SOCIO-ECONOMIC ANALYSIS OF POULTRY PRODUCTION IN TWO LOCAL GOVERNMENT AREAS OF KADUNA STATE.

BY

ADEPOJU, SHOLA OLATUNDE

B.AGRIC. (A.B.U)

A THESIS SUBMITTED TO THE POSTGRADUATE SCHOOL, AHMADU BELLO UNIVERSITY, ZARIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE (AGRICULTURAL ECONOMICS) DEPARTMENT OF AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY, FACULTY OF AGRICULTURE AHMADU BELLO UNIVERSITY, ZARIA NIGERIA

JULY, 1999.

DEDICATION

This work is dedicated to God Almighty of My Lord and My Saviour (Jesus Christ), that made this work a success by His grace and nothing but His lovely grace.

DIGITIZED

DECLARATION

The Author hereby declares that the whole of the thesis now submitted for the Master of Science Degree (Agricultural Economics) of Ahmadu Bello University, Zaria is the result of his research, except where references are made to the published literature and duly acknowledged. The work has not been presented before in any previous application for a certificate.

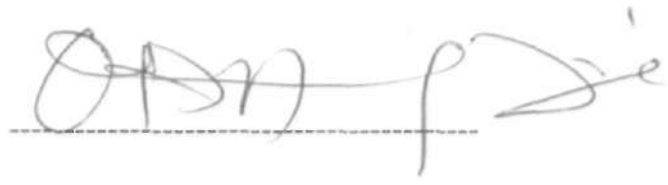




30/09/98

Adepoju, Shola Olatunde **Date**

The above declaration is confirmed:



31/12/98

Dr. D. O. A. Phillip **Date**

Chairman, Supervisory Committee.

CERTIFICATION

This thesis entitled "SOCIO-ECONOMIC ANALYSIS OF POULTRY PRODUCTION IN TWO LOCAL GOVERNMENT AREAS OF KADUNA STATE" by Adepoju, Shola Olatunde, meets the regulations governing the degree of Master of Science of Ahmadu Bello University, Zaria and is approved for its contribution to scientific knowledge and literary presentation.

DR. D. O. A. PHILLIP — DATE

CHAIRMAN, SUPERVISORY COMMITTEE

PROF. J. O. OLUKOSI — DATE

MEMBER, SUPERVISORY COMMITTEE

DR. D. O. A. PHILLIP — DATE

HEAD OF DEPARTMENT

PROF. S. B. OJO — DATE

DEAN, POSTGRADUATE SCHOOL

COPYRIGHT STATEMENT

This thesis or any part thereof must not be reproduced in any form without the written permission of the Postgraduate School, Ahmadu Bello University, Zaria or the Author.

LIBRARY

ACKNOWLEDGEMENTS

I owe a great deal to lots of people, who God used to make this work a success. God, I give you all the glory.

I am very grateful to my major Supervisor Dr. D. O. A. Phillip for all he has done, not only on this work, but for all the proffessional ingredients given to us during the classwork and also my second Supervisor, Prof. J. O. Olukosi. I am sincerely grateful to Prof. A. O. Ogungbile for the constructive advice, financial support and for being fatherly. To other Instructors, Drs. M. I. Kolawole, Ben Ahmed and Chekwendu, and a senior colleague, Mallam Shehu Rahman, I say thank you for making me a complete agricultural economist.

I cannot take for granted the material and/or moral support of Prof. A.O. Ogungbile, Prof. T. O. Mosaku, Prof. Toyin Oguntona, Dr. Ogunlade, Kayode Bankole, Abdulsalam, Mohammed Ghali, Buhari Abubakar, Dr. Useh, Jimoh Boyi, Gbenga Olagunju, Biodun Olasore and Funmi Alabi, I say God will give answer to all your prayers according to His will in glory. A friend in need, is a friend indeed, Moh'd Seghir Ahmed, God will always meet you at the point of your needs and same goes for a sister (Mrs. Tope Oniye). To my classmates and friends, Onor, I. G., Moses, Ayuba, Shaba and Tabo and others I say God be with us as we go into the world.

To my Mentor Chief (Prof.) D. I. Saror, I say thank you for all your concerns about me and my future. I will always remember you and your family.

ABSTRACT

The study was undertaken with the main objective of evaluating the analysis of socio-economic characteristics of poultry(layer) production in two local government areas of Kaduna state.

The study examined the socio-economic characteristics of poultry (layer) farmers as it relates to egg production. Structured questionaire were administered to the farmers to gather information on socio-economic activities, marketing and labour. The regression analysis were based on variables such as years of experience, level of education, level of income, cooperative participation, age of farmers and sex of farmers, inputs level of production and productivity, using analytical techniques such as descriptive statistics, farm budgeting analysis (gross margin analysis) and production function analysis.

The analyses were hypothesized that:

1. There is no relationship between the production (output) and socio-economic characteristics of the poultry keepers.
2. Poultry (layer) business is not profitable

The result showed that socio-economic characteristics were related to productions, though level of education, cooperative participation and age of farmers were not significant, but year of experience, level of income and sex of the farmers were significant at 5, 1 and 10%, respectively.

While in the production analysis there was no significant in feed used, but labour and flock population were at 5 and 1%, respectively.

The result also showed that the poultry (layer) business is a very profitable business when properly managed and well supervised.

KASHIM IBRAHIM LIBRARY

TABLE OF CONTENT

Title Page		i
Dedication		ii
Declaration		iii
Certification		iv
Copyright Statement		v
Acknowledgement		vi
Abstract		vii
Table of content		ix
List of tables		xii
CHAPTER ONE		
1.0	INTRODUCTION	1
1.1	The need for poultry production	1
1.2	Problem statement	3
1.3	Objective of the study	4
1.4	Justification of the study	5
1.5	Hypotheses	5
CHAPTER TWO		
2.0	LITERATURE REVIEW	7
2.1	Poultry (layer) production system trend	7
	Poultry (layer) production in Nigeria	8
2.2	Poultry production system	12
2.3	Socio-economic characteristics of farmers	12
2.4	The role of government in the poultry industry	14
2.5	Profitability of poultry (layer) production	17
2.6	Problems associated with the poultry production	21
2.7	The use of the poultry (layers) production inputs	21

CHAPTER THREE

3.0 METHODOLOGY..... 23
3.1 The study area..... 23
3.2 Sampling procedure..... 24
3.3 Data collection..... 24
3.3.1 Socio-economic data..... 25
3.3.2 Production data..... 25
3.3.3 Labour data..... 25
3.3.4 Marketing data..... 25
3.3.5 Financial data..... 25
3.4 Analytical techniques..... 25
3.4.1 Descriptive statistics..... 26
3.4.2 *Farm budgeting analysis*..... 26
3.4.3 Production function analysis..... 27
3.5 Limitation of the study..... 29

CHAPTER FOUR

4.0 Results and Discussion..... 30
4.1 Socio-economic characteristics of the farmers..... 30
4.1.1 Age structure of respondents..... 30
4.1.2 Respondents year of experience in poultry(layers) keeping..... 31
4.1.3 Farmer's level of education..... 32
4.1.4 Farmer's cooperative participation..... 33
4.1.5 Sex of the farmers..... 34
4.1.6 The farmer's level of income..... 34
4.2 Poultry (layer) production system..... 35
4.3 Socio-economic regression analysis..... 37
4.3.1 Correlation analysis..... 38
4.4 Gross marginal analysis..... 40
4.5 The production function analysis..... 42
4.6 Identified problems of poultry production..... 44

CHAPTER FIVE

5.0 Summary and Conclusion..... 46

5.1 Socio-economic characteristics..... 46

5.2 Socio-economic analysis..... 47

5.2.1 Correlation analysis..... 47

5.3 Gross marginal analysis..... 47

5.5 Production function analysis..... 48

5.6 Policy implication..... 49

5.7 Reccomendations 50

5.9 Suggestions for further study..... 50

REFERENCES..... 52

APPENDIX 54

LIST OF TABLES

		Page
4.1	Age distribution of sampled poultry farmers	31
4.2	Years of experience of sampled poultry farmers	32
4.3	Educational level of sampled poultry farmers	33
4.4	Years of cooperative participation of the farmers	34
4.5	Level of income of sampled poultry farmers	35
4.6	Stock population of the sampled poultry farmers	36
4.7	Regression analysis for socio-ecconomic characteristics	37
4.8	Correlation analysis of the output-input relationship	39
4.9	Estimated gross margin for poultry (layer) production	41
4.10	Regression coefficient of inputs with Cobb-Douglass equation	43

IKASHIM IBRAHIM LIBRARY

CHAPTER ONE

1.0 INTRODUCTION

1.1 The Need for Poultry Production

The importance of poultry in the production of human food and income is frequently over looked by the leaders and promoters of rural development. Poultry population can be increased more rapidly than other farm animals and therefore offers an opportunity for rapid development in countries where a higher standard of human nutrition is being encouraged, FAO (1985).

The importance of poultry in meeting the food requirements of a nation was recognised by the Ford foundation research team (1979) which strongly recommends that steps be taken immediately to encourage expansion of the poultry industry. The effort in each state should concentrate on key villages and a limited number of commercial enterprises so that the production and market development can be integrated effectively. The immediate objective should be to produce results which will secure and demostrate the practicability of achieving much higher production capacity.

It is argued that,extensive use of food by-products and waste material would make expansion of the industry possible without competing with humans for the scarce and costly cereal grains. The use of considerable quantities of grains for poultry production may be justified, however, when more grains are produced, especially those not commonly used as food by humans (FAO, 1985).

KASHIM IBR

Good nutrition is asserted to be primary for applying modern method of poultry production. One of the turning points in the history of poultry production came in, when it was discovered that vitamin D could be supplied by adding cod-liver oil to the feed or by providing direct sunlight. This and other development made it possible to move poultry production year round and a greater labour efficiency. Good nutrition, however, reduces production costs. As a rule, feeding accounts for 50 to 70 percent of the cost of producing eggs. This percentage may even be higher in tropical and sub-tropical countries where labour is usually cheap and housing does not have to be very elaborate. The close relationship between balanced rations, production and feed requirements is particularly clear in the case of egg production. The better the ration the more eggs are produced per hen, while the higher the production per hen the less feed needed per dozen eggs.

The main economic function of poultry in Nigeria is to produce eggs for consumption. Table bird production is largely, though not entirely a by product of egg production, while hatching eggs are required in large numbers each year for normal replacements and in favourable times for the expansion of flocks. The efficiency or otherwise of these utility operation depends largely on genetical factors but it also influenced to a considerable and perhaps a greater degree by environmental conditions such as nutrition and general management (Mann, 1955).

1.2 Problem Statement

Since its onset in the fifties, commercial poultry production in Nigeria has passed through various stages of development each with its peculiar problems. The initial problem was of convincing people generally, particularly the less educated, that poultry keeping in general and egg production in particular was essential for both dietary and economic reasons. Sociological attachments of all kinds (Ikpi, 1979), however, provided strong deterrents to egg and broiler production, and blinded both urban and rural dwellers in the country then against the rich nutritional and economic returns of these poultry products.

During the 1960s, problems in the development of the poultry industry shifted from those of sociology and marketing to those of poultry management and disease. Through government intervention and encouragement, poultry keeping had come to be accepted as a worthwhile hobby, if not a business. Successful poultry keepers had started getting visible financial rewards from their ventures. Proper management of layer enterprises then became a problem which soon got compounded by the outbreak of poultry diseases hitherto unknown to producers in the country.

David-west (1979), asserted that the development of the poultry sector has been slowed down due to a number of constraints. The major ones include inadequate supply of day old chicks, feeds and equipment, lack of credit and managerial skill, and diseases.

Oluyemi and Roberts (1985), also stressed that there has been for quite some time

a persistent advocacy for the improvement of world nutritional status, especially in the developing countries, though substantial increase in the intake of protein foods of animal origin. Coupled with this is the necessity for the diversification of agricultural economy. Poultry production is probably the fastest economic route in achieving the two objectives and indeed, in those countries where these objectives are being pursued, it has been undertaken at varying scales of production and levels of efficiency. It has been asserted from a larger number of failures that the entrepreneurs approached their business with more enthusiasm than actual knowledge of the poultry business. The project analysis of poultry business is always viable and profitable, but when it comes to the execution or the practical aspect of the business, it is not always sustainable.

Studies have established that there are other factors other than the breed of the birds or the source of the birds that play vital role in the success of poultry business. Most of these factors are socio-economical.

1.3 Objective of the Study

This study is broadly intended to carry out a socio-economic analysis of small holder poultry (layer) production in Giwa and Sabon Gari Local Government Areas of Kaduna state.

The specific objectives are:

(i) To identify the socio-economic characteristics of the producers;

(ii) To describe the poultry (layer) production system;

(iii) To determine the relationship between production output and socio-economic characteristics of the poultry keepers;

(iv) To determine the profitability of the layers production business;

(v) To identify the associated problems of poultry production;

(vi) To make relevant recommendations based on the findings of the study.

1.4 Justification of the Study

Basically, this study is to explore key problems in the poultry (layers) production business and suggest options for reducing such problems. Most of the work done has been on the other areas of poultry business, such as the role of government, future projection, marketing etc., but little has been done on other factors (such as socio-economic) of the poultry business. Research had and are more concerned on future projection and need to increase and improve poultry (layers or eggs) production, than on how to arrest the causes of collapse. The study is also to make a contribution on the subject matter upon which further research work can be done.

1.5 Hypotheses

(i) Null (Ho): There is no relationship between the output and socio-economic characteristics of the producers.

Alternative (H_1) There exist a relationship between output and socio-economic charateristics of the producers.

(ii) Null (Ho): Poultry (layers) business is not profitable

Alternative (H_1) poultry (layer) business is profitable.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Poultry (layer) Production System Trend

Traditional poultry husbandry has been known since time immemorial. In farm court yards and around dwelling places, there have always been poultry living free in association with man. Improvement of traditional poultry husbandry in temperate countries during the 19th century and the beginning of the 20th century has culminated in a form of husbandry which is frequently found in rural area where it represents a substantial part of production.

Modern poultry farming in enclosures, that obey the precise and rigours rules. Its principal characteristics are rearing sheds where the poultry density is high and where the birds are raised on soil or in cages, use of a complete feed prepared commercially under conditions which have been subject of intensive research; use of specialized poultry strains with the best possible performance which have been subjected to a selective breeding programmes (Appleby *et. al.,* 1987).

The modern poultry industry originated in the 19th century though its roots, as described, go back to Roman times. It developed progressively from numerous small flock of dual purpose breeds scavenging around the barnyard, fed on scraps and home grown grains, and using natural lighting, incubation and brooding. Along the road to large scale intensive husbandry there have been a number of important scientific and technological developments, which have allowed all the factors important for economic production to be

brought in turn under control. These included the artificial incubator and an effective brooding system, increased understanding of nutritional requirements and formulation of balanced diets. The reduction and elimination of disease through improved hygiene, disinfection, vaccination and antibiotics, environmental and photoperiodic manipulation through housing design and the availability of electrical power and accurate control systems, are also important factors for economic production. Other important factors for economic production are reduction of labour requirements by automation of husbandry procedures such as food and water supply, egg collection and manure removal of all livestock enterprises, poultry production is the most dependent on scientific knowledge and technological exterprise (Appleby, *et. al.*, 1992).

Poultry (layer) Production in Nigeria

It was established that poultry used to be kept as small scale enterprises before it became commercialised. In many countries, and especially in the tropics, the days of keeping poultry as a hobby are far from being over. A very high proportion of the several millions of indigenous fowls in these countries are maintained as small scale ventures.

The birds are maintained at little cost to the owner. they are probably fed grains or reminants of human food once or twice a day; housing is of the simplest type; the adult females hatch and rear their own chicks. People, mostly in rural areas, who own these birds rarely slaughter them for table or eat their eggs except on special occasions. They prefer to sell the birds and the eggs. As there is very little investment and low running costs, profit could be said to be relatively high, but it is certainly not enough for the owner

of the birds to live on. In order to derive income from keeping birds, it is necessary to go into commercial poultry production (Oluyemi and Roberts, 1985). Olomu (1985), asserted that egg production is the popular enterprise for poultry farmers in Nigeria today. This is because the market for egg is more attractive.

The poultry industry in Nigeria has witnessed a lot of changes in the last 30-40 years. It evolved slowly and steadily through the early years, experiencing a boom in the late 70's to early 80's. By 1983, the industry experienced a serious crises that marked the end of the first era of poultry production in the country. Same 1983, it was asserted that there were approximately 5,000 registered commercial poultry farms in Nigeria. Currently, the number has fallen far below 2,000. The resultant corolary to this is that the poultry population due to poor management and disease outbreak, has dropped sharply. Survivors of that crises struggled to revamp the industry, with very little real progress (Job, 1992). A recent National Livestock Census estimated that the livestock population of Nigeria consists of 102.8 million indigenous poultry while the exotic commercial poultry are currently being enumerated (Hasidu, 1992). The Central Issue here is that the growth rate of the Nigeria poultry is far below the growth in demand (Jafiya, 1992).

Conversely, Winrock International Institute for Agricultural Development (1992) shows that in terms of poultry production, Nigeria rates highest. She has a total population of 190 million "chicken". Nigeria is distantly followed by Ethiopia, Tanzania, Sudan, Kenya, Benin and Mozambique with 57, 30, 29, 23, 23 and 19 millions respectively. Thus, relative to our population and land sizes, Nigeria is truly a "giant" in this and other

aspects. However, in terms of livestock share in agricultural production as Nigeria's figure is the lowest, with only 18.00 percent. It thus follows that crop production (cereals, tubers, grain legumes etc) accounts for the remaining 82 percent of agricultural production in Nigeria (Okaiyeto, 1992).

Ogunmodele (1979), like winnock international institute for agricultural development set forth the primary reason why poultry industry in fast growing in Nigeria,but relatively young. This is because the local chickens, duck and guinea fowls have not been reared for ages in the country. Rather, these birds were reared by the extensive system of management and the intensive production on country wide basis, largely by the private enterpreneurs, started less than two decades ago. Within the last decade, many poultry units producing broiler and/or eggs have been established and the operation feed the nation programme stimulated greater interest in the backyard production of chickens.

The enthussiasm set forth to stimulate poultry industry could not be sustained by small scale operators as poultry feed became scarce and expensive due to shortage of maize primarily and perhaps also due to increase in the prices of protein sources conventionally used in ration formulation for chickens. Consequently the expected supply of proteins products from chickens and other classes of poultry should play a prominent role in alleviating the protein deficit, especially protein of animal origin. But, Offiong (1979) saw poultry as of comparative recent origin in this country. Though poultry had been kept in almost every household by our for bears for many generations and continued to play a role in rural sociology, commercial poultry farming is not more than two decades or so old

in Nigeria. As a new industry, it is still going through some teething problems. There are a number of factors which must grappled with in order to succeed in the poultry enterprise. Some of these problems or factors are financing, land use, and location of the industry, the birds, management, nutrition and products marketing.

Nigeria residents, both urban and rural areas, are aware that local hens produce very low due to the nature of being uncared for and thriving largely for feeding through scavenging, present no great problems or mortality such as we experience with the modern high producing exotic type chickens. However, it is argued that the local chickens can not provide a living for the farmer. The economics of present day egg demand the husbandry of highly prolific laying birds, and in addition, labour saving methods which invariably involve much more unnatural conditions such as our highly intensive system of management.

Under this highly intensive system, how many hens should we crowd into a unit area without detriment to their well being and without subjecting the birds to serious stress which may result in low performance, reduced weight gain or even death? What are the best method of rearing young stock so that they express their full genetic potential during their productive life? How do we feed and manage young chickens of different ages to prevent poor growth rate, disease and even mortality?

The answer to the above questions will help a long way, as it was known in Nigeria several years ago, poultry business was never an industry but a side line activity. The

subject of poultry keeping was never taken seriously. Today, the poultry industry in Nigeria is becoming not only important but challenging. The activities for the development of poultry as an industry started with the Ministry of Agriculture. Private farmers never took it seriously as a source of income. It was reported that poultry industry in Nigeria started about 40 years ago, and the impact was only felt about 10 years later (Callistus, 1978).

2.2 Poultry Production System

Many systems of poultry keeping exist in Nigeria. The most important ones are the deep litter and battery cage systems in commercial poultry keeping, and the range and semi-intensive systems used mainly by rural poultry farmers. sometimes, however, those engaged in backyard poultry keeping employ deep litter or slattered floor system (Callistus, 1978). But Ogundipe (1976), asserted that management of adult bird on intensive system appeared economically feasible and disirable mean of boosting poultry production of peasant.

2.3 Socio-Economic Characteristic of Farmers

Three groups of poultry keeping are identified in the country today. According to Callistus (1978), the first group is the peasant poultry farmer, while the second is the backyard and small unit farmer. These two groups together form the rural sector of the poultry farmers. The third group is the commercial poultry farmer.

The peasant or village poultry farmer is contended with 5 - 25 birds which receive

little or no care. The birds almost manage themselves wandering about near their owner's houses or perhaps in some crude structures which have been provided for them. Hens make their own nests near the house and lay their eggs, brood, and hatch the chicks. The chicks fend for themselves at the mercy of such predators but their productivity is low.

The backyard and small unit poultry farmers keep about 50 - 500 birds, and practice simple but often inadequate husbandry methods. They supply some feed and use some simple equipment. They serve as the bridge between the village poultry farmer and the commercial poultry men. The use of exotic breeds or improved strains is practised. The farmers are members of the elite who keep poultry as a hobby and part time enterprise. Some of the farmers in this category have discovered that poultry is a paying concern and could be used to cut-down on the family expenses. the absentee commercial poultry farmer is emerging from this group.

The third group is the commercial poultrymen. This new-style poultry farmers are successfull businessmen or professional men whose basic incomes come from other interests. Their poultry farms are investments to provide extra income and employment for relatives. It is a delibrate attempt to provide a better standard of nutrition for the bulk of the people who have too little animal protein in their diets. These farmers are intelligent, educated and successful in some other career. Although they may not know much about poultry when they start, they are far above the old idea of peasant poultry farming. The commercial poultry farmer does not devote full time to the farm, so the actual running of it is left to a manager. Success of the farm depends largely on the

aptitude of the manager for the poultry work. Farms are sited mainly for the owners convinence either near a town where he works in order to facilitate supervision and the sales of eggs, or in his home village where he will have land available and relatives anxious for employment. In this case, there is usually no running water and electricity, but storage tanks are used to reserve water in the wet season.

The backbone of the poultry industry is likely to be the smaller units for quite a time to come, with the few bigger units catering for the cities. At present there is a handfull in the 15,000 plus range, quite a substantial number in the 5000-10,000 range, and a large number in the 100 - 1000 range.

2.4 The Role of Government in the Poultry Industry

Government role has been largely to encourage private enterpreneurship through training, incentives supply of subsidised inputs (day-old chicks, point of lay birds, equipment), free duty on imported chicks and poultry equipment, tax holiday for inventors, guaranteed credit scheme, and subsidised veterinary services. In addition, government has set up hatcheries, feed mills and demonstration farms.

In 1962, the former Western State organised an egg marketing scheme which assisted farmers on grading, storage and marketing of eggs. The scheme marketed about 370,000 dozen eggs in 1964. a similar scheme was also operational in the former Eastern Nigeria in 1966. Recently, there has been a sustained government backing campaign to increase poultry production at both commercial and subsistence (backyard) levels.

The Federal government has also continued a programme of importation and distribution of maize and concentrates and the establishment of cooperative feed mills (David-west, 1979). With the view of improving the domestic fowl of the country, the following breeds were introduced by government in December 1920 (Indian game, light sussex, and Rhode Island red). To prevent inbreeding a further twelve male birds were purchased from England in 1922. Of these breeds, the Indian game is by far the best. The birds lay only from 10 to 15 eggs in a clutch and then want to sit. In habbits they are closely akin to the native fowl of the country. They are strongly advocated for distribution to natives, where the production of chickens for the table is the first consideration.
The light sussex is also a good bird. The eggs are slightly tinted in colour but not very large. The Rhode Island red is a first rate all round bird and lays a good sized dark brown egg. This is a very hardy breed, and being almost exactly the colour of laterite, less liable to attack by hawks than the light sussex. The Rhode Island has proved so popular that it is now kept by the agric department to the exclusion of the two others (NAD, 1928). Olomu (1985), further stressed that there are a number of good layers with over 20 strains in Nigeria today. Some of the popular exotic breeds are Harco, white leghorn, Haddock 380, Rhode Island Red, Tetra, Warren, Hyine Bili, Plymonth, Bacoac, Rock and Hubbard.

Callistus (1978), asserted that the development of poultry as an industry started in the early 1960's. Extension and Research Liasion Services were established by the governments of the federation to teach farmers modern techniques of agricultural and poultry husbandry. The various governments of the federation started the farm settlement scheme. These settlements, based on the Israeli experience, were entirely new agricultural

developments. They were run as cooperatives with common marketing and purchasing facilities. On several of these settlements poultry were kept by the settlers. Over 96 layer cage unit was issued to each settler; their chicks and feeds were purchased in bulk. The aptitude of the settlers for poultry work naturally varied, but many managed their small units with great attention and had much success and landable results.

The estimated national needs for livestock and poultry are more than what is produced now. As part of the federal government policy to increase the production of food, "operation feed the nation" was launched on March 31, 1976. The scheme was designed to inject a sense of urgency into normal programs and bring home to all the need to produce more food. The role poultry can play, as a source of fast protein producing animal is great.

Also confirmed, that government embarked on many schemes to help poultry farmers. Multiplication centres have been built and operated by the Nigeria livestock and meat authority to produce day old chicks. These are sold to farmers at subsidised rates. The federal livestock department has been called upon to establish animal production units with feed mills attached to each unit. The National Animal Production Research Institute was established in Shika, under Ahmadu Bello University, to handle all types of livestock research programs, including poultry. But at very young age of this institute, in 1984, the federal government banned the importation of day old chicks and hatcheable eggs. therefore causing a serious set back to the industry.

2.5 Profitability of Poultry (layer) Production

Among the different kinds of livestock that are profitable and possibly successful in Nigeria, agriculturists and nutritionists consented that the process is of developing the poultry industry seems to be the fastest means of bridging the protein deficiency gap presently prevailing in the country. In addition, when compared to other kinds of livestock, poultry has by far the quickest and the highest turnover rate. It is therefore little surprising that funds invested in poultry production are recouped faster than in any other livestock enterprise (Ikpi and Akinwumi, 1979).

Any casual observer feels convinced that egg production is a profitable venture in Nigeria today. Once the pullets are raised to point of lay, the processes became fairly simple, being made up of feeding, watering, keeping the poultry house clean and collecting eggs. In the past one decade, egg sales have not created much problem and producers could be of any size or scale. However, the levels of profit vary according to levels of management, technical knowledge and attention to details. Egg prices have climbed steadily higher from 40 kobo per dozen (1 per create) in the mid-60's to about 2.50 per dozen (6.25k per create) in 1978. The price increases can be attributed not only to rising production costs, but also to the long chains involved in egg distribution. But the biggest cause for rising egg prices is the excessive demand over supply, as a result of greater awareness among the populace on the nutritional value of eggs. In addition, national policy has consistently banned importation of table eggs (Olayide and Akinwumi, 1979).

Olayide and Akinwumi (1979) stressed that, the egg production scene has continued to attract more people due to the simplicity of the process. Once pullets, come into lay, the activities become routine and cash flow problems are minimized. But concluded that poultry industry in Nigeria is not well organised. Today, many individual small producers have the illusion that they are making profits whereas vigorous analysis would show that the profits, if any, are marginal. Poultry keeping as a profitable business where properly organised and, in consequence, large commercial flocks now exist on general farms.

The trend to over supply must remain a constant threat to poultry profit and, for survival in the poultry business today a rising standard of efficiency is essential. This does not automatically mean that the owner of a small flock can no longer find his poultry business, whether part or general farm or a small specialized unit, a worthwhile venture. The decline in small farm flocks is undoubtedly due to in part to dissatisfaction at an apparently small return. Some have gone out because of the realisation that the flock is not securing a profit; others have given up because they have come to believe the business that, the small flock is doomed.

The evidence of surveys by university economists and other indicates that the size of the flock is not a factor dictating whether high profits are to be gained or not. The small flock owner has certain advantages compared with his larger colleague; he also has some disadvantages (MOAFF, 1964). Adegeye and Ditton (1985) observed and defined farm management as a practical aspect of the applied science of agricultural economics, as it embrace the application of physical and biological sciences in keeping with the economics

of profitable resource allocation for maximizing the farm net income.

They also realised that the costs of the small flock can also be low in some circumstances, compared with the large unit, in so far as food outlay and depreciation on housing are concerned. On some farms there is a certain amount of waste food, such as household scrap, which, if used with a grain balance, can provide a reasonably satisfactory diet. It must, however, be appreciated that the high laying bird of today needs carefully constituted diet. The waste and some home mixed foods may be cheap diet and a reduced egg production must assessed by the farmer who may find it more profitable, after a trial, to use a more expensive food and get an increased egg output.

It will, it is hoped, be clear that the small flock may posses certain advantages denied to the large units. If efficient labour, unneeded elsewhere on the farm, is available; if existing unused housing can be effectively and cheaply adapted to the needs of the birds and if good food can be supplied in the limited quantities needed at below the ruling market price or anyone of those aims achieved then the small flock will generally have lower costs per bird than the larger unit. And if the calibre of the management is such that the performance of the layers is as good or better than the big "poultry factory" then the smaller man in recieving a greater profit margin than his bigger colleagues, and so a substantially greater return on his invested capital. Even if, no account of poorer environment, he is achieving a slightly lower egg output per bird, his labour costs should still enable him to do as well or better than the larger flock owner. Too often, however, the small man employs paid labour to look after a limited number of birds in a poorly

designed awkwardly situated house, with unsatisfactory equipment leading to food waste. The small flock can not hope to compete in efficiency and profitability, if it is merely a poor copy of a large efficient unit that is better managed and designed to reduce labour costs, and in which good mechanical aids replace costly but in efficient and uninterested labour.

On the side of the big poultry business are certain advantages which must not be forgotten. The new house for the large flock has the advantage of scale economics. Thus, as the size of the unit increases so the changes for housing and mechanical aids per bird became lower. The bigger the unit the more opportunity for labour to be fully employed. Unless the smaller flock owner takes full account of the special advantages he possesses, he is likely to compare unfavourably with the owner of the much bigger business (MOAFF, 1964).

Callistus (1978), said, poultry production is one of the most promising sources of additional income for the farmer. The addition of poultry to his farm activities has a number of advantages. It produces much needed protein food, it serves as a source of income and employment to many who would be unemployed; it has quick returns. The income return from poultry (layer) keeping begins to flow in as quickly as 22 weeks. a relatively small investment is required to establish a poultry farm when compared to other livestock farms; this is due to the low unit value of poultry and the low expenditure on poultry maintenance. A poultry farm of any size can be established in Nigeria, keeping in mind the feasibility of the disposal of the resultant poultry and eggs.

2.6 Problems Associated with the Poultry Production

The development of the poultry sector has been slowed down due to a number of constraints. The major ones include inadequate supply of day old chicks, feeds and equipment, lack of credit and managerial skill, and diseases. Internal supply of day old chicks is quite inadequate which makes it difficult for farmers to replace their stock at appropriate times (David-west, 1979).

Lack of information about the level of supply of eggs in the country at any point in time hits both producers and the consumers. Gluts often develop in certain areas simultaneously with scarcities in other areas of the country. This lack of cordinated information results in costly cross-hauling of poultry products which may lead to spoilage and/or wastage (Ikpi and Akinwumi, 1979). Ogundipe (1976) pointed out that management is an important problem, and as a factor tha affects profitability. If it fails the farm-firm also fails.

2.7 The Use of Poultry (layers) Production Inputs

For a profitable production cycle, it is said that the feed use for point of lay bird to the end of lay, the layer consumes about 41 kilogrammes of feed. It is also of interest that from one day old to the end of lay it consumes about 50 kilogrammes of feed.

On labour, to operate economically one labourer should handle about 1500 to 2000 layers on deep litter system and 2000 - 2500 layers in battery cage system. The number of birds assigned per labourer will depend on any additional assistance given for

undertaking such operations as egg collection and water supply where there is no pipe-borne water (Oluyemi,1985).

CHAPTER THREE

3.0 METHODOLOGY

3.1 The Study Area

The study area were Sabon Gari and Giwa Local Government of Kaduna state. Kaduna state is located in the Northern part of Nigeria, the state has an estimated population of 3,869,255 million with a total land mass of 45,567 square kilometre (Fos, 1991). Both local governments are grouped under Maigana zone of Kaduna State Agricultural Extension Services (Adetunji, 1997).

Sabon Gari has two districts (Sabon Gari and Basawa) and ten wards. It is situated at longitude 7° to 8° East and latitude 11° to 12° North. It has an average altitude of 640m. The average annual raining season extending april to October with minimum temperature ranging 27.2°C in the raining season to 35°C in april. The inhabitants are predominantly Muslims and Hausa, with farming and trading as there major occupations. Due to the location of Ahmadu Bello University in the area, the local government became a complex one with many ethnic groups. The farm economy of the area is characterized by small sized and fragmented land holding (Ali 1997).

Giwa is situated in the plain of the Northern part of the state. It lies between latitude 11.20° to 11.52°N and longitude 7.0° to 7.5°E. The area is bounded on the north part by Funtua and Malumfashi local government areas of Katsina state. It is located north west of Zaria in the transition zone between the northern guinea and sudan savanna where

livestock population is generally high in the northern Nigeria. On the west part, it is bounded by Birnin Gwari and on its south is the Igbabi local Government of same Kaduna state. There are more than twelve villages. Predominant language spoken in the area is Hausa and over 90 percent of the population are Muslim (Livestock system Research, 1989, NPC, 1991). agriculture occupies the main sources of livelihood for about 70 percent of the working population farming is traditional in nature with main emphasis on cultivation of crops and keeping livestock. Wet season usually begins in april/May and last for about five to five and half months. The area is chosen for this study because it has many small scale mixed farmers, in addition to its closeness to both A.B.U. and NAPRI.

3.2 Sampling Procedure

A preliminary survey was carried out in the study area during which the poultry farmers still in business were identified. The preliminary investigation informed the sample of 33 farmers collected for the study, using purposive sampling technique. Thereafter, structured questionnaires were administered.

3.3 Data Collection

The Structured questionnaire was used to collect information on the last production cycle of each farmer. The data collected cover 52 weeks of laying period. Data on socio-economic characteristics, production, labour, market price of output, farm expenses and finance were collected.

3.3.1 Socio-Economic Data

This included year of experience, level of education, level of income, year of cooperative participation, sex and age of the farmer.

3.3.2 Production Data

This covered stock population, quantity of inputs and output per each flock, etc.

3.3.3 Labour Data

The number of hours put into each flock population were provided. Also information was gathered for wage and number of hours spent.

3.3.4 Marketing Data

Data were gathered on quantity of eggs sold, spent layer sold and prices recieved.

3.3.5 Financial Data

Data were collected on the source of finance and management of finance.

3.4 Analytical Techniques

Descriptive statistics, Gross Margin analysis and production function analysis were employed to analyse the data collected from the survey.

3.4.1 Descriptive Statistics

Measures of central tendency such as mean and percentages and measure dispersion such as range were used to classify the socio-economic characteristics.

3.4.2 Farm Budgeting Analysis

According to Olukosi and Erhabor (1988), a farm budget is a detailed physical and financial plan for the operation of a farm for certain period. The aim of a farm budget is to compare how profitable different kinds of enterprise combination can be. In a nut-shell, farm budgeting involves considering the resources to be used, the choice of enterprises to be pursued and a calculation of expected receipts, expenditures and net farm income.

There are several methods of budgeting, but in this study Gross Margin analysis was employed to calculate the profitability of the poultry (layer) business. Gross Margin is expressed as:

GM = GR-TVC, where

GM = Gross Margin

GR = Gross Revenue

TVC = Total Variable Cost.

The unit of calculation is N/100 birds.

3.4.3 Production Function Analysis

According to Olayide and Heady (1982), the production function states the technical relationship between inputs and output in any production processes. In mathematical terms, this function is assumed to be continuous and differentiable. Assume an implicit, continuous and differentiable function of the form:

$$Y = F(X_1, X_2, \ldots X_n)$$

where Y = output in physical terms

$(X_1, X_2, \ldots X_n)$ = inputs in physical terms.

Among the numerous production algebraic equation forms are linear, spillman, quadratic, power (Cobb-Douglas), Square root exponential, trancedental and semi log fuctions. According to Heady and Dillon (1961); Olayide and Heady (1982); Olukosi and Ogungbile (1989), all types of production functions are possible in productivity studies. Various studies have fitted them into all kinds of agricultural production data, each subject to its assumption's and limitations. There is no single functional type that can be used to characterize agricultural production under any given environmental conditions.

Production function was constructed using important factors of production that were easily measurable. These were flock population, labour and feed.

The socio-economic linear function was constructed using the socio-economic characteristics variables. These are year of experience, level of education, level of income, cooperative participation, sex and age of the farmers.

The total physical output was regressed on the two setting of independent variable inputs. Two functional forms of the production models were used for production function and one for the socio-economic.

These were:

(1) A Cobb-Douglass Form of the type

$$Y = b_o\, x_1^{b1}\, x_2^{b2}\, x_3^{b3} + ei$$

In logarithmic form, the function is of the type

$$\text{Log } Y = \text{Log } b_o + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3 + ei$$

(2) A semi-log form of the type;

$$Y = \text{Log } b_o + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3 + ei$$

Where Y = Total eggs produced

X_1 = Flock population

X_2 = Labour in man-hours

X_3 = Feed in Kilogram (kg).

(3) A Linear function of the type

$$Y = b_o + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + ei$$

Where Y is for total eggs produced. While X_1 - X_6 listed below were same for the three functions.

X_1 = Year of experience

X_2 = Level of education
X_3 = Level of income
X_4 = Cooperative participation
X_5 = Age of farmers
X_6 = Sex of the farmers.

Ibrahim Ib... Ahmadu Bel...

4. Correlation coefficient between variables $Y, X_1, X_2, X_3, X_4, X_5$ and X_6 was conducted.

3.5 Limitation of Study

Crises in the business that led to collapsed of so many big poultry farms, thereby confined samples to the number collected for the study. Majority of the farmers are educated and coupled with the presence of National Animal Production Research Institute and Ahmadu Bello University in the study area, the importance of education was difficult to ascertain.

Collecting data was generally difficult from the respondents. It requires a lot of patience and time to get respondents to respond to such complex questionnaire and interview. In calculating revenue from eggs, they did not have accurate record of crack and wasted eggs and used drug quantities record were not kept and that accounted for why drug was not regressed in production function analysis.

Finally, despite the high percentage of $\bar{R}^2$, half of the independent variables were not significant at 10percent. This could be as a result of multicollinearity or heteroskedasticity. This led to the correlation coefficient conducted.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Socio-Economic Characteristic of the Poultry keepers

Data on socio-economic characteistics of the poultry keepers were confined to Age, Year of experience, level of education, cooperative participation, sex and level of income. The aim of investigating these socio-economic particulars was to ascertain if they bear any significant relation to the production of eggs.

4.1.1 Age Structure of Respondents

The estimate as shown in Table 4.1 indicates that only 6.06 percent of the respondents sampled are below 20 years of age. 21.21 percent are between the age of 21 and 30 years. about 33.33 percent are between the age of 31 and 40 years while 33.33 percent are between 41 - 50 years of age. On the whole, 66.66 percent of the total farmers are between 31 and 50 years of age. The table also shows that 6.06 percent of the respondents are between the age 51 and 60 years.

Kashim Ibrahim Library,
Ahmadu Bello University,
Zaria, Nigeria.

Table 4.1: Age structure of Respondents in Giwa and Sabon Gari Local Governments of Kaduna state.

Age group	No. of respondents	% of Total	Mean for the Group
< 20	2	6.06	16.00
21 - 30	7	21.21	27.43
31 - 40	11	33.33	36.27
41 - 50	11	33.33	47.00
51 - 60	2	6.06	55.50
Total	33	=100.00	41.77

Source: Field survey, 1998

4.1.2 Respondents Years of Experience in Poultry (Layers) Keeping

Some researchers use years of experience of respondents in lieu of management as a factor of production. The belief is that the higher the years of experience, the more accurate in taking decisions.

As shown in Table 4.2, about 76 percent of the respondents have less than 10 years of experience in poultry (layer) production. The respondents in this group have the mean experience of 3.76 years. The result also shows that about 22 percent of the respondents have between 11 and 20 years of experience in poultry (layer) production and the respondents in this group have the mean experience of 15 years while 3 percent of the respondents have between 21 and 30 years of experience in poultry (layer) production. The

result shows that about 24 percent of the total respondents sampled are very experienced in the systems of poultry (layer) production practice in the study area. They are therefore aware of the consequences of their actions and production decisions which will in effect determinine the output of their production.

Table 4.2: Years of Experience in Poulty (layer) production of Respondents in Giwa and Sabon Gari Local Government of Kaduna State.

Range of Years	No. of respondents	% of Total	Group Mean of years
< - 10	25	75.76	03.76
11 - 20	07	21.21	15.00
21 - 30	01	03.03	30.00
Total	33	100.00	16.25

Source: Field survey, 1998.

4.1.3 Respondents' Level of Education

The distribution of respondents among educational levels shows that about 13 percent of the respondents have primary education. About 27 percent of the respondents have secondary education while about 61 percent have tertiary education. The level of education attained is an important attribute of an individual. This determine the ability of a particular producer to easily accept and adopt innovations that could bring about increase in production or reduction in production costs.

In the study area, that is highly institutionalised, the respondents are majority small holders, but about 88 percent of the total respondents has secondary education and above.

Table 4.3: Level of Education of Respondents

Educational Level	No. of respondents	% of Total
Primary	4	12.12
Secondary	9	27.27
Tertiary	20	60.61
Total	33	100.00

Source: Field survey,1998.

4.1.4 Respondents' Cooperative Participation

As shown in Table 4.4, about 64 percent of the respondents are not participating in any cooperative organisation at all. Six percent of the respondents are one year old in cooperative society, while about 24 percent of the respondents are up to 2 years in cooperative society. The result also show that about 6 percent have up to three years cooperative society participation.

Table 4.4: Cooperative Participation of the Respondents.

Year(s) of Participation	No. of respondents	% of Total
NIL	**21**	63.64
1	**02**	06.06
2	**08**	24.24
3	**02**	06.06

Source: Field survey,1998.

4.1.5 Sex of The Respondents

The result of the study shows that about 70 percent (23 respondents) of the poultry (layer) production keepers sampled are male, while about 30 percent (10 respondents) of the producers are female.

4.1.6 The Respondents' Level of Income

The level of income of the respondents is measured in point of lay birds equivalent. Table 4.5 shows that less than 19 percent of the respondents have less than 100 point of lay birds as return from last production cycle. About 39 percent of the respondents have between 100 and 200 birds, while about 42 percent of the respondents have between 200 and 300 point of lay birds as a return per 100 birds used in production.

Table 4.5: Level of Income in Point of Lay bird equivalent per 100 birds used in production of the Respondents

Level ofIncome	No. of respondents	% of Total	Mean of Group
< 100	6	18.18	70.16
101 - 200	13	39.40	159.69
201 - 300	14	42.42	248.50
Total	33	100.00	222.88

Source: Field survey,1998.

4.2 Poultry (layer) Production System

The result of the study revealed that 100 percent of the respondents in the study area practice deep litter system. about 90 percent of the respondents' keep brown layers, while the remaining 10 percent keep Black layers and most of the respondents (80 percent) sources their birds Jos, Kaduna and Sapele with few of the respondents (about 20 percent) from Zaria. Almost all the respondents are operating on small holder production. Also the result shows that 100 percent of the respondents have primary source of income from their major occupation and poultry (layer) production is only meant to augment their source of income to meet their standard level of living. Though in running the poultry business. About 36% of the total respondents were involved in cooperative participation. While the remaining 64% were basically depending on their major occupation in running the business.

Table 4.6 shows that less than 40 percent of the respondents have less than 500 laying birds. About 46 percent of the total respondents have between 500 and less than 1000 birds, while 9 percent of the total respondents have between 1000 and 1500 laying birds. The result also show that non of the respondents have laying birds between 2000 and 2500 while 1500 to less 2000 and 2500 to less than 3000 are 3 percent each of the total respondents. The results show that majority of the respondents now keep about 1000 laying birds. This is an indicator of constraints facing the poultry keepers. Majority of the respondents interviewed have facilities to house between 5000 and 10,000 laying birds.

The study revealed that each bird consumed 0.1222kg of feed daily instead of 0.1125 kg daily. Also revealed by the study is the use of 0.007 man hour daily instead of 0.005 recommended by literature.

Table 4.6: Respondents stock Population.

No. of Birds	No. of respondents	% of Total	Mean flock of the group
< 500	13	39.39	467.46
500 - 999	15	45.46	680.80
1000 - 1499	3	09.09	1144.00
1500 - 1999	1	03.03	1950.00
2000 - 2499	0	00.00	-
2500 - 2999	1	03.03	2750.00
Total	33	100.00	740.82

Source: Field survey,1998.

4.3 Socio-Economic Regression Analysis

The socio-economic analysis is to measure the impact of each socio-economic characteristics to production, when the characteristics come together to produce an output. Linear function regression analysis was employed to determine the coefficient of the independent variables of the socio-economic characteristics.

The result of the socio-economic regression analysis is shown in Table 4.7

Table 4.7: Linear Function Regression Analysis for Socio-Economic Characteristics.

Variables	Regression Coefficient	Standard Error	T-Value	Level of Significance
Year of experience	-17475.060	6455.516	-2.707	0.05
Level of education	-2908.512	4354.383	-0.668	N.S
Level of Income	155.907	24.612	6.335	0.01
Cooperative Particition	30077.730	39294.831	0.765	N.S
Age	2992.986	2328.641	1.285	N.S
Sex	111295.548	48033.552	2.317	0.10
Constant	-180961.935	147988.373	-1.223	N.S

Source: Field survey, 1998.

$\bar{R}^2$ = 0.852

N.S = Not significant

F = 11.581, at 0.01 level of significant.

Ibrahim Ibrahim Library,
Ahmadu Bello University,
Zaria, Nigeria.

The $\bar{R}^2$ (adjusted coefficient of multiple determination) was estimated to be 0.85 which mean 85 percent of variation observed in the output was accounted for by all the variables in the regression equation. F-Value of 11.58 was significant at 1 percent significant level which is an indication that independent variables included in the model were important in explaining the variation in the output. Two of the variables (year of experience and level of education) were inversely related to the output. Though three of the variables were not significant to the production, but were related to the output since their regression coefficient is not zero. Three of the independendent variables, year of experience, level of income and sex of the respondents were significant at 5 percent, 1 percent and 10 percent respectively to the output.

4.4 Correlation Analysis

It is degree to which two variables are linearly related, whether through direct causation, indirect causation, or statistical chance. This is usually summarized by a correlation coefficient. This coefficient can take on values between plus and minus unity. A value of -1 indicates a perfect negative relationship, +1 indicates a perfect positive relationship, and zero indicates no relationship. Values in between the extremes indicate the strength of relationship. It only reflect the degree to which variables are linearly related.

The Table 4.8 below show the Correlation coefficient of output and Socio-economic characteristics of the farmers.

The Table 4.8: The Correlation coefficient of output and Socio-economic characteristics of the farmers.

	Y (output)	X_1 (Yr of exp.)	X_2 (Level of ed.)	X_3 (Level of income)	X_4 (Coop. part.)	X_5 (Age)	X_6 (Sex)
Y	1						
X_1 (Yr of exp.)	0.474*	1					
X_2 (Level of ed.)	0.056	0.186	1				
X_3 (Level of income)	0.641*	0.440*	0.224	1			
X_4 (Coop. part.)	0.196	-0.239	-0.205	-0.067	1		
X_5 (Age)	0.228	0.618*	0.341**	0.413**	-0.175	1	
X_6 (Sex)	-0.207	-0.214	-0.051	-0.328***	-0.169	-0.324***	1

Source: Field survey, 1998.

* = significant at 1% level of significance

** = significant at 5% level of significance

*** = significant at 10% level of significance

Ahmadu Bello University, Zaria, Nigeria.

The above correlation coefficient shows that, there is a relationship between the production (output) and experience of the producer, output and level of income, experience of the producer and level of income, Age of the producer and experience of the producer. All these were significant at 1%. The relationship between age and level of education and that of age and level of income were significant at 5%. There also existed an inverse relationship between sex and level of income and between sex and age at 1% level of significance.

4.5 Gross Margin Analysis

The budget analysis shown by Table 4.9 was calculated per 100 birds and indicate that feed input accounted for about 74 percent of the total cost of production, thus confirming the report of Downey and Trocke (1981) that the largest out of pocket expenses item for farmers in recent year has been purchased feed; while the point of lay birds input accounted for about 24 percent of the total cost of production. The result also shown that labour accounted for less tha 2 percent of the total cost of production and drug accounted for less than 1 percent of the total cost of production. the total variable cost was N139790.66 . Feed, drug, labour and point of lay birds accounted for N104167.52, N431.55, N2456.74 and N32734.85 respectively. The gross revenue was N199,272.07 and the gross margin is N59,481.41. Appendix A and B show the details of the gross margin analysis.

Table 4.9: Estimated Gross Margin analysis for Poultry (layer) production/100 birds.

Item/100 birds	Value/100 birds (N)
Gross Revenue	
Eggs	176363.77
Spent layers	22908.30
	199,272.07
Variable Cost	
Feed	104167.52
Drug	431.55
Labour	2456.74
Point of lay birds	32734.85
Total Variable cost	139790.66
Gross Margin	59481.41

Source: Field survey, 1998.

The study shows that each bird consumed 0.1222kg of feed daily instead of 0.1125kg daily. Also revealed in the use of 0.007 man hour per bird daily instead of 0.005 recommended. The total birds kept for the 52 weeks data collected were 24447. The man hour used on these birds was 58240mh instead of 40044mh. As recommended in the review, 2000 birds suppose to use 9mh per day. Also recommended is a bag (25kg) of feed to 200 birds daily.

Ibrahim Library,
Ahmadu Bello University,

It is difficult for 30 birds to produce 30 eggs in a day, because it take about 18 hours for an egg to form. In the data collected, the average production of the entire farmer is 73%. from this data, 30 birds produced 22 eggs daily and 41 birds produced 30 eggs (one crate) daily. The cost analysis of this shows that producing one crate of eggs cost about ₦120 ro ₦130 depending on the type and cost of feed used. One crate of eggs sell for ₦200.00 to ₦220.00 depending on the size and the level of demand. Each bird consumed about 20cl of water daily, but could increase or decrease depending on the weather. The use of well water was found common because of the disadvantage of treated water on pultry drugs when treated water is used, milk is always added to bind the free ions in the water.

4.6 The production Function Analysis

The importance of production function analysis lies in its ability to measure the contribution of each input to production when the inputs interacted with one another to produce an output. The result of the production functions analysis is shown in Table 4.10.

Though the poultry scientists have generally agreed that the egg production function is linear for feed consumed and eggs output only (Olayide and Heady, 1982). But with other production, inputs the double log model had the best "goodness of fit" with $\bar{R}^2$ of 0.97 (which is about 97 percent), out of the two models used. The F-value of 403.720 was significant at 1 percent which is an indication that independent variables included in the model were important in explaining the variation in the output.

Table 4.10: Regression coefficient of inputs with Cobb-Douglas production function equation

Variables	Regression Coefficient	Standard error	T-value	Level of significance
Feed	-0.163	0.218	-0.746	N.S
Labour	-0.135	0.052	-2.596	0.05

Flock population	1.230	0.201	6.112	0.01
Constant	6.731	0.853	7.891	0.01

Source: Field survey, 1998.

$\bar{R}^2$ = 0.97

F = 403.720 at 0.01 level of significant

N.S = Not Significant.

Two of the regression coefficients showed negative relationship with output, which mean the inputs were been over used and need to be reduced. But the flock population showed positive relationship with output, which mean an increase in number of the flock will lead to an increase in output. Labour and flock population were significant at 5 and 1 percent respectively.

Details of number of eggs produced, the flock population, the man-hour labour input and the kilogramme of feed used for the 52 weeks of data collected is on Appendix C.

4.7 Identified Problems of Poultry Production

The study revealed the followings as the problems facing the poultry producers.

The problems are finance, Technical knowhow of the business (knowledge), lack of extension services support, Diseases and vaccine failure, reputable day old chicks, expensiveness of feed, marketing of the eggs during heat period and unstable quality of the feed.

About 39 percent of the respondents are been confronted by the problem of finance while about 9 percent of the respondents identified experience as another problem.

The study shows that 3 percent of the respondents identified extension services support as another problem hindering the production of eggs, while less than 40 percent identified unstable quality of feed as another problem. About 49 percent identified marketing during the period of heat as a problem that suffer return on production, which is final implication is on success of the business. Also shown by the result is the problem of diseases and vaccine failure confronting about 61 percent of the respondents, while about 42 percent of the respondents identified high cost of feed as the major problem causing the collapse of most poultry farms of recent as its not conform with the price of eggs. Ogunfowora *et al.*, 1972, said the ability of producers to meet the cash expenses, for the general operation is very limited considering the low incomes of these producers. Thus, any attempt at agricultural extension and structural transformation should include the possibility of making funds available to the producers.

IKASHIM IBRAHIM LIBRARY

CHAPTER FIVE

5.0 Summary and Conclusion

An attempt has been made to examine the impact of socio-economic characteristics on small holders poultry (layers) production in Giwa and sabon Gari Local governments, Kaduna State. Primary data were collected from the farmers using structured questionnaire and personal interview. Samples were selected from the two local governments among the poultry keepers.

5.1 Socio-Economic characteristics

The socio-economic characteristics analysis in small holder poultry (layer) production has been studied with respect to year of experience, level of education, level of income, cooperative participation, age and sex of the respondents. Descripture statistics was used to summarized and described the body of the data.

In the study about 75.76 percent of the respondents were less than 10 years of experience, 21.21 percent were between 11 and 20 years and 3.03 percent were between 21 and 30 years of experience. The result showed that 12.12 percent of the respondents have primary education, 27.27 percent have secondary education, while 60.61 percent have tertiary education and this shows that educational level are closely similar in the surveyed area.

In the case of level of income valued at point of lay birds equivalent, 18.18 percent have less 100, 39.40 percent have between 101 and 200 point of lay birds, 42.40 percent of the respondents have between 201 and 300. Also revealed by the study is the cooperative participation of the respondents, 63.64 percent were not participating with any cooperative society, 6.06 percent had one year participation, 24.24 percent had two year participation and 6.06 percent were up to 3 years with cooperative societies.

With respect to the age of the respondents, the result showed that 6.06 percent were less than 20 years of age, 21.21 percent were between 21 and 30 years, 33.33 percent were between 31 and 40, 33.33 percent were between 41 and 50 and 6.06 percent

between the age of 51 and 60. also shown by the result is the sex of the producers where 70 percent of the respondents were male and 30 percent were female.

5.2 Socio-Economic Analysis

Year of experience, level of education, level of income, cooperative participation, age and sex of the respondents were used as independent variables in the regression equation. Linear function was used to examine the impact of these independent variables on eggs production. An $\bar{R}^2$ value of 0.85 which was significant was found for the independent variables. Four of the regression coefficients had positive signs (level of income, cooperative participation, age and sex) and it means they had increasing effects on output. Two of the regression coefficient had negative signs, which means year of experience and level of education had decreasing effects on output.

Three of the variables were significant at 5 percent, 1 percent and 10 percent for year of experience, level of income and sex of the respondents respectively.

5.3 Correlation Analysis.

The results show that, there is a relationship between the output and experience of the producers, output and level of income, experience and level of income, age of the producers and experience of the producers. All these were significant at 1%. The relationship between age and level of education and that of age and level of income were significant at 5%. There existed an inverse relationship between sex and level of income and between sex and age, at 5% level of significance.

5.4 Gross Margin Analysis

The budget analysis calculated per 100 birds indicate that feed input accounted N104167.52 of the total cost of production of N139,790.66. Point of lay birds, labour and drug accounted for N32734.85, N2456.74 and N431.55 respectively. The gross revenue

for the production of eggs per 100 birds was N199,272.07, while the gross margin was N59,481.41.

The study shows that each bird consumed 0.1222kg of feed daily instead of 0.1125kg daily. Also revealed in the use of 0.007 man hour per bird daily instead of 0.005 recommended. The total birds kept for the 52 weeks data collected were 24447. The man hour used on these birds was 58240mh instead of 40044mh. As recommended in the review, 2000 birds suppose to use 9mh per day. Also recommended is a bag (25kg) of feed to 200 birds daily.

It is difficult for 30 birds to produce 30 eggs in a day, because it take about 18 hours for an egg to form. In the data collected, the average production of the entire farmer is 73%. from this data, 30 birds produced 22 eggs daily and 41 birds produced 30 eggs (one crate) daily. The cost analysis of this shows that producing one crate of eggs cost about ₦120 ro ₦130 depending on the type and cost of feed used. One crate of eggs sell for ₦200.00 to ₦220.00 depending on the size and the level of demand. Each bird consumed about 20cl of water daily, but could increase or decrease depending on the weather. The use of well water was found common because of the disadvantage of treated water on pultry drugs when treated water is used, milk is always added to bind the free ions in the water.

5.5 Production Function Analysis

Feed, labour and flock population were used as independent variables in the regression equation. Cobb-Douglas function was chosen because it gave a better result than semi-log production function. An $\bar{R}^2$ value of 0.97 which was significant was recorded from the analysis. Feed and Labour regression coefficient had a negative signs.. It shows that feed and labour inputs had decreasing effects on output, but flock population had increasing effect on output. It means labour and feed were been used in excess for the production and flock population was not enough for the production.

The study shows that 3 percent of the respondents identified extension services support as another problem hindering the production of eggs, while less than 40 percent identified unstable quality of feed as another problem. About 49 percent identified marketing during the period of heat as a problem that suffer return on production, which is final implication is on success of the business. Also shown by the result is the problem of diseases and vaccine failure confronting about 61 percent of the respondents, while about 42 percent of the respondents identified high cost of feed as the major problem causing the collapse of most poultry farms of recent as its not conform with the price of eggs. Ogunfowora *et al.*, 1972, said the ability of producers to meet the cash expenses, for the general operation is very limited considering the low incomes of these producers. Thus, any attempt at agricultural extension and structural transformation should include the possibility of making funds available to the producers.

5.6 Policy Implications

It was discovered during this study that despite poultry (layer) production profitability, there were fewer people in the business. The findings revealed that the problems has been lack of finance for the execution of the project. Problem of diseases and vaccines failure that had cut up with so many producers. Expensiveness of feed and unstable quality of feed that had increase cost of production, where the return had virtually remain same. Also revealed had been lack of support from extension services and lack of experience of most respondents engaged in poultry (layer) production.

It was equally discovered that lack of reputable day old chicks and glut in sales of eggs that occurs twice every year scared most people from the business. This coupled with management defect which invariably cause by the socio-economic characteristics of the respondents were identified as the major cause of the collapsed of business of poultry (layer) production.

Finally, in the study area, it was discovered that majority of poultry keepers were engaged in other major occupation and poultry keeping as a secondary occupation and this

made supervision of the business porous. Whereas supervision in poultry (layer) production is as important as the business itself.

5.7 Reccomendations

1. Poultry keeping should be encouraged among rural farmers and commercial enterprises that would run it as a primary source of income. This will make supervision effective.
2. Non-govermental organizations such as cooperative societies should assist and encourage poultry business with credit facilities.
3. Government should provide an assistance in areas of drugs and vaccines, reputable day old chicks and expensiveness and quality of feed.
4. Government should provide extension service agents to assist the farmers in areas of Management and Technical know-how.
5. Farmers should plan their programme to reduce or remove losses of the glut periods.
6. Farmers should avoid change of attendants(staff) on a particular flock and should encourage the use of young literate staff.

5.8 Suggestions for Further Study

From the findings and conclusions of this study, the following recommendations are made:-

i. More studies should be carried out all over Nigeria to ascertain the impact of socio-economic characteristics on poultry (layer) production. More importantly among the producers that run the business as major occupation.

ii. Effort should be made in further studies to examine the effect of this characteristics on broilers production, poultry in general and comparative studies of poultry production.

Kashim Ibrahim

iii. Impact study of National Animal Production Research Institute on Poultry (layer) production should be conducted.

Ibrahim Library,
Ahmadu Bello University,
Zaria, Nigeria.

REFERENCES

Adegaye, A.J. and Ditton, J.S. (1985). Essentials of Agricultural Economics Impact publishers, Nigeria Limited, Ibadan.

Adetunji, M.A. (1997). "Impact of IAR Improved Varieties of cowpeas and sorghum on farming systems and living standard of farmers in Shika and Bomo villages" Unpublished B.Agric Project. Department of Agricultural Economics and Rural Sociology ABU., Zaria.

Ali, I.L. (1997). "The Economic of Popcorn production in sabon gari Local Government Area" Unpublished B. Agric. project. Department of Agricultural Economics and Rural Sociology ABU., Zaria.

Appleby, M.C., Hughes, S.O. and Elson, H.A. (1987): Mannual of poultry production in the propics, CAB International.

Callistus, C.K. (1978). Improving rural poultry production in Nigeria. An Unpublished M.Sc Thesis, Department of Animal Science, ABU, Zaria.

David-west, K.B. (1979). Poultry Production in Nigeria: Processdings of the first National Seminar on Poultry production.

Downey, D. W and Trocke, J.K. (1981). Agricultural Business Management pp.7.

FAO, (1985). Poultry feeding in tropical and subtropical countries pp.1-3.

Ikpi, A.E. and Akinwumi, J.A. (1979). The future of poultry industry in Nigeria: Proceedings of the First National Seminar on Poultry production.

Jafiya, I.A. (1992). The role of the Nigeria Agricultural Industry: Revamping Poultry Production, Management and Feeding Training.

Job, T.A. (1992). Poultry production in Nigeria: Status Problems and prospects: A paper presented at the workshop organised by Limscu on the Nigeria Livestock Industry.

Livestock system Research, NAPRI, (1989): Exposition of activities presented at NAPRI seminar.

Mann, G.E. (1955). Poultry Breeding, Genetics and system of Breeding. pp. 1-4.

M.O.A.F.F. (1964): The small Poultry flock; Ministry of Agriculture, fisheries and food; Bulletin No. 198.

N.A.D. (1928): Hints on keeping English poultry in Nigeria. Nigerian Agricultural Department. pp 8.

Offiong, S.A. (1979): The Poultry Industry - factors to consider: proceedings of the first National Seminar on poultry production.

Ogundipe, S.O. (1976). The raising of guinea fowl. AERLS Extension guide No. 83, Poultry Series N0. 10, Produced and distributed by AERLS/ABU, Zaria

Ogunfowora, O.S.M. and Olayide S.O. (1972). "Derived resource product supply and farm policy in the North central state of Nigeria" unpublished Ph.D. Thesis.

Ogunmodele, B.K. (1979). The future of the Poultry Industry in Nigeria: Proceedings of the First National Seminar on poultry production.

Okaiyeto, P.O. (1992). Project analysis for Poultry Enterprises: Revamping poultry production; Management and feeding Training Manual.

Okaiyeto, P.O. (1992). Poultry production in Nigeria: Past, present and future: Revamping Poultry Production; Management and Feeding Training Manual.

Olayide, S.O. and Akinwumi J.A. (1979). The economics of commercial broiler and egg production in Nigeria: Proceeding of the First National Seminar on Poultry production.

Olomu, J.M. (1985). Practical hint for background poultry producers. Animal production series No. 1, NAPRI, Zaria.

Olayide, S.O. and Heady, B.O. (1982). Introduction to Agricultural Production Economics. pp 31 - 35 and 41 - 44.

Olukosi J.O. and Erhabor P.O. (1988). Introduction to Farm Management Economics : Principle and application agitab Publishers Ltd, Zaria.

Olukosi, J.O. and Ogungbile A.O. (1989). Introduction to agricultural Production Economics: Principle and application Agitab Publishers Ltd, Zaria.

Oluyemi J.A. and Roberts F.A. (1985). Poultry Production in Warm wet climates. pp.3-10.

Ibrahim

APPENDIX A

Gross Margin Analysis

S.N	GR	Subtract	TVC	Equal	GM	Eq. No of point of lay birds	Eq. No. of eggs
1	980166	-	670700	=	311266	1038	46690
2	1053250	-	732100	=	321150	918	45878
3	1060667	-	727550	=	333117	951	49967
4	2248427	-	1374200	=	874227	2498	119212
5	1021053	-	651505	=	369548	1231	55432
6	1009227	-	628630	=	380597	1269	57100
7	3619460	-	2625160	=	985300	2815	155573
8	2138933	-	1270240	=	868693	2896	130304
9	2157220	-	1297000	=	860220	2868	129033
10	915700	-	632830	=	282870	943	33945
11	887994	-	732450	=	155544	444	222221
12	1861653	-	1454350	=	407303	1163	61096
13	5341466	-	3387640	=	1953826	6513	279118
14	946123	-	693950	=	252173	721	37826
15	1127283	-	688900	=	438383	1461	59776
16	940140	-	688385	=	251755	719	35965
17	1049277	-	714100	=	335177	1117	50277
18	1068294	-	660875	=	407419	1164	58203
19	1754000	-	1465200	=	288800	825	43320
20	1322766	-	982300	=	340466	1134	51070
21	1035653	-	736650	=	299003	854	40773
22	922080	-	725100	=	196980	563	29547
23	1112258	-	733150	=	379108	1083	51697
24	859893	-	641410	=	218483	728	32773
25	1071493	-	794800	=	276693	922	41504
26	1074333	-	708000	=	366333	1145	54950
27	3063046	-	1918900	=	1144146	3814	171622
28	1091600	-	948220	=	143380	477	21507

29	784997	-	707250	=	77747	222	11662
30	1611783	-	1146520	=	465263	1550	66466
31	625181	-	549240	=	75941	253	10849
32	1755200	-	1624120	=	131080	410	19662
33	1047116	-	706900	=	340216	1134	48602

APPENDIX B

Gross Margin Analysis

S.N	Original flock population	GR (₦/100 birds)	TVC(₦/100 birds)	GM (₦/100 birds)
1	500	196033.20	134140.00	62253.20
2	500	210650.00	146420.00	64230.00
3	500	212133.40	145510.00	66623.40
4	1000	224842.70	137420.00	87422.70
5	480	212719.40	135730.20	76989.20
6	478	211135.40	131512.60	79622.80
7	1950	185151.80	134623.60	50528.20
8	990	216053.80	128307.10	87746.70
9	985	219007.10	131675.10	87332.00
10	486	188415.60	130211.90	58203.70
11	475	186946.10	154200.00	32746.10
12	995	187100.80	146165.80	40935.00
13	2750	194235.10	123186.90	71048.20
14	495	191136.00	140191.90	50944.10
15	500	225456.60	137780.00	87676.60
16	470	200029.80	146464.90	53564.90
17	473	212835.10	144847.90	67987.20
18	485	220266.80	136262.90	84003.90
19	1000	175400.00	146520.00	28880.00
20	700	188966.60	140328.60	48638.00
21	500	207130.60	147330.00	59800.60
22	480	192100.00	151062.50	41037.50
23	490	226991.40	149622.50	77368.90
24	460	186933.30	139437.00	47496.30
25	580	184740.20	137034.50	47705.70
26	500	214866.60	141600.00	73266.60
27	1432	213899.90	134001.40	79898.50
28	600	181933.30	158036.70	23896.60

29	455	172526.80	155439.60	17087.20
30	860	187416.60	133316.30	54100.30
31	356	175612.60	154280.90	21331.70
32	942	186327.00	172411.90	13915.10
33	560	186985.00	126232.10	60752.90

APPENDIX C

Production Function Analysis

S.N	No. of eggs in 52 weeks	Flock population X_1	Labour (man hour) X_2	Feed (in kg) X_3
1	128275	500	1456	22750
	134750	500	1274	22750
	140350	500	1094	22750
	275240	1000	2548	45500
	135878	480	1092	20475
	134176	478	1092	20475
	496178	1950	3640	81900
	283715	990	1274	40950
	286833	985	1274	40950
	119130	486	1092	20475
	109892	475	1820	22750
	243428	995	2912	45500
	676638	2750	2912	109200
	123356	495	1820	22750
	136675	500	1274	22750
	117520	470	1274	20475
	138904	493	1274	22750
	135292	485	1092	20475
	222600	1000	2912	45500
	173215	700	1274	31850
	124180	500	2184	22750
	122472	480	1820	22750
	134967	490	1274	22750
	111734	460	1820	20475
	138974	580	1274	27300
	143150	500	1274	22750
	416497	1432	2184	63700

145740	600	1820	27300
100687	455	1274	22750
200769	860	2912	36400
78123	356	1274	18200
227955	942	2912	54600
127988	560	1820	22750