.17 showed the average farm and off-farm investment of farmers in the study area according to occupational categories.

Table 4.15: Average farm investment made by the farmers

Investment	Sabon Gari			Giwa			Combined		
	F	%	(₦)	F	%	(₦)	F	%	(₦)
Hoes/Cutlasses	38	47.5	1857.63	30	37.5	1406.67	68	42.5	1658.68
Irrigation Equipments	4	5.0	39500.00	8	10.0	51500.00	12	7.5	47500.00
Purchase of fertilizer	76	95.0	12038.16	79	98.8	25287.34	155	96.9	18790.97
Chemicals and seeds	43	53.8	2400.70	68	85.0	4658.09	111	69.4	3783.61
Hired labour	65	81.3	9511.54	70	87.5	29014.29	135	84.4	19624.07
Land purchase	4	5.0	48312.50	5	6.3	74000.00	9	5.6	62583.33
Land hire/lease	16	20.0	2250.00	18	22.5	12944.44	34	21.3	7911.77

Table 4.16: Average off-farm investment made by the farmers

Investment	S/Gari			Giwa			Combined		
	F	%	(₦)	F	%	(₦)	F	%	(₦)
Education of children	48	60.0	18914.58	58	72.5	33318.97	106	66.3	26796.23
Building/Maintenance of houses	16	20.0	15300.00	39	48.8	109602.56	55	34.4	82169.09
Trade expansion	28	35.0	49735.71	24	30.0	71583.33	52	32.5	59819.23
Household equipments	2	2.5	11000.00	2	2.5	60000.00	4	2.5	35500.00

F = Frequency
% = Percentage of the respondents.

Table 4.17 Average farm and off-farm investment of farmers according to occupational categories

Occupation	Sabon-gari			Giwa			Combined		
	F	Farm ₦	Off-farm ₦	F	Farm ₦	Off-farm ₦	F	Farm ₦	Off-farm ₦
Farming alone	19	45273.69	25710.53	29	34389.65	33581.04	48	38697.92	30465.63
Farming/Trading	32	19232.19	35907.03	29	43694.14	34482.75	61	30861.61	35229.92
Farming/Civil service	22	22138.18	22604.55	18	31766.67	51027.78	40	26471.00	35395.00
Farming/Transportation	6	32041.67	20666.67	3	32933.33	49000.00	9	32338.89	30111.11
Farming/Sewing	1	7000	10000.00	1	50500.00	17500.00	2	28750.00	13750.00
Total	80	27024.00	28360.31	80	37319.13	38210.63	160	32171.56	33285.47

4.8 Determinants of Investment.

The results of the regression analysis on the factors that influence the level of total investment undertaken by farmers are presented in table 4.18. In the equation, the standard error of the respective regression coefficient is in parenthesis. For the linear relationship between the level of total investment and the selected independent variables, both farm income (X_3) and off-farm income (X_4) were found to be significant and positive at 1% level of probability.

The linear function was estimated as

$$y = -69742 + 3942\ X_1 + 0.3597\ X_2 + 0.3408X_3 + 0.3059X_4 - 0.0375X_5 + 1517X_6 + 257X_7 \quad - - - - - - - \quad (7)$$

The independent variables all combined to explain about 70.7 percent of the variability observed in the level of investment of the farmers. The equation shows that farm size was positively correlated with investment. This confirms *a priori* expectation and implies that the larger the farm size, the more will be the level of investment. The equation indicates that an increase of one hectare in farm size (X_1) will lead to an increase of ₦3,942 in investment. Amount of loan was positively correlated with investment. This finding is in agreement with general expectation. According to Barau (1991), outside financial help in form of credit or loan is required to induce more capital investment in the agricultural sector. A loan (X_2) of ₦1.00 obtained by the farmers increases total investment by about ₦0.36.

The result confirms the fact that income is one of the major determinants of investment, an additional earning of ₦1.00 each as farm (X_3) and off-farm (X_4) incomes tends to increase investment by ₦0.34 and ₦0.31 respectively.

The interest rate (X_5) charged on loans obtained by the farmers has a negative relationship with their total investment, this is in line with general expectation. It

confirms the fact that high interest rate tend to decrease investment. A one percent (1%) increase in interest rate on loans obtained by the farmers decreases their investment by as much as ₦0.04.

The age of the farmer (X_6) was also found to be positively correlated with their level of investment. An increase of one year in farmer's age increases total investment by about ₦1,517. This means that older farmers tend to accumulate more investment in both farms and off-farm.

Farming experience was found to have positive relationship with total investment, an increase of one year in farming experience increases total investment by ₦257. This finding is in line with *a priori* expectation that the more experience the farmer is in farming, the more he will be able to manage his farm and accumulate investment.

From the above analysis, the null hypothesis which states that "there was no relationship between investment and the stated variables" was rejected. The F-values, which measures the joint significant of all the explanatory variables in the model was 55.689, which was significant at 1 per cent level of probability.

Table 4.18: Effects of factors influencing the amount of farm and Off-farm Investment among farmers in 2005.

Independent variables	Regression coefficient	T-values
Constant	-69742 (27266)	-2.558*
Farm size (X_1)	3942 (2281)	1.729
Loan obtained (X_2)	0.3597 (0.1298)	2.770**
Farm income (X_3)	0.3408 (0.0451)	7.551**
Off – farm income (X_4)	0.3059 (0.0529)	5.781**
Interest charged on loan (X_5)	-0.0375 (1.1314)	-0.033
Age of farmer (X_6)	1517 (978)	1.550
Farming Experience (X_7)	257 (960)	0.268

R^2 = 0.7195
R^{-2} = 0.7065
DW = 1.954
F-value = 55.689**

** Significant at 1% level.

Table 4.19: Pearson correlation coefficients between investment and selected variables

Variables	Investment	Farm size	Loan obtained	Income	Off-Farm Income	Interest Rate	Age	Farming experience
Investment	1.0000							
Farm size	0.6442* (0.0001)	1.0000						
Loan obtained	0.3333* (0.0001)	0.1582 (0.0458)	1.0000					
Farm Income	0.7561* (0.0001)	0.7099* (0.0001)	0.1676 (0.0342)	1.0000				
Off-Farm Income	0.6042* (0.0001)	0.4049* (0.0001)	0.2015 (0.0106)	0.4284* (0.0001)	1.0000			
Interest Rate	0.1792 (0.0234)	-0.0085 (0.9151)	0.7238* (0.0001)	0.0487 (0.5409)	0.1057 (0.1836)	1.0000		
Age	0.4254* (0.0001)	0.3806* (0.0001)	0.0008 (0.9925)	0.3681* (0.0001)	0.2689* (0.0006)	-0.0118 (0.8825)	1.0000	
Farming experience	0.3706* (0.0001)	0.3789* (0.0001)	0.0329 (0.6795)	0.3257* (0.0001)	0.1942 (0.0139)	0.0236 (0.7666)	0.82029* (0.0001)	1.0000

*Significant at 1% level

4.9 Test of Hypothesis

F - Ratio was used to test the significance of the entire regression relationship.

Variation in Y due to	Sum of squares (SS)	Degree of freedom (df)	SS / Df
Savings			
Regression	6967176055882	7	995310865126
Residual error	4.1077165E12	152	27024450387
INVESTMENT			
Regression	2694110679239	7	384872954177
Residual error	1.0504814E12	152	6911061887.7

$$F_1 = \frac{995310865126}{27024450387}$$

$$= 36.830 \text{ (Savings)}$$

$$F_2 = \frac{384872954177}{6911061887.7}$$

$$= 55.689 \text{ (Investment)}$$

from the table of F values, the 1 and 5 percent critical value of F with $df_1=7$ and $df_2=152$ is found to be 2.79 and 2.09 respectively.

Since $F_1 = 36.83 > F_{.01} = 2.79$

$F_1 = 36.83 > F_{.05} = 2.09$

$F_2 = 55.689 > F_{.01} = 2.79$

$F_2 = 55.689 > F_{.05} = 2.09$

The hypotheses of no relationships between socio-economic characteristics and savings were rejected, the alternative hypotheses were accepted because the result of the analysis showed that there was a relationship between socio-economic characteristics of

the farmers and the savings, with income (farm and off-farm) and household size being significant at 1 percent and 5 percent level of probability respectively.

Also the hypotheses of no relationships between investment and selected variables were rejected, the alternative hypotheses were accepted. This acceptance was also based on the result of the analysis which showed that there was a relationship between investment and the selected variables with loan obtained, farm and off-farm income being significant at 1 percent level of probability.

4.10 Reasons for Savings and Investment

The motives why individuals cultivate thrift and investment habit varied. The following reasons were offered and found to be predominant among the respondents: Table 4.20 showed that about 24 percent of the respondent saved for security and emergency cases. Security purpose referred to here include unforeseen circumstance such as death, draught, fire, sickness, armed robbery. About 21 percent of the respondents used their savings for farm investment, this include purchase of fertilizers, chemicals, hoes and cutlasses. 25 percent of them saved for precautionary motives this include day to day upkeep of the family, to avoid extravagant spending. 8, 6 and 4 percent of them used savings for education of children; trade expansion and social commitments (marriage/marriage obligations) respectively. While only 2 percent saved for the purpose of securing loan for farming and business expansion.

Table 4.20: Utilization of Savings by the respondents

Uses of savings	S/Gari	Giwa	Combined	Percentage
Emergency and security case	22	16	38	23.75
Education of children	4	8	12	7.50
Trade expansion	6	3	9	5.63
Farm investment	20	14	34	21.25
Precautionary motives	11	29	40	25.00
Securing of loan	3	0	3	1.88
Social commitment	6	0	6	3.75
Did not save	8	10	18	11.25
Total	80	80	160	100

4.11 Problems affecting Savings

Respondents were asked to indicate the problems affecting their savings. The salient problems stated were:

i. Low income ranked first among the problems (about 31%), the respondents complained that what was realized as income was not enough to meet their needs, therefore no surplus to keep aside as saving.

ii. Inadequate banks ranked second (about 13%) as shown in table 4.21, non availability of commercial banks especially in Giwa local government area where there are only two community banks operating make it difficult for the farmers to have access to bank.

iii. Bank procedures and practices ranked third, accounting for about 12% of the constraints. The respondents keep away from patronizing banks because of their practices and procedures which they claim to be harsh and time consuming.

Also, price fluctuation jointly ranked third (12%) along side bank procedures. Price instability is a problem the farmers has to contend with especially at the time of harvest when the price is usually low thereby making it difficult for them to make a good revenue from their farm produce.

iv. Another constraint is low interest rate on deposits (about 11%). The farmers complained that what the banks are offering as interest is too low, so they consider it a waste keeping their money there.

v. Distance and proximity of banks to the respondents' residential area ranked fifth (10%) among the problems. The respondents have to travel long distances to have access to bank, this discourage savings.

vi. Fear of insecurity ranked sixth (9%) among the major constraint. Insecurity according to the respondents include theft, arm robbery as well as what was happening in the banking sector prior consolidation. They express fear that they may lose their money in case of bank collapse, or liquidation. Also fears of losing their money to thieves after withdrawal keep them away from patronizing banks.

vii. Inadequate storage facility and pest/diseases ranked seventh and eighth respectively among the constraints. For those that saved in form of stored grains complained about lack of modern storage facilities, as a result, they lost substantial amount of grains to pest and diseases. This discourage savings in this form.

Table 4.21: Problems Affecting Savings

Constraints	Frequency			Percentage	Ranking
	S/ Gari	Giwa	Combined		
Low income	29	10	39	30.71	1st
Inadequate banks	0	16	16	12.60	2nd
Bank procedures	12	3	15	11.81	3rd
Price fluctuation	12	3	15	11.81	3rd
Low interest rate	7	7	14	11.02	4th
Distance/proximity	3	9	12	9.45	5th
Fear of insecurity	4	7	11	8.66	6th
Inadequate storage facility	2	2	4	3.15	7th
Pest and diseases	0	1	1	0.79	8th
Total	69	58	127	100	

4.12 Investment Constraints

When asked to indicate problems militating against investment, the following were identified:

i. Inadequate capital was ranked first by about 32 percent (Table 4.22). Meaning that since the income realized was low and what was kept aside as savings were low, this can lead to low investment too as the farmers response indicated.

ii. Another major constraint to investment is high cost of inputs (about 19%). These inputs essentially fertilizers, agro-chemicals, seeds and farm implements, are hardly available in sufficient quantities and costly when needed most for farm operations.

iii. Low price/low return ranked third (about 13%). Low price especially at the time of harvest makes it difficult for them also to keep aside something for investment.

iv. High interest rate ranked fourth (12%). Interest rate charged on loan by both formal and non formal sources is very high making it difficult for the farmer to obtain loan for investment.

v. Loan default is another constraint (12%) ranking fourth along side high interest rate. Some of the respondents invested their money through lending (that is, they are in the business of money lending) but lamented that most of the time they lost the money due to default on the part of the borrower, this discourages them from this type of investment.

vi. Inadequate knowledge ranked fifth accounting for about 9 percent. Some of the respondents lack knowledge on investment opportunities available to them. This is also a constraint to investment.

vii. Inadequate storage facilities ranked sixth among the constraints (about 4%). Some of the respondents are in the business of buying and storing grains to re-sell when they think they can make enough profit. But due to lack of storage facilities, they lost part of it to pest and diseases. This constitute a problem along the line of investment.

Table 4.22: Investment Constraints

Constraints	Frequency			Percentage	Ranking
	S/ Gari	Giwa	Combined		
Inadequate capital	17	5	22	31.89	1st
High cost of inputs	11	2	13	18.84	2nd
Low price/low return	8	1	9	13.04	3rd
High interest rate	0	8	8	11.59	4th
Loan default	8	0	8	11.59	4th
Inadequate knowledge	0	6	6	8.70	5th
Inadequate storage facility	3	0	3	4.35	6th
Total	47	22	69	100	

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY

This study was designed to analyze savings and investment of farmers in Giwa and Sabon-Gari Local Government Areas of Kaduna State. One hundred and sixty households were randomly selected in the study area, eighty from each of the two Local Government Areas. Primary data was used for the study which were collected with the aid of an interview schedule and structured questionnaires. Descriptive statistics, multiple regression analysis and correlation analysis were the tools employed for the analysis.

The results showed that 97% of the households were male headed, while 74% were within the age group of 27 to 53 years, the mean age was 41 years. About 98% of the respondents had one form of education or the other. The average family size was ten (10). About 59% of the respondents had between 12 to 38 years of farming experience, the mean was 20 years. Also about 81% has between 0.4 to 5.3 hectares of farmland, the mean was 4.35 hectares.

About 30% of the respondents had farming as their only occupation. The average income, savings and investment were ₦204,118, ₦47,351 and ₦65,457 respectively.

Result of the regression analysis showed that farm and off-farm income (1% level of probability) and family size (5% level of probability) were significant influence on savings. About 61.2% of the variations observed in the amount of savings were accounted for by the variables included in the model. Also regression analysis showed that farm and off farm income and loan obtained were significant (1% level of

probability) influence on investment, as well as farm size at 10% level of probability. About 70.65% of the variations in the level of investment were accounted for by the variables included in the model.

Pearson correlation analysis showed that the relationship between savings, farm and off – farm income, family size, farm size are moderate at 1% level of probability. Also the relationship between investment, farm size, farm and off- farm income was strong at 1% level, while loan, age, farming experience had moderate relationship with investment.

5.2 Conclusion

From the evidences gathered, savings potential exists in the two local government areas. The result revealed that income was the most important determinant of savings as well as investment. Some of the factors found to exert significant positive influences on the level of savings and total investment include income, family size, access to loan and farm size. The study also showed that there was inadequate investment by the farmers in the area of capital improvement.

Therefore, efforts to mobilizing savings among the people in these areas and in Nigeria as a whole need be directed at improving existing practices within formal and informal institutional sectors.

5.3 Recommendations

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

1. Increase in income should result in proportionately higher volume of savings and effort designed to accelerate the level of savings should be geared toward raising income, therefore, price stabilization will encourage production and increase

income and so price support for farmers and granting of soft loans will go a long way in encouraging farmers to make capital investments. This will increase their income and hence savings.

2. Mass education and promotional programme are desirable to mobilize savings across socio-economic strata in the society and also intimate farmers on the advantages of utilizing banking facilities and also investment opportunities for them to invest wisely.
3. Establishment of Banks in rural areas should be encouraged; this will bring the bank closer to the farmers thereby reducing the distance. The banks will mobilize savings as well as grant loans to the rural households for desired economic activities
4. The banking system generally (that is, image and cumbersome procedures) has to be improved in order to encourage the habit of financial saving among the people.

5.4 Suggestions for Further Study

i. This study limits itself to one farming season (one year), there is the need to cover more seasons (about 2 – 5 years) for a comparative result.

ii. This study limits itself to two local government areas, therefore, effort should be made to cover more areas, not only in Kaduna state but also other geographical regions of the federation for a comparative analysis.

iii. It is important to undertake an extensive research on how rural households allocate their income among competing needs for detail knowledge of savings and investment.

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APPENDIX

DEPARTMENT OF AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY AHMADU BELLO UNIVERSITY, ZARIA.

QUESTIONNAIRE ON SAVINGS AND INVESTMENT BEHAVIOUR OF FARMERS IN GIWA AND SABON-GARI LOCAL GOVERNMENT AREAS OF KADUNA STATE.

INSTRUCTION: Please tick or fill where appropriate

A. GENERAL INFORMATION

1. Date of interview……
2. Questionnaire No……
3. Interviewer……..
4. Name of Farmer…….
5. Sex: Male [ ] Female [ ]
6. Age:…….
7. Are you married: Yes [ ] No [ ]
8. If married, what is the size of your household?.....

No of wife/wives	Children	
	No of male	No of Female

9. How many years did you spend in school…….
10. What is the highest level of your education?
    (a) Primary Education [ ]
    (b) Secondary Education [ ]
    (c) Koranic/Arabic Education [ ]
    (d) Adult Education [ ]
    (e) Post Secondary/University [ ]
    (d) Non literate [ ]

INFORMATION ON FARMING ACTIVITIES

11. How long have you been farming?.....

12. What is the total area of your farm land, size of farm, acre or Ha?.....
13. How did you acquire your farm?
    (a) Inherited [ ] (e) Gift [ ]
    (b) Purchase [ ] (f) Mortgage [ ]
    (c) Hire [ ] (g) Others specify……..
    (d) Family land [ ]
14. What are the major crops produced
    (a)…… (d)……
    (b)…… (e)……
    (c)…… (f)……
15. What is the total area of farm land (Ha or acre) allocated to each crop grown above?.....

	Crop produced		Farm size (Ha/acre)		Yield (Kg/Bag)	
	Sole crop	Mixture	Sole	Mixture	Sole	Mixture
A						
B						
D						
E						
Others specify						

16. Crop products output/Ha or acre

Sole crop name of crop	Crop mixture name of crop	Quantity (Kg/Bag) sold	Quantity (Kg/Bag) consumed	Quantity given out as gift (kg/Bag)	Quantity received as gift (kg/Bag)	Quantity purchased (kg/Bag)	Total amount

OFF-FARM ACTIVITY(IES)

17. What other activity(ies) do you engage in apart from farming?.....
18. What is your source(s) of income?
    (a) Farm activities
    (b) Off-farm activities
    (c) Combination of (a) and (b)
    (d) Other sources (specify)…….
19. What is the amount of income realized from the following last season?
    (a) Farm activities ₦ …….
    (b) Off-farm activities ₦ …….
    (c) Other source ₦ …….
20. How much of your income was pent on the following consumption?

	Amount (₦)
Food	
Clothing	
School fees	
Medication	
Others (specify)	

INFORMATION ON SAVINGS AND INVESTMENT

21. Do you save? Yes [ ] No [ ]
22. If yes, why do you save?.....
23. If no, why are you not saving?.....
24. If you are saving, how do you save?
    a) With the banks [ ] b) Adashe [ ] c) At home [ ]
    d) Others (specify)……..
25. Do you keep livestock? Yes [ ] No [ ]

26. If yes, what type(s) of livestock do you keep?

Type of animal	Number of animals	Average current market value (₦)	Number of animals sold	Total market value (₦)
Cattle				
Sheep				
Goats				
Donkeys				
Horses				
Chicken				
Ducks				
Guinea fowl				
Others (specify)				

27. Do you have any other form of savings apart from cash, animals, grains?
    Yes [ ] No [ ]
28. If yes, please specify……
29. What amount are you able to save from your farm incomes during the last cropping season? ₦ …….
30. What amount do you keep for saving from off-farm income(s) in the last cropping season? ₦…….....
31. What amount do you keep for saving in the following way?
    a) Cash at home ₦……
    b) The amount (cash) in the bank ₦ …….
    c) Amount from Adashe ₦ …….
    d) Others (specify) ₦ …….
32. How much of your savings do you invest in farm activities? ₦……
33. What proportion of this amount in (31) above goes into:
    a) Acquiring new farm tools ₦ ……
    b) Purchasing of fertilizer ₦ …….
    c) Chemicals and new seeds ₦ ……
    d) Hired labour ₦ ……

e) Land purchase ₦ ……

f) Land hire/lease ₦ …….

g) Others (specify) …….

34. How much of your savings do you invest in following activities?

a) Education of children ₦ …….....

b) Building of house(s) ₦ …….....

c) Trade expansion ₦ …….....

d) Others (specify)……

35. Did you borrow money or take loan? Yes [ ] No [ ]

36. If yes, how much? ₦…….

37. What is the interest on the loan? ₦…….

38. From where do you borrow from?

a) Bank b) relatives c) Friends d) cooperatives

e) Others (specify)……..

39. What problem(s) do you normally encounter in saving part of your income?.....

40. What problem(s) do you normally encounter in investing you savings?.....

41. What in your view can be done to improve your savings?.....

42. What in your view can be done to improve your investment……

Table: 19 Regression Analysis using the three function for investment

	Linear Function	Cobb-Douglass (Log Function)	Quadratic Function
Constant	-69742	5.932	28019
	(27266)	(1.094)	(83757)
X_1	3942		-12433
	(2281)		(11576)
X_2	0.360		2.325
	(0.129)		(3.853)
X_3	0.341**		0.291
	(0.045)		(0.221)
X_4	0.306**		0.287
	(0.053)		(0.281)
X_5	-0.035		-13.7
	(1.131)		(40.58)
X_6	1517		-1064
	(978)		(5720)
X_7	257		-414
	(960)		(4914)
X_1^2			-1931
			(568)
X_2^2			-0.0000
			(0.0000)
X_3^2			-0.0000
			(0.0000)
X_4^2			-0.0000
			(0.0000)
X_5^2			0.00025
			(0.0002)
X_6^2			-25
			(104)
X_7^2			-67
			(102)
Log X_1		0.365**	
		(0.089)	
Log X_2		-0.024	
		(0.019)	
Log X_3		0.116	
		(0.029)	
Log X_4		0.043**	
		(00013)	
Log X_5		0.049	
		(0.024)	
Log X_6		0.812	
		(0.358)	
Log X_7		0.107	
		(0.164)	
R^2	0.7195	0.4238	0.8390
R^{-2}	0.7065	0.3967	0.7918
F-ratio	55.689*	15.656*	17.8*

Table:.20 Regression Analysis using the three function for savings

	Linear Equation	Cobb-Douglass	Quadratic Equation
Constant	14195	8.924	56202
	(64369)	(1.513)	(193665)
X_1	0.568**		0.882
	(0.092)		(0.498)
X_2	0.572**		1.662
	(0.106)		(0.581)
X_3	-1411		15732
	(2213)		(13327)
X_4	-1543		-31616
	(2693)		(12269)
X_5	6729		-47378
	(2685)		(15057)
X_6	3430		55134
	(4373)		(24867)
X_7	353		-10192
	(1906)		(9825)
X_1^2			-0.0000
			(0.0000)
X_2^2			-0.0000
			(0.0000)
X_3^2			-421
			(235)
X_4^2			581
			(364)
X_5^2			-581
			(325)
X_6^2			339
			(839)
X_7^2			-125
			(177)
Log X_1		0.184	
		(0.040)	
Log X_2		0.030	
		(0.014)	
Log X_3		0.139	
		0.483	
Log X_4		-143	
		(0.114)	
Log X_5		0.223	
		(0.121)	
Log X_6		0.266	
		(0.092)	
Log X_7		-0.132	
		(0.184)	
R^2	0.6291	0.3428	0.8503
R^{-2}	0.6120	0.3093	0.8064
F-ratio	36.830*	10.211*	19.40*