CONTRIBUTION OF SMALL SCALE POULTRY FARMING IN BANGLADESH

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CERTIFICATE

This is to certify that thesis entitled **"CONTRIBUTION OF SMALL SCALE POULTRY FARMING IN BANGLADESH"** submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE IN AGRICULTURAL EXTENSION AND INFORMATION SYSTEM,** embodies the result of a piece of *bona fide* research work carried out by **Md. Abdul Hannan, Registration No. 27557/00721** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

I further certify that such help or source of information, as has been availed of during the course of this investigation has duly been acknowledged.

Dated: 7. 2. 08
Dhaka, Bangladesh.

(Prof. Mohammad Hossain Bhuiyan)
Supervisor

Dedicated to
My
Beloved Parents

ABBREVIATIONS AND ACRONYMS

BAU	=Bangladesh Agricultural University
BBS	= Bangladesh Bureau of Statistics
BCR	=Benefit Cost Ratio
cm	=Centimeter
DLS	=Directorate of Livestock Services
e.g	=For Example
et al	=Et alia (and others)
etc	=etcetra
FFYP	=Fifth Five-Year Plan
GDP	=Gross Domestic Product
gm	=Gram
GOB	=Government of Bangladesh
HSC	=Higher Secondary Certificate
ha	=Hectare
i.e.	=That is
kg	=Kilogram
mt	=Million ton
MS	=Master of Science
No.	=Number
"000" TK	=Thousand Taka

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CONTENTS

CHAPTER III METHODOLOGY

CHAPTER IV **RESULTS AND DISCUSSION**

LIST OF TABLES

TABLES

LIST OF FIGURES

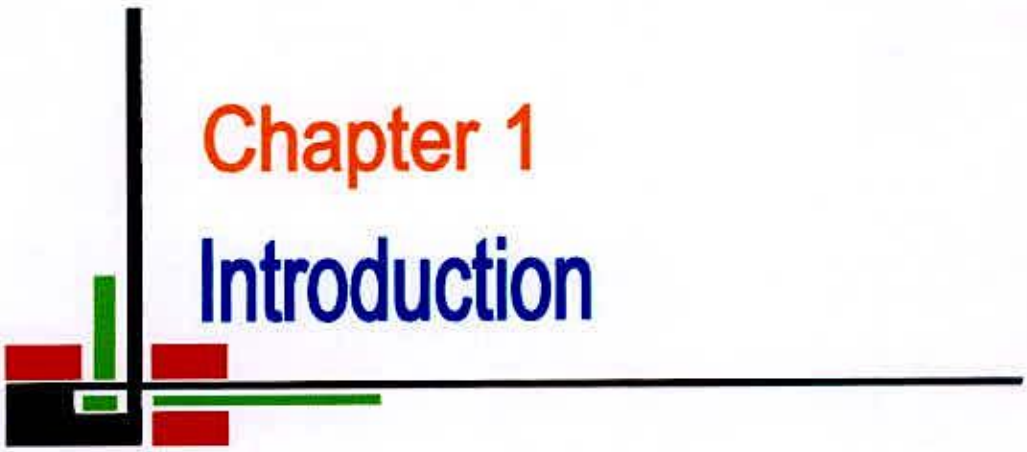
LIST OF APPENDIX

APPENDIX

CONTRIBUTION OF SMALL SCALE POULTRY FARMING IN BANGLADESH

ABSTRACT

The study was undertaken to investigate the socioeconomic characteristics of poultry farm owners and to assess the relative profitability of broiler and layer poultry farms and to determine the contributions of key variables to the production process of the farms. In total, 80 poultry farms, 40 from each of the selected broiler and layer poultry farms were selected randomly in Savar Upazilla of Dhaka district. Data was collected during 10 July to 10 August 2007 with the help of Interview schedule. Coefficient of correlation was used in order to analyze data in accordance with the objectives. To achieve the main objective of the study, a simple tabular analysis and the cost and return analysis were done. Cobb-Douglas production function model was also employed to estimate the contributions of the key variables: feed, human labour, vaccine and medicine, electricity to the production of poultry farms. The study revealed that on an average the total costs per poultry farm per year were Tk 2, 88,581.00 and 3, 24,661.00 for broiler and layer farm, respectively. The yearly gross returns from per broiler farm were Tk 3, 54,093.00 and from per layer poultry farm were Tk. 4, 64,971.00 having net returns were Tk 65,512.00 and Tk 1, 40,310.00, respectively. This implies that layer poultry farm was more profitable than broiler poultry farm. Correlation analysis shows that level of education, farm size, annual family income, Cosmopoliteness, poultry farming knowledge, training and annual expense had significant relationship with their farm profit. However, age and family size of the poultry farmers had no significant relationship with their farm profit. This study also revealed that sample poultry farm owners faced some important problems, such as: capital and credit constraints, high prices of feed, frequent occurrence of diseases, inadequacy of veterinary care and services, non-availability of chicks, low market price of products and pollution of environment made by chicks. If steps were taken to solve these problems, the owners of both broiler and layer poultry farms could earn much higher profits than the existing level.



Chapter 1

Introduction

CHAPTER I

INTRODUCTION

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1.1 General Background

Poultry in Bangladesh, as an emerging sub-sector of livestock, play a pivotal role in her economic development by providing employment to different sections of people. In addition to combat the challenges of inadequate nutrition at home, poultry industry in Bangladesh is also trying to earn a good deal of foreign exchange by exploring export possibilities. This industry, along with the other relevant sectors of agriculture, has committed to the nation to supply the cheapest sources of prime quality of animal proteins (meat and eggs) in the diet of people. Though the expansion and development of this industry is remarkable in the recent years, particularly in commercial sector, there is still a big gap between the demand and the supply of animal protein.

Chicken meat, unlike beef, is acceptable to all sectors of people irrespective caste and religion. Poultry sector contributes about 37% of the total animal protein supplied in Bangladesh (Ahmed & Islam, 1990). Bangladesh is a densely populated country and per capita land is 0.089 hectare (BBS, 1998). Due to the limited availability of grazing land and poor financial condition the scope for

development of livestock industries of large animals is limited here. Therefore, the poultry, more especially small-scale poultry farming has good opportunity to increase rapidly day by day.

There are about 160 million chickens and 36 million ducks in Bangladesh (Ahmmad, 2005). Commercial poultry production is increasing day by day still then about 70% of chicken and 80% to 85% of ducks raised by small and landless farmers in rural Bangladesh (Huque, 2003). Maximum people of Bangladesh live in substandard and poor condition. Their per capita income is 463 US $ per annum (BBS, 2005). They have no huge capital to build up a large-scale poultry farm. The traditional scavenging poultry rearing, most popularly known as family poultry production, which is still popular to the rural poor and a section of urban people due to less financial involvement. Among the poultry species, chicken population is dominant over others, covering almost 90 per cent followed by duck (8 per cent) and a small numbers of pigeons, geese and quails. Almost each rural family usually keeps 10-20 chicken, duck or pigeon that are traditionally maintained by the female members of the family, fed on household wastes and crop residues (Saleque, 2001; Rahman, 2003). Commercial poultry farming, mainly small-scale poultry farming has recently emerged in different areas of the country because of the market demands of poultry meat and eggs.

In our country poultry farming have a bright prospect because we have a large and ready market for meat and egg and also have a favorable environment to raising

poultry. Our landless and small farmer can easily start small-scale poultry farming because it requires small capital. If we can produce enough milk, meat and egg then we can fulfill our demand and we can export those items to other countries.

1.2 Importance and Scope of small-scale poultry

Poultry rearing is considered as a highly viable sector for generation of employment and income for the landless, unemployed youths and destitute women. Poultry farming, unlike crops, is not seasonal. People in this country raise poultry mainly with a view to getting meat, egg to fulfill their day-to-day consumption. Income from sale proceeds also helps them to satisfy their various financial needs.

Rural poultry, particularly chicken and duck production play a significant role in the socio-economic development of Bangladesh. Almost 90% rural family keeps a small number of indigenous chicken and duck under traditional scavenging system. (Masuda, 2006). The main feature of the small-scale poultry production system is low-input quick return. Poor farmers, who could not afford to keep large animals because of big investment, can easily maintain a few chickens or ducks within their homestead premises. It is believed that the contribution of scavenging fowl and duck in terms of supplying meat and eggs in country is more than the large commercial poultry. Rural women and children that generate cash income for the family in addition to supplying adequate eggs and meat to family's diet as the cheapest source of animal protein generally maintain poultry birds. Small-scale

chicken generally scavenges around the homestead areas at daytime where they eat kitchen wastes, leftover cereal grains like rice, wheat, pulse, green grasses and other feedstuffs. The birds to produce good quality animal protein instead of being wasted utilize these feedstuffs. Therefore, rural small-scale poultry keeping is found suitable for the poor farmers in Bangladesh, like some other developing countries to provide animal protein and cash income for rural women, landless poor or marginal farmers.

It may be noted that small-scale commercial poultry farming based on imported hybrid strain expanded in the country over the last seven to ten years. These small holders have a great contribution to the economy of the country (Sharaban, 2004). It has created the employment opportunity for disguised and unemployed people.

Balanced food is an important factor for normal growth and mental development for human body. Animal proteins such as meat, fish, milk, egg etc., are essential for balanced food. According to WHO (2001), 55 gm animal protein is required per person per day but we are getting only 7.6 gm. According to the report of GOB (1999), average per capita availability of meat is 13 gm per day and egg is 0.06 (no.) per day whereas per capita requirement of meat is 120 gm per day and eggs is 0.28 (no.) per day. To reduce the gap between demand and supply of animal protein, can play very significant role.

Poultry meat and eggs are used chiefly as human food. Poultry meat alone contributes 37 per cent of the total meat production in the country. Poultry

contributes about 22 to 27 per cent of the total animal protein supply in the country (Bhuyan, 1999).

Approximately 70 per cent people are suffering from malnutrition and about 81 per cent families do not have their calorie requirements. In addition to these, about 60 per cent families of Bangladesh cannot meet their protein requirement in their daily food consumption. Therefore poultry, especially small-scale poultry farming can play vital role to fulfill the nutritional deficiency in human body.

1.3 Justification of the study

Population pressure in Bangladesh is forcing marginal lands to be brought under cultivation, leaving practically little land exclusively for grazing of animals. Hence, the possibility of expansion of livestock farming is very limited in this country. Poultry however, have a shorter life cycle and their production requires less land and capital compared to other meat-producing animals such as cattle, sheep goat, etc. It should also be noted that crop cultivation in Bangladesh is subject to a high degree of risk and uncertainty and provides seasonal irregular and uncertain income to the farmers. Our consumption of non-cereal foods are among the lowest in the world and therefore, needs more production of eggs, meat, milk, etc., to get a satisfactory level of balanced diet as well as cash income.

Since the majority of people irrespective of caste/religion, prefer chickens and eggs, its demand is very high and the prices has gone up. As a result, a tendency to

initiate small-scale commercial poultry farming is observed both in rural and urban areas.

Maximum farmers of our country are poor. They are interested to set up small-scale poultry farm due to less financial investment. This type of poultry also contributes a lot to meet up our protein requirement as well as our employment opportunity. But small-scale poultry farming is negligible in our country. So, this type of farming should be evaluated keeping this view in mind present study was taken.

1.4 Objectives of the study

The overall objective of this research is to investigate various socioeconomic aspects of small-scale poultry farming in selected areas of the country. The followings are specific objectives of the study:

I. To identify and describe some major socioeconomic characteristics of poultry farmers. The socioeconomic characteristics are age, education, family size, farm size, annul income, cosmopoliteness, farming knowledge, training and annual expense.

II. To determine the profitability of the small poultry farms.

III. To explore relationship between profitability of small-scale poultry farm and socioeconomic characteristics.

IV. To identify the major problems facing by the farmers in conducting poultry business and suggest policy implication based on the findings.

1.5 Limitation of the study

Almost all research studies have some limitations in terms of time, money and personnel. The present study is not an exception to that. Despite the care taken to make this study more meaningful, there are still some limitations, which are highlighted below:

i. The researcher had to work with limited samples because of the constraints of time and funds. A large sample might have strengthened the findings.

ii. The farmers of Bangladesh do not keep any farm records of their farm business. So the data supplied by them in this study were from their memories. So, the accuracy of the data depends upon their sincerity and memories. As a result the probability of data errors cannot be ignored.

iii. The profitability analysis of poultry farms was done using constant input-output price relationship, which may be changed over time. This may also change the results, but the broad conclusions drawn from the present study is expected to remain unchanged.

iv. The findings of the study are based on data from a very small area of Bangladesh. So to draw any general conclusion on the basis of the results should deserve special caution and care for the country as a whole.

1.6 Assumption of the study

"An assumption is the supposition that an apparent fact or principle is true in the light of available evidence" (Goode and Hatt, 1952). The researcher had the following assumptions in mind while undertaking this study:

- The respondent included in the sample was capable of providing proper answer to the question in the interview schedule.
- The researcher who acted as interviewer was adjusted to social and environment condition of the study area. Hence the data collected by him and the respondents were free from bias.
- Views and opinions furnished by farmers included in the sample were representative views and opinion of the whole population of the study.
- The response furnished by the respondents were reliable i.e. they expressed the truth about their conviction and opinions.
- The respondents were more or less conscious about poultry farming.

- The findings of the study will have general application to other part of the country with similar, socio-economic, cultural and agro-ecological conditions of the study area.

1.7 Statement of the hypothesis

The following hypothesis was formulated to test the relationship between the selected characteristics of the poultry farmers and their profit.

Research hypothesis:

There is relationship between age, education, family size, farm size, annual income, cosmopoliteness, farming knowledge, training, annual expense of the poultry farmers and their profit.

For testing the hypothesis statistically, the following null hypothesis were formulated:

i. There is no relationship between age of the poultry farmers and their profit.

ii. There is no relationship between education of the poultry farmers and their profit.

iii. There is no relationship between family size of the poultry farmers and their profit.

iv. There is no relationship between farm size of the poultry farmers and their profit.

v. There is no relationship between annual income of the poultry farmers and their profit.

vi. There is no relationship between cosmopolteness of the poultry farmers and their profit.

vii. There is no relationship between farming knowledge of the poultry farmers and their profit.

viii. There is no relationship between training of the poultry farmers and their profit.

ix. There is no relationship between annual expense of the poultry farmers and their profit.

1.8 Definition of related terms:

For clarity of understanding, certain terms used throughout the study are defined as follows:

Farmers: The persons who were involved in farming activities are called farmers. They participated in different farm and community level activities like crops, livestock, fisheries, and other farming activities. In this study the owners of small-scale poultry farms were considered as a farm.

Age: It means the age of a farmer that will refers to the period of time from his birth to the time of investigation. In this study age refers to the period of time from the birth of a poultry farmer to the time of face-to-face interview with him.

Education: Education of an individual poultry farmer was defined as the formal education received up to a certain level from an educational institute. (e.g. School, College and University)

Family size: Family size refers to the total number of members of a poultry farm family including the respondent himself, his spouse, children and other dependent, who live and eat together in a family unit.

Farm size: Farm size refers to the total area on which a poultry farm family carries on farming operations, the area being estimated in terms of full benefit to the farmer's family.

Annual income: It means the total earning by a poultry farmer the respondents himself and the members of his family from agriculture and other sources during a year. It is expressed in taka.

Training exposure: It refers to the total number of days attended by a poultry farmer in his life to the various agricultural subject matter. Respondent received short/long term training in his entire life up to the date of interviewing as provided by different organizations is considered for this variable.

Cosmopoliteness: Cosmopoliteness is the degree which express extends of poultry farmers external orientation.

Respondents: People who have answered questions by an interviewer for a social survey. They are the people from whom a social research worker usually gets most data required for his research. In this study poultry farmers were the respondents.

Problem faced: The term 'problem faced' refers to different problems faced by the farmers at the time of operating different activities.

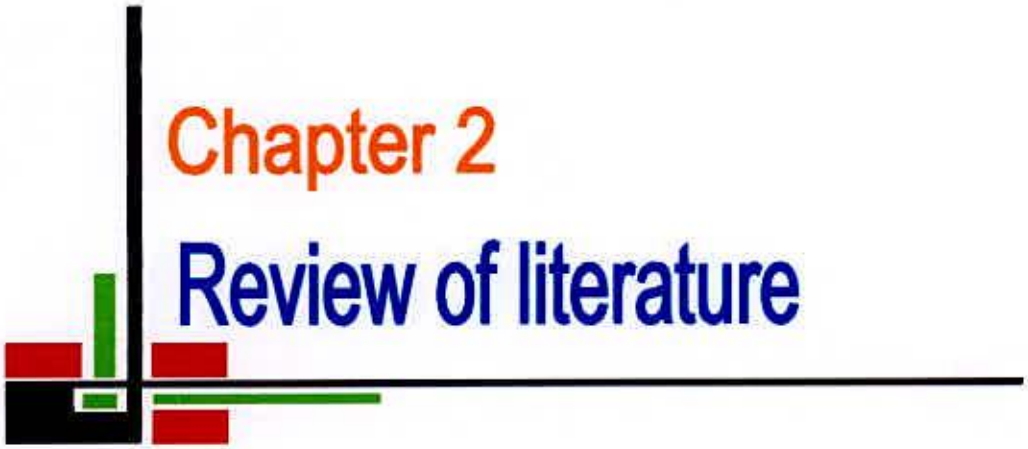
Variable: A general indication in statistical research of characteristics that occurs in a number of individuals, objects, groups etc. and that can take on various values, for example the age of individual.

Assumption: An assumption is "The supposition that an apparent fact or principle is true in the light of the available evidence'.

Hypothesis: Defined by Goode and Halt (1952), a proposition this can be put to " a test to determine its validity". It may seem contrary to or in accord with common sense. However, it leads to an empirical test.

Null hypothesis: The hypothesis, which we pick for statistical test, is null hypothesis (H_0). In this study null hypothesis is stated that there is no relationship between the concerned variables.

Statistical test: A body of rules that help to take decision regarding accepting or rejection of the hypothesis is defined as test. In this study if a null hypothesis is rejected it is assumed that there is a relationship between the variables.



Chapter 2

Review of literature

CHAPTER II

REVIEW OF LITERATURE

The purpose of this chapter is to provide a review of some previous research works, which are related to the present study. Although a good number of researches have been done in the poultry sector; it was found that only a limited number of works related were conducted in Bangladesh. However, the most relevant studies are reviewed:

Anonymous (1981) conducted a study at Daribhabakhali two miles away from the Bangladesh Agricultural University Campus. The study showed that the share of poultry in the total income of farm families was only 4.22 percent but 83.00 percent farming families were interested to raise poultry production.

Yasmin *et al.* (1989) studied on characteristics of backyard poultry farmers affecting their knowledge on poultry production in Bangladesh. Findings of the study indicated that 17 percent farmers had low knowledge compared to 70 percent medium and 13 percent high. Statistical test showed that education, family size, occupation, number of birds and extension contract of the farmers had a positive and significant relationship with their knowledge on poultry production.

However, farm size was negatively significant and age and income of farmers had no significant relationship with their knowledge on poultry production.

Miah (1990) conducted a study on small-scale poultry farms in Savar areas. The purpose of the study was to gain information about the profitability of small-scale commercial poultry farming. The average earning in birds in small and medium farms was 589 and 3139, respectively. The average number of birds in small and medium farms was Tk 1, 36,788.00 and 5, 67,304.00, respectively. The small and medium farms on an average annually earned Tk 3, 08,779.00 and 14, 80,302.00, respectively. He found that the profitability of small-scale commercial poultry farming was positively co-related to the sizes of individual farms. The study also revealed that profitability of poultry farming depends on the sizes of individual farms.

Ukill and Paul (1992) conducted a study on problems and prospects of broiler industry in Chittagong Region. They found that non-availability of chicks, prevention and control of diseases, predators, lack of balanced feed, housing lighting and fluctuations of market were the basic problems of broiler poultry farming. They also showed that 88 per cent profit within a year by broiler farming.

Haque (1992) presented a paper on "Rural poultry in Bangladesh economy" of Fourth National Conferences of Bangladesh Animal Husbandry Association. He

employed cost benefit analysis on 500 layers and 500 broilers. He found that the profit of layer farm was Tk 1, 05,876.00 and broilers' farm was Tk 37,146.00.

Paul *et al.* (1992) conducted a study on the profitability of layer poultry farm in Savar areas. The purpose of the study was to gain information about the profitability of small-scale commercial poultry farming. The average numbers of birds in small, medium and large farms were 100, 200 and 300, respectively. The average annual cost per small, medium and large farms were Tk 53,800.00, Tk 1,06,180.00 and Tk 1,53,800.00, respectively. The small, medium and large farms on an average annually earned Tk 72,000.00, Tk 1,44,000.00 and Tk 2,16,200.00, respectively. They found that the profitability of small-scale commercial poultry farming was positively co-related to the sizes of individual farms.

Ali (1993) conducted a study on the profitability of small-scale egg producing poultry farm in the Dhaka City in Bangladesh. In total 30 poultry farms in which 16 were small and 14 medium were selected, which were mainly egg producing poultry farms. The average number of birds in small farms was 61 while it was 178 in medium farms. The average egg production per year was 268 and 260 per hen in small and medium farms, respectively. The study also noted that poultry owners earned annually net return Tk 21,301.00 in small farm and Tk 6,731.00 in medium farm on the basis of cash cost. On the basis of full cost poultry owners

earned annually net return Tk 12,135.00 in small farm and Tk 51,556.00 in medium farm.

Islam (1995) conducted a study on economic analysis of poultry farms of different sizes in some selected areas of Dhaka City. He found that the relative profitability of small, medium and large poultry farms. The study revealed that total costs per poultry birds per year were Tk 406.17, Tk 373.86 and Tk 347.54 for small, medium and large farms, respectively. On the other hand, the average gross returns per poultry bird per year stood Tk 614015 for a small farm, Tk 599.67 for a medium and Tk 351.69 for a large farm.

Kitsopanidis, *et al.* (1996) studied the effects of the most important factors on the profitability of the poultry farming in Greece. The most important factors for poultry meat production were mortality and age of Final Live Weight (FLW) of broilers, because they affected the total feed consumed and the total FLW of broilers achieved. Analysis of these factors showed that an increase of mortality from 2.5 to 10.0 per cent and the age of FLW of broilers from 53 to 62 days led to a decrease in the profitability by 96.7 and 77.1 per cent, respectively.

Hasan (1997) examined the relative profitability of poultry rearing under the supervision of selected four different categories of farms under the supervision of Bangladesh Rural Advancement Committee (BRAC) in the Mirpur thana of Kustia

District. In total 72 samples of BRAC members were selected randomly. Out of which 20 from Model Rearer, 10 from Chick Rearer and 10 from Mini Hatcherer, 10 from egg and poultry bird Collector, 2 from Aratdar and 10 from Retailer. The study revealed that on an average the total cost per poultry farm per year was Tk 1,367.65, 6259.13, and 46,703.75 for key Rearer, Model Rearer, Chick Rearer and Mini Hatcherer respectively. The gross returns and net returns petr poultry farm per year were Tk 6,533.25 and Tk 5,165.00, Tk 1,71,50.00 and Tk 10,899.27, Tk 42,996.50 and 18,437.74, Tk 92,611.20 and 45,907.45 for key Rearer, Model Rearer,, Chick Rearer and Mini Hatcherer, respectively. The annual net return was the highest for the Mini Hatcherer but the net return per taka invested was the highest for the key Rearer.

Sarker (1998) conducted a study to know the existing poultry production, management and product utilization policy of the farmers in two northern districts of Bangladesh during February-March, 1997. The finding of the study showed that on an average number of egg production of breed Fayoumi, White Leghorn, Rhode Island Red, Australorp, Native Chicken and Duck were 140, 136, 111, 123, 51 and 58 per year, respectively. It was found that only 6 percent farmers used poultry vaccine regularly and 52 per cent farmers quite irregularly. Predator animals, non-availability of balanced ration and improved breeds were identified as the most important problems of poultry production in the northern part of Bangladesh.

Zebunnesa (1998) in her study revealed that the average annual income per household from poultry, dairy and sericulture groups were Tk. 23,388.40, Tk. 31,881.97 and Tk. 32,607.18 respectively. She estimated that total variable costs of poultry, dairy and sericulture were Tk. 32,979.00, 15,790.80 and Tk. 5,175.21 respectively. Annual gross margin obtained from poultry, dairy, and sericulture were Tk. 8,529.00, 13,992.00 and Tk. 15,642.00 respectively.

Bhuiyan (1999) studied the socio-economic characteristics of poultry farm owners and assessed the relative profitability of broiler and layer poultry farms. He worked on a total of 60 poultry farms taking 30 broiler farms and 30 layer farms from the Kotwali Upazilla of Mymensingh district. The study revealed that on an average, the total costs per poultry farm per year were Tk 2,99,482 and 3,14,620 for broiler and layer farm, respectively. The gross returns per year were Tk 3,55,772 and 4,37,477 for broiler and layer farm, respectively. The net returns per year were Tk 56,290 for broiler and Tk 1,22,826 for layer poultry farm revealed that most of the selected input variables had some significant impacts on the production of broiler and layer poultry farms.

Begum (2000) conducted a study to estimate the relative profitability of small, medium and large categories of broiler and layer farms and to determine the contributions key variables to poultry income. She found that total costs per broiler per farm per year stood at Tk. 2, 38,051, 525095, 1120630 and Tk 663943

for small, medium, large and all farms, respectively. For layer farms total costs per farm per year stood at Tk. 215255, 432179, 1192688 and Tk. 535129 for small, medium, large and all farms, respectively.

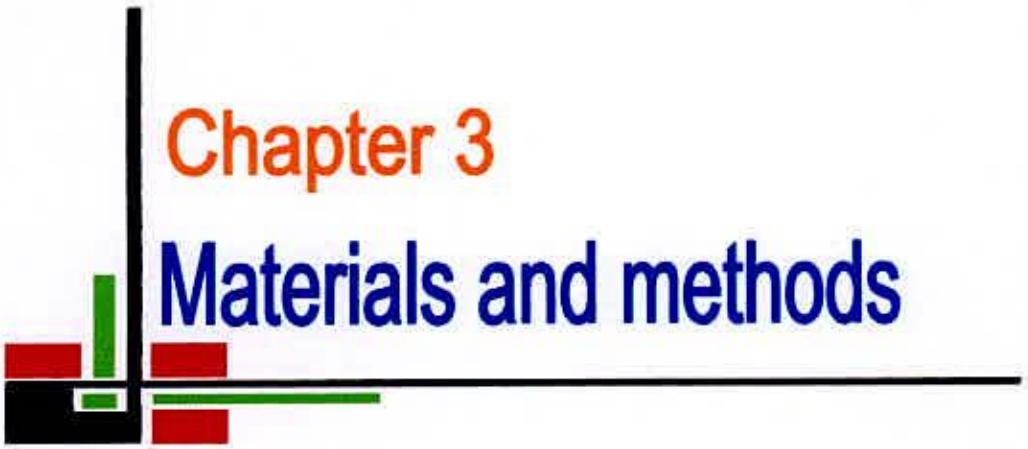
Karim (2000) conducted a study on economic analysis of broiler enterprise under contract farming system in Bangladesh. For this study the area selected was Bajitpur Upazilla of Kishoreganj district. The study showed that total costs per bird were estimated at Tk. 78.43 for small farms, Tk. 78.51 for medium farms, Tk. 78.32 for large farms and Tk. 78.31 for all broiler farms. Variable costs per bird were Tk. 71.33 for small farms and Tk. 71.81 for medium and Tk. 71.98 for large farms and Tk. 71.75 for all broiler farms. Average amount of gross return per bird stood at Tk. 89.21, Tk. 89.40, and Tk. 90.71 and Tk. 89.87 for small, medium, large and all broiler farms respectively. It may be seen that the variation in return for different farm categories was not insignificant. The findings of the study also showed that the broiler farms contributed significantly to the creation of self-employment/ product wage employment in the study area. The study showed that the proportion of savings increases with the rise in income. It indicated that broiler farming was playing a crucial role in creating employment opportunity in the rural and semi-urban areas of Bangladesh.

Nair and Ghadoliya (2000) based on the number of birds, classified farms into three size groups, viz. small, medium and large and also showed the economic viability of layer farming in the state of Goa. They showed that the total cost of maintenance per layer was Rs. 327.52, Rs. 320.00 and Rs. 307.52 for small, medium and large size farms respectively. The net returns per layer were also being Rs. 30.78, Rs. 46.35 and Rs. 64.98 for small, medium and large size farms respectively. On the return side, returns from eggs per layer accounted the maximum amount than other returns as would be expected. It was found from the study that the net returns were highest in the large size farms and lowest in small size farms indicating economics of scale. They also reported that better feeding, and proper management on large size farms resulted in higher egg production and returns per layer on these farms. Production cost of an egg was maximum for small farms and minimum for the large farms. They also calculated the cost-benefit ratio that was 1:1.11, 1:1.17 and 1:125 for small, medium and large size farms respectively. The ratio was also the highest for the large size group farms. It was concluded from the study that layer poultry farms of all categories were economically viable in the study area and they also showed that large size group layer farms were making more profits as compared with the medium and small size group farms.

Ahmed (2001) conducted a study on comparative economic analysis of broiler production under PROSHIKA supervised and private management in some selected areas of Tangail district. It was observed that broiler rising under both PROSHIKA supervision and private management were profitable but broiler production under private management was profitable than PROSHIKA supervision.

Bhuiyan (2003) conducted a study comparing economic analysis of poultry production under supervision of ABF and farmers own management in some selected areas of Kishoregonj district. The study reveals that in case of broiler farm total cost per year stood at Tk 8,33,860 and 6,53,952 under ABF supervision and farmers own management. The respective figures at layer farm per 18 months were Tk 32,81,098 and 7,09,712. It is evident from the study that the gross returns of broiler farm per year stood at Tk 11,01,786 and 8,84,482 under ABF supervision and farmers own management, respectively. On the other hand, gross returns at layer farm per 18 months stood at Tk 62,66,456 and 10,08,381. The net returns over full cost at broiler farm per stood at Tk 2,67,926 and 2,30,530 under ABF supervision and farmers own management, respectively. The respective figures for layer farm per 18 months were estimated at Tk 29,85,358 and 2,98,669.

Begum (2004) conducted a study on the profitability of poultry farms at smallholder production units in some selected areas at Muktagachha upazilla of Mymensingh district. She selected 3 commercial layer farms (Total number of birds 9,450) and 3 commercial broiler farms (Total number of birds 21,000). She showed that rearing cost per layer stood Tk. 1,014.80 for 1.5 year and total costs per broiler were estimated at Tk. 72.04 for 1 year. Average gross return per layer and broiler stood at Tk. 1,168.72 and 82.31 respectively. Net returns per layer stood at Tk. 153.92 and per broiler at Tk. 10.27. The study also noted that cost benefit ratio was 1.17 for layer farm and 1.14 for broiler farms. It was concluded from the study area than broiler farms.



Chapter 3

Materials and methods

CHAPTER III

METHODOLOGY OF THE STUDY

The focus of the chapter is to describe the selection of the study area, selection of the population samples, period of data collection, collection of data and their validity and reliability, analytical techniques and methods of measuring cost items and competitiveness along with other relevant methods.

3.1 Locale of the study

The study was purposely conducted at four villages namely Shadapur, Chakulia, Genda and Beraid in the Savar Upazilla under Dhaka district. The area was chosen for the following reason: i) availability of different categories of poultry farms; ii) easy communication facilities from the Sher-e-Bangla Agricultural University Campus to the area and iii) expected better cooperation from the owners of poultry farms. Before selecting the study area the author visited these areas to get him acquainted with the characteristics of the poultry farmers and specially practices involved in poultry farming.

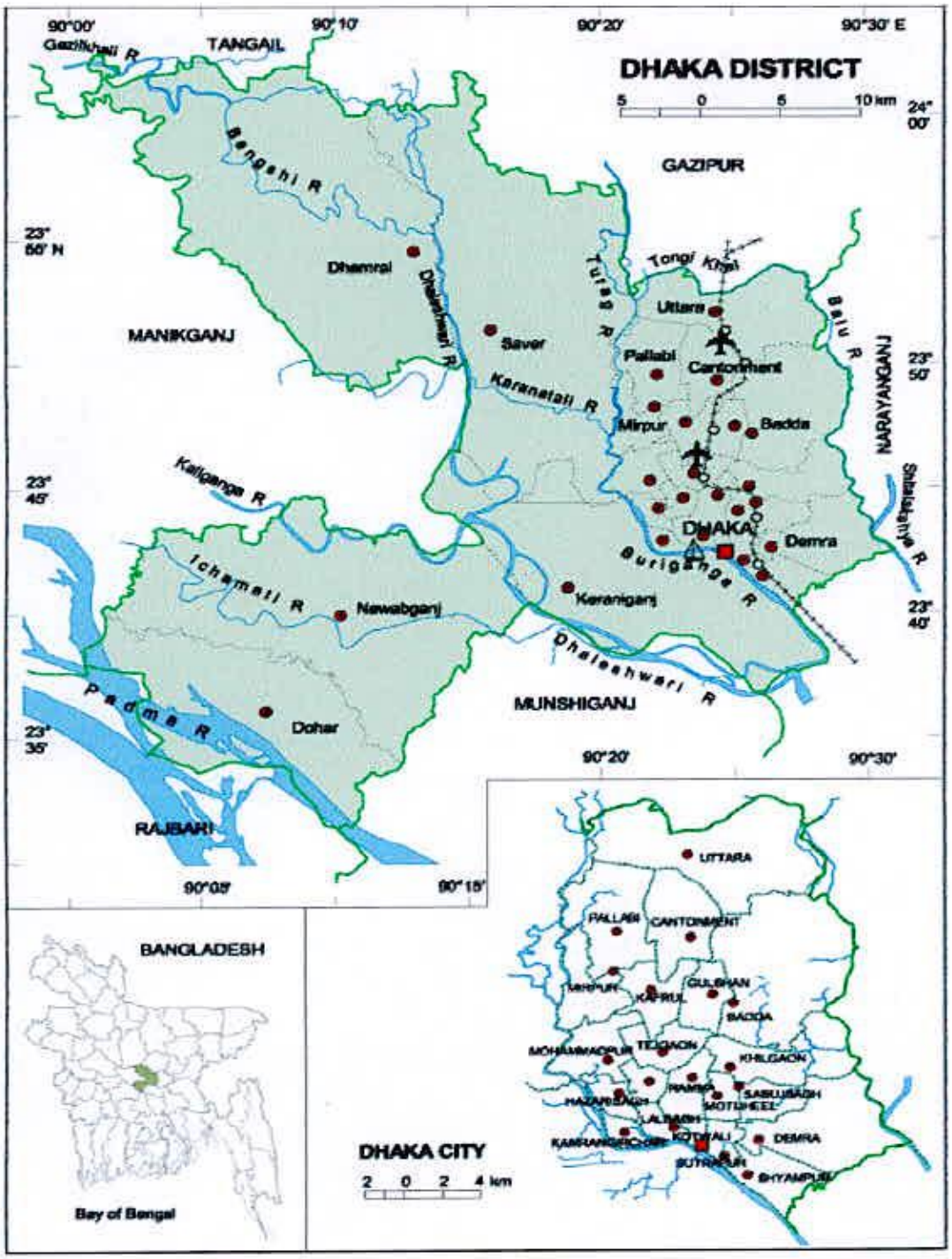
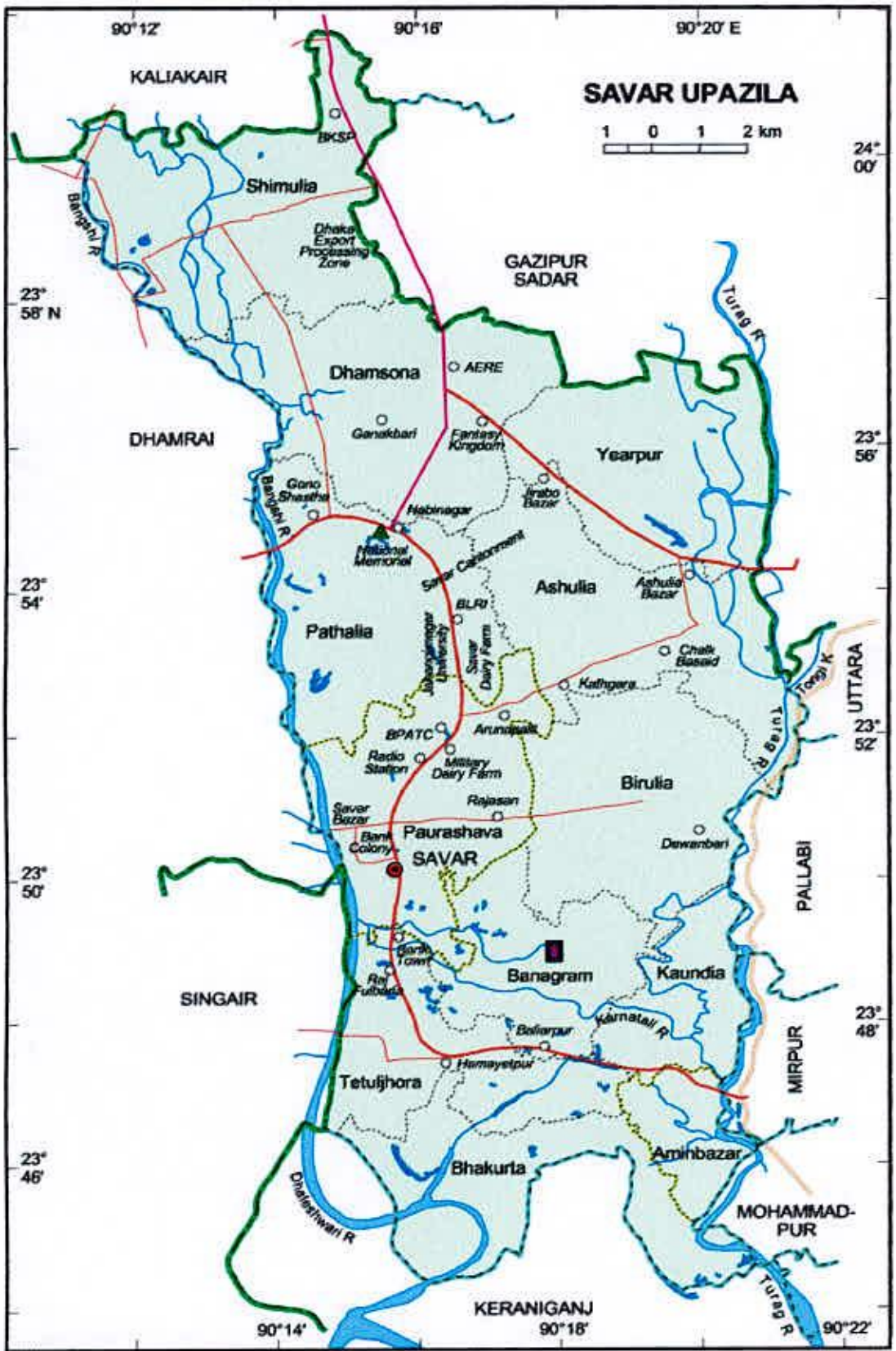


Figure 3.1 A Map of DHAKA District showing Savar Upazilla.



"STUDY AREA" Fig. 3.2 A Map of SAVAR upazilla showing Banagram union

3.2 Population and sampling procedure

It is not possible to make farm business survey covering all farms. For this reason, sampling was done to select representative farms to minimize time and cost of the study. There were 150 poultry farms in the study area. Out of these population 80 poultry farms were selected at random 30 belong to small farm having up to 500 birds, and 30 belong to medium having 500-1000 birds and 20 belong to large having more than 1000 and above birds.

3.3 Preparation of Interview schedule

In order to collect relevant data, an interview schedule was prepared keeping in view the major objectives of the study. The draft schedule was pre-tested by interviewing six respondents in the study areas. The draft schedule was improved, rearranged and modified in the light of the actual and practical experiences. After making necessary adjustments, a final survey schedule was developed in logical sequences of the following items of information:

i) Socioeconomic characteristics of poultry owners.

ii) Productivity indicators of the poultry farming and items of costs and returns.

iii) Inventory of the poultry farms.

iv) Problems of poultry farming and the suggestions of the poultry owners to solve those problems.

3.4 Period of data collection

The data were collected during July 2007 to August 2007.

3.5 Variables of the study

In descriptive survey research, the selection and measurement of variables constitute an important task. Ezekiel and Fox (1959) defined a variable as any measurable characteristics, which can assume varying or different values in successive individual cases. A research hypothesis contains at different values in successive individual cases. A research hypothesis contains at least two elements, an independent variable and a dependent variable. Thowsand (1953) defined an independent variable is that factor which is manipulated by the experimenter in his attempt to ascertain its relationship to an observed phenomenon. He further defined a dependent variable is that factor which appears, disappear or varies as an effect of the independent variables.

The dependent variable of the study was: Profitability of Small-scale poultry farming.

The independent variables included; age, education, family size, farm size, annual income, cosmopoliteness, and poultry farming Knowledge.

3.5.1 Measurement of Independent variables:

3.5.1.1 Age:

The age of a respondent was measured in terms of actual years from his birthday to the interview. One score was assigned for each and every complete year of a farmer's age.

3.5.1.2 Education:

A score of zero was given to a respondent who didn't know how to read and write, a score of 0.5 was given to the respondent who could sign only and a score of one was given for each year of formal schooling completed by the respondent i.e. one for completing class one, two for class two and so on.

3.5.1.3 Family size:

Family size of a respondent was measured in terms of actual members for his family. One score was assigned for each member of the family.

3.5.1.4 Farm size:

Farm size was estimated in terms of full benefit to the respondent. By considering benefit the farm size of a respondent was measured by using the following formula:

Farm size = A+B+C+ ½ (D+E)+F

Where,

A= Homestead area including orchard/Garden

B= Farm areas

C= Cultivation area owned by the respondent

D= Area shared in (Borga) by the respondent

E= Area shared out (Borga) by the respondent

F= Land taken from others on lease.

The farm size of a respondent was calculated in hectare

3.5.1.5 Annual income:

Income of a respondent was measured in taka on the basis of the total yearly earnings of his family from agricultural and non-agricultural sources. For determining agricultural income of a respondent at first the yields of all the crops produced in the immediate previous year of the study were converted into cash according to the market price. The values of other farming products encompassing live stock, poultry, fisheries etc. were taken into consideration. Earning from other non-farming activities (Services, Business, Labour and others) of the respondents and other members of his family was also calculating the income. Yearly earnings from farming and non-farming activities were added together to obtain the total income of a respondent. For calculation of income score, one was assigned one thousand taka of income. Annual income of a respondent was measured by using the following formula:

Annual income = A+B = ----------Tk.

Where,

A= Income from agricultural sources

B= Income from non-agricultural sources

3.5.1.6 Cosmopoliteness:

Cosmopoliteness of a respondent was measured in terms of his nature of visits to the six different place external to his own social system. The scale was used for computing the cosmopoliteness scores is presented below:

Nature of visit	**Weight**
Never visit	0
Occasional visit	1
Often visit	2
Regular visit	3

The cosmopoliteness score of a respondent was determined by adding the scores obtained for his visits to each of the six locations of places as shown in item no. six of the interview schedule (Appendix A). The cosmopoliteness scores of an individual could range from 0-36 where 0 indicated no cosmopoliteness and 36 indicated very high cosmopoliteness.

3.5.1.7 Poultry farming knowledge:

Poultry farming knowledge of a respondent was measured by asking him ten (10) questions on different aspects of poultry farming. The score two (2) was given to each of the questions. The total assigned score of all questions was 20. The score was given to their response at the time of interview. Answering a question correctly an individual could obtain full score, while for wrong answer he obtained zero score.

3.5.1.8 Training:

Training is essential for poultry farming. Training of a respondent was measured in terms of actual day/months for their percentage.

3.5.2 Measurement of dependent variable:

The dependent variable of the study was profitability of small-scale poultry farming.

3.5.2.1 Simple profitability analysis

Relative profitability of different categories of poultry farmer was examined on the basis of gross margin and net return analysis.

3.5.2.2 Gross margin analysis

Gross margin analysis was done to have an estimate of the difference between total return and variable cost. The argument for using the gross analysis is that farmers of Bangladesh are more interested to know their return over variable cost. Moreover, for short run analysis as well as for farm planning, gross margin analysis is widely used. This analysis is also easily understandable to the farmers because of its simplicity.

3.5.2.3 Net return analysis

The analysis considered fixed cost (which includes cost for land rent, interest on operating capital, depreciation of tools and equipment, etc.) Deducting all costs (variable and fixed cost) from gross return arrived at net return.

To achieve the main objectives of the study, a simple costs and returns analysis was used to determine the profitability of the selected poultry farms. For this purpose, the following equation was developed to assess the profitability of the poultry farms.

$$R = PeEs + PeEc + PeEg + PqQs + PqQc + PqQg - \Sigma (P_{xi}X_i) + Ic - TFC$$

Where,

R = Profit per poultry farm per year (Tk/year)

Pe = Per unit price of egg (Tk/piece)

Pq = Per unit price (Tk) of poultry/chick/pullet (Tk/kg)

Es = Total number of eggs sold in a year.

Ec = Total number of eggs consumed in a year by farm family.

Eg = Total number of eggs gifted in a year.

Qs = Total number of poultry/chicks/pullets sold in a year.

Qc = Total number pullet consumed in a year by farm family.

Qg = Total number of poultry/chicks/pullets gifts in a year.

Pxi = Per unit price of ith (variable) inputs.

Xi = Number/quantity of ith inputs (i=1,3, ----n).

Ic = Value of change in inventory.

TFC = Total Fixed Costs

Interpretation and discussion of the findings presented in simple terms, such as average, percentage, ratios, etc. In order to confirm some results normal test were performed. Normal tests for large samples were used to test the difference between two sample means when population variances were not equal.

3.5.2.4 Production functional analysis

To determine the contribution of the most important variable in the production process of poultry farms, the Cobb-Douglas production function was used. The log linear form of the model has, in fact, important application in economics and it is, therefore, widely used by many researchers in their economic studies (Dorman and Guise 1984, Ali and Miah 1994). Another advantage of this model is that the elasticity of production, for example, and returns to scale can easily be obtained from the results of the co-efficient. The following model was used in this study.

$$\mathbf{Y}= ax_1^{b1} x_2^{b2} x_3^{b3} x_4^{b4} x_5^{b5} D_2^{b6} D_2^{b7} e^u$$

Which was linearised in the logarithmic form as under:

$$\text{In } Y = \text{In } a + b_1 \text{ In } x_1 + b_2 \text{ In } x_2 + b_3 \text{ In } x_3 + b_4 \text{ In } x_4 + b_5 \text{ In } x_5 + b_6 + D1 + b_7 + D_2 + u$$

Where,

Y = Returns from eggs and poultry birds.

a = Constant or intercept of the function.

x_1 = Cost of feed.

x_2 = Cost of labour

x_3 = Veterinary expenses

x_4 =Cost of electricity

x_5 = Cost of purchase of day-old chicks

D_1 = Intercept dummy for farm size effect

$D_1 = 1$ for medium poultry farms;

$D_1 = 0$ for otherwise.

D_2 = Intercept dummy for farm size effect

$D_2 = 1$ for medium poultry farms;

$D_2 = 0$ for otherwise.

u = error terms

b_1-----b_7 = Parameters to be estimated.

A separate function was also estimated for the pooled data of poultry farms with intercept dummy for farm category

(e. g. D3 = 1 for poultry farms;

D3 = 0 for otherwise)

It was measured by the total profit in poultry farming of poultry farmers. One score was given for one thousand.

3.6 Procedure for computation of costs and returns

To determine the relative profitability of poultry farms, it is necessary to compute all cost items, which have to be deducted from the value of output. The cost of inputs is an important factor affecting economics decision of a farm manager. But it is quite difficult to estimate the costs of some production inputs. For purchased inputs costing were relatively straight forward as the actual price paid for the item. For home or farm supplied inputs, costing was done byusing the principle of opportunity cost. The cost items were divided under the following heads:

Cost of day old chicks: Cost of poultry birds is the money value of total costs of poultry birds, purchased by the owners of the poultry farms.

Feed cost: Cost of feed included ready made feed, such as, rice bran, wheat bran, fishmeal, bone meal, oil cake, salt, mineral, vitamin, D. L. methionin, (In ready made feed they used rice bran, etc)

Veterinary charge: Veterinary expenses included costs of vaccine, medicine and treatment. Veterinary expenses were calculated by taking into account the actual cost incurred by the sample farmers.

Electricity or fuel cost: Electricity or fuel cost has been measured as per unit appeared in a month

Cost of tools and equipment: The costs of durable assets like tools and equipment, poultry house, etc., were determined by applying straight-line

depreciation method for one year. The annual depreciation cost was worked out as follows;

$$\text{Depreciation} = \frac{\text{Original value} - \text{Salvage value}}{\text{Life of the asset}}$$

Housing cost: The cost of land use was calculated by taking into account of the depreciation cost, interest on housing value and repairing cost.

Land uses cost: The cost of land use was different for different plots depending upon to location, topography and fertility of the soil. The cost of land use may be estimated by using one of the alternative concepts (i) interest on the value of land and (ii) rental value of land.

The average rental value of land use was estimated according to the assessment of the farmers. The interest rate was charged at the rate of Tk. 10 per cent, which was the interest rate given on short-term deposits. Interest on the value of land was computed by using the following formula:

Interest on the value of land = $V \times I \times T$

Where, V = Average value of land

I = Rate of interest per annum

T = Length of production period

Interest on Operating Capital: In this study, the amount of money needed to meet the expenses on hired or purchased inputs was treated as operating capital. Interest on operating capital was computed at the rate of 10 per annum. Interest on operating capital was computed by the following formula:

Annual interest on OC = Operating Capital

IR = Rate of Interest

3.7 Measurement of problems

Ten problems were selected supposed to be faced by farmers in poultry farming. These were measured by using a ten-point scale. Scores were assigned to ten for very high problem, 8 for high problem, 6 for medium problem, 4 for low problem, 2 for very low problem and 0 for no problem. To ascertain the intensity of problem in poultry farming, Problem Facing Index (PFI) was computed by using following formula:

$PFI = P_{VH} \times 10 + P_H \times 8 + P_M \times 6 + P_L \times 4 + P_{VL} \times 2$

Where,

PFI = Problem Facing Index

P_{VH} = Percent of farmers having very high problem

P_H = Percent of farmers having high problem

P_M = Percent of farmers having medium problem

P_L = Percent of farmers having low problem

P_{VL} = Percent of farmers having very low problem

3.8 Methods of data collection

The researcher conducted the whole survey after the preparation of the final schedules. The face-to-face data collected from the selected poultry owners by direct interview with a set of interview schedules designed for the study. Before asking the individual questions, each owner of a poultry farm was explained in

brief the aims and objectives of the present study. They were then convinced that the study was purely an academic one, and was not likely to have an adverse effect on their businesses. To attain accuracy and reliability of data, care and caution were taken in the data collection. Attention was paid to the mood of the farmers and a congenial relationship was maintained between the respondents and the researcher.

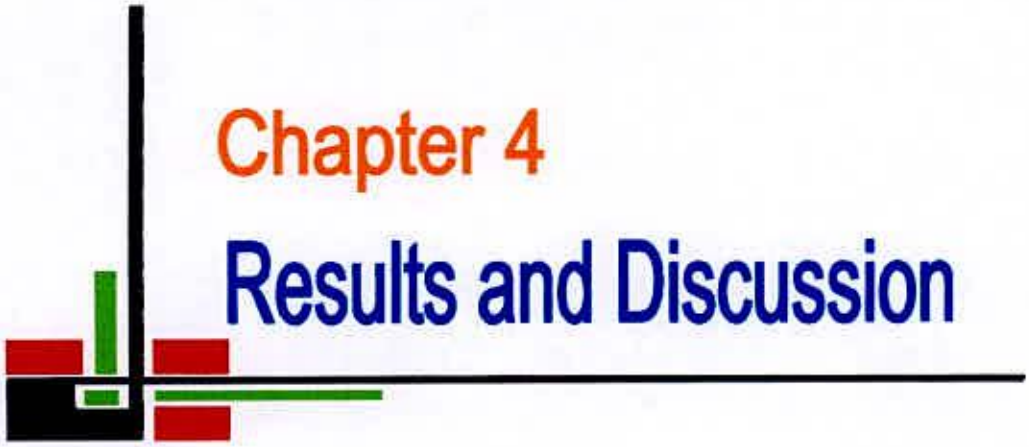
After completion of each interview, the schedule was checked and verified to be sure that answer to farmers was again interviewed for relevant answers. In order to minimize errors, data were collected in local units. These were subsequently converted into appropriate standard units.

3.9 Compilation of Data

The researcher coded and compiled after the data from the interview schedule. The local units were converted into standard unit. The qualitative data were transferred into quantitative forms by appropriate scoring techniques. The responses of the respondents from the interview schedule to a master sheet and then entering the data into the computer for analysis.

3.10 Analysis of data

All the collected data were summarized and scrutinized carefully and recorded in master sheets. Finally relevant tables were prepared in accordance with the objectives of the study. Data were presented mostly in tabular form, because it is simple in calculation, widely used and easy to understand.



Chapter 4

Results and Discussion

CHAPTER IV

RESULT AND DISCUSSION

The main purpose of this section is to provide a clear idea about the poultry farm and farm owners. The findings have been discussed under the following socio-economic characteristics.

4.1 Socio-economic characteristics of poultry producers

The salient features of the nine (9) characteristics of the farm owners, each of which constituted an independent variable are presented in Table 4.1

Table 4.1 Salient features of the characteristics of poultry farmers

Characteristics	Measuring units	Possible scores	Observed scores		Mean	Standard deviation
			Minimum	Maximum		
Age	Years	Unknown	25	68	38.91	9.72
Education	Schooling	Unknown	0	16	7.93	3.84
Family size	number	Unknown	3	10	6.16	1.81
Farm size	Hactares	0.2-3.0	0.091	2.31	0.45	0.36
Annual income	Thousand Tk. ("000" Tk)	Unknown	39	774	288.40	156.14
Cosmopoliteness	Score	0-18	2	9	5.40	2.39
Farming Knowledge	Score	0-20	6	17	11.24	3.21
Training	Day's	Unknown	0	30	14.47	10.92
Annual expense	Thousand "000" Tk)	Unknown	25	910	199.53	131.84

4.1.1 Age:

Age of the respondents ranged from 25 to 68 years, the average being 38.91 with standard deviation of 9.729. The poultry farmers of the study group were classified into three categories on the basis of their age as shown in Table 4.2

Table 4.2 Distribution of poultry farmers according to their age

Categories	Farmers (N=80)		Mean	SD
	Number	Percent		
Young aged (upto 30)	17	21.3	38.91	9.729
Middle aged (31-50)	54	67.5		
Old aged (>50)	9	11.3		
Total	80	100		

Data presented in table 4.2 indicate that the highest proportion (67.5 percent) of the farmers were middle aged compared to 11.3 percent of being old and 21.3 percent the young. However, data also revealed that 88.8 percent of the farmers were young and middle aged. It might be due to young and middle-aged people are generally more receptive to new ideas and practices.

4.1.2 Education

Education has its own merits and it contributes to economic and social development. Education also plays an important role in agricultural development especially in the livestock and poultry sub-sector. Education helps a person to have day-by-day information about the modern techniques together with technological change in various production processes. It makes a man more capable to manage scarce resources and hence to earn maximum profit (Miah 1990). It also helps a person to take proper decision regarding his farm business.

Table 4.3 Distribution of poultry farmers according to their education

Categories	Farmers (N=80)		Mean	SD
	Number	Percent		
Do not read or write (0)	6	7.5	7.937	3.842
Primary level education (I-V)	16	20.0		
Secondary level education (VI-X)	38	47.5		
Higher level education (>10)	20	25.0		
Total	80	100		

The table 4.3 reveals that most of the owners of selected poultry farmers are well educated and a very little less than half portion (47.5 percent) of the respondents fell in the secondary education and above to the respondents few them (25

percent) and (20 percent) were higher and primary level of education. Only 7.5 percent of the farmers had no education respectively. The findings indicate that education of an individual is likely to be more receptive to the modern facts and ideas; they have much mental strength in deciding of a matter related to problem solving.

4.1.3 Family size

The range of family size of the poultry farmers was from 3-10 members. The family sizes of the respondents are divided into three categories such as small, medium and large. The categories of the respondents are presented in the Table 4.4

Table 4.4 Distribution of poultry farmers according to their family size

Categories	Farmers (N=80)		Mean	SD
	Number	Percent		
Small family (upto 5)	32	40.0	6.46	1.81
Middle family (6-7)	27	33.8		
Large family (Above 7)	21	26.3		
Total	80	100		

Table 4.4 indicates that the highest proportion (40 percent) of the respondents had small family size compared to 33.8 percent and 26.3 percent medium and large family size respectively.

4.1.4 Farm size

Farm size of the respondents varied from farm to farm. The range of the farm size was from 0.09 to 2.31 and classified into three categories namely marginal, small and medium. The categories of the respondents are presented in the Table 4.5

Table 4.5 Distribution of poultry farmers according to their farm size

Categories	Farmers (N=80)		Mean	SD
	Number	Percent		
Marginal farm(upto 0.2 ha)	15	18.8	0.455	0.368
Small farm (>0.21-1.00 ha)	60	75.0		
Medium (>1.0-3.0 ha)	5	6.3		
Total	80	100		

Data presented in Table 4.5 indicates that more than one third (75 percent) of the respondents had small farm while 18.8 percent were marginal. However 6.3 percent of the respondents had medium farm.

4.1.5 Annual income

The annual income of the respondents in this study ranged from 39 to 774 and classified into three categories such as low, medium and high. The categories of annual income are presented in the Table 4.6

Table 4.6 Distribution of poultry farmers according to their annual income

Categories	Farmers (N=80)		Mean	SD
	Number	Percent		
Low income (upto 210'000 Tk)	14	17.5	288.40	156.14
Medium income (210001-366000 Tk)	53	66.3		
High income (Above 366000 Tk)	13	16.3		
Total	80	100		

Data furnished in the Table 4.6 indicates that the highest portion (66.3 percent) of the respondents had medium annual income while 17.5 percent and 16.3 percent low and high income respectively. The average income of the farmers was much higher of the study area than national average income of the country. This might be due to the fact that the farmers of the study area were not engaged in only agriculture. They earned from other sources such as service, business etc.

4.1.6 Cosmopoliteness

The range of the computed cosmopoliteness scores of the respondents varied from (one) 1 to 15, against the possible range of zero (0) to 18. The mean was 5.40 and the standard deviation was 3.21. Based on the observed cosmopoliteness scores, the farmers were classified into three categories as shown in Table 4.7

Table 4.7 Distribution of poultry farmers according to their cosmopoliteness

Categories	Farmers (N=80)		Mean	SD
	Number	Percent		
Low cosmopoliteness(upto 4)	33	41.3	5.40	3.21
Medium cosmopoliteness (5-7)	26	32.5		
High cosmopoliteness (Above 7)	21	26.3		
Total	80	100		

Data presented in Table 4.7 reveals that the highest proportion (41.3 percent) of the respondents had low cosmopoliteness as compared to 32.5 percent having medium cosmopoliteness and 26.3 percent high cosmopoliteness. Cosmopolites people always know about the various information relating to agriculture.

4.1.7 Farming knowledge

Farming knowledge scores of the poultry farmers ranged from (six) 6 to 17 against the possible range of (zero) 0 to 20 with an average of 11.24 and standard deviation 3.21. The poultry farmers were classified into three categories on the basis of their farming knowledge as shown as table 4.8 below.

Table 4.8 Distribution of poultry farmers according to their poultry farming knowledge

Categories	Farmers (N=80)		Mean	SD
	Number	Percent		
Low farming knowledge (upto 7)	7	8.8	11.24	3.21
Medium farming knowledge (8-14)	59	73.8		
High farming knowledge (above 14)	14	17.5		
Total	80	100		

Data is presented in Table 4.8 indicates that the major proportion (73.8 percent) of the poultry farmers had medium-farming knowledge compared to 8.8 percent of them having low knowledge and 17.5 percent, had high knowledge. It can be clearly seen from the table that an overwhelming majority of the poultry farmers (91 percent) had medium and high poultry farming knowledge.

4.1.8 Training

Training scores of the poultry farmers ranged from 0-30 with an average of 14.47 and standard deviation 10.92. The poultry farmer were classified into three categories on the basis of their training as shown as table 4.9 below.

Table 4.9 Distribution of poultry farmers according to their training

Categories	Farmers (N=80)		Mean	SD
	Number	Percent		
No participation (upto 9)	35	43.8	14.47	10.92
Low participation (10-20)	22	27.5		
Medium participation (above 20)	23	28.8		
Total	80	100		

Data furnished in the Table 4.9 reveals that the highest portion (43.8 percent) of the respondents had no participation of training while 27.5 percent and 28.8 percent low and medium participation respectively.

4.1.9 Annual expense

The annual expense of the respondents ranged from 25 to 910 and classified into low, medium and high expense the categories of annual expense are presented in Table 4.10

Table 4.10 Distribution of poultry farmers according to their annual expense

Categories	Farmers (N=80)		Mean	SD
	Number	Percent		
Low expense (upto 134000 tk)	20	25.0	199.53	131.84
Medium expense (134001-265000 tk)	50	62.5		
High expense (above 265000 tk)	10	12.5		
Total	80	100		

Data furnished in the Table 4.10 indicates that the major portion (62.5 percent) of the respondents had medium annual expense while 25.0 percent and 12.5 percent low and high expense respectively.

4.2 **Profit**

The annual income of the respondents ranged from 15 to 300 and classified into three categories such as low, medium and high profit. The categories of profit are presented in the Table 4.11

Table 4.11 Distribution of poultry farmers according to their profit

Categories	Farmers (N=80)		Mean	SD
	Number	Percent		
Low profit (upto 46000 tk)	27	33.8	82.52	65.92
Medium profit (46001-115000 tk)	35	43.8		
High profit (above 115000)	18	22.5		
Total	80	100		

Data furnished in the Table 4.11 indicates that the highest portion (43.8 percent) of the respondents had medium profit while 33.8 percent and 22.5 percent low and high profit respectively.It was shown that the highest proportion of the poultry farmers was medium profit of poultry farming.

4.3 Relationship between profitability of small poultry farm and socioeconomic characteristics

This section deals with the relationships between the ten selected characteristics of farmers (independent variables) with farm profit (dependent variables). The independent variables included Age, Education, Family size, Farm size, Annual income, Cosmopoliteness, Farming knowledge, Training and Annual expense. Only the dependent variable of the study was Farm profit.

Pearson's Product Moment Co-efficient (r) was used to test the null hypothesis concerning the relationship between the dependent and independent variables. To

reject or accept the null hypothesis five per cent (0.05) level of probability was used. Statistically significant and insignificant relationships were observed when the computed values of " r " were higher and lower than the tabulated value respectively. The summary of the result of correlation analysis is presented in Table 4.12 and the correlation matrix is given in the Appendix-C.

Table 4.12 Co-efficient of correlation showing relationship between the characteristics of poultry farmers and their farm profit

Dependent Variable	Characteristics of the poultry farmers	Co-efficient of Correlation
Farm profit	Age	-0.012^{NS}
	Education	0.514**
	Family size	0.204
	Farm size	0.695**
	Annual income	0.842**
	Cosmopoliteness	0.600**
	Farming knowledge	0.622**
	Training	0.801**
	Annual expense	0.607**

NS= Not Significant

*= Significant at 0.05 level (2-tailed)

**= Significant at 0.01 level (2-tailed)

4.3.1 Relationship between age of the poultry farmers and their farm profit

The relationship between age of the poultry farmers and their farm profit was examined by testing the following null hypothesis: *"There is no relationship between age of the poultry farmers and their farm profit."*

As shown in the table 4.12 the co-efficient of correlation between the concerned variables was computed and found to be 'r'= -0.012 ^{NS} which led the following observation

- Firstly, the relationship showed a negative trend.
- Secondly, a very low relationship found to exist between two variables.
- The computed value of 'r'= -0.012 ^{NS} was smaller than the table value with 78 df at 0.05 level of probability.
- Hence, the concerned null hypothesis was accepted
- The correlation co-efficient between the two concerned variables was not significant.

4.3.2 Relationship between Education of the poultry farmers and their farm profit

The relationship between age of the poultry farmers and their farm profit was examined by testing the following null hypothesis: *"There is no relationship between education of the poultry farmers and their farm profit."*

As shown in the table 4.4 the co-efficient of correlation between the concerned variables was computed and found to be 'r'= 0.514** which led the following observation

- Firstly, the relationship showed a positive trend.
- Secondly, a very low relationship found to exist between two variables.
- The computed value of 'r'= 0.514** was greater than the table value with 78 df at 0.01 level of probability.
- Hence, the concerned null hypothesis was rejected.
- The correlation co-efficient between the two concerned variables was significant.

4.3.3 Relationship between Family size of the poultry farmers and their farm profit

The relationship between age of the poultry farmers and their farm profit was examined by testing the following null hypothesis: *"There is no relationship between family size of the poultry farmers and their farm profit."*

As shown in the table 4.4 the co-efficient of correlation between the concerned variables was computed and found to be 'r'= 0.204 which led the following observation

- Firstly, the relationship showed a positive trend.
- Secondly, a very low relationship found to exist between two variables.
- The computed value of 'r'= 0.204 was smaller than the table value with 78 df 0.05 level of probability.
- Hence, the concerned null hypothesis was accepted
- The correlation co-efficient between the two concerned variables was not significant.

4.3.4 Relationship between Farm size of the poultry farmers and their farm profit

The relationship between age of the poultry farmers and their farm profit was examined by testing the following null hypothesis: " *There is no relationship between farm size of the poultry farmers and their farm profit.*"

As shown in the table 4.4 the co-efficient of correlation between the concerned variables was computed and found to be 'r'= 0.695** which led the following observation

- Firstly, the relationship showed a positive trend.
- Secondly, a very low relationship found to exist between two variables.
- The computed value of 'r'= 0.695** was greater than the table value with 78 df 0.01 level of probability.
- Hence, the concerned null hypothesis was rejected.
- The correlation co-efficient between the two concerned variables was significant.

4.3.5 Relationship between Annual income of the poultry farmers and their farm profit

The relationship between age of the poultry farmers and their farm profit was examined by testing the following null hypothesis: *"There is no relationship between annual income of the poultry farmers and their farm profit."*

As shown in the table 4.4 the co-efficient of correlation between the concerned variables was computed and found to be 'r'= 0.842** which led the following observation

- Firstly, the relationship showed a positive trend.
- Secondly, a very low relationship found to exist between two variables.
- The computed value of 'r'= 0.842** was greater than the table value with 78 df at 0.01 level of probability.
- Hence, the concerned null hypothesis was rejected.
- The correlation co-efficient between the two concerned variables was significant.

4.3.6 Relationship between Cosmopoliteness of the poultry farmers and their farm profit

The relationship between age of the poultry farmers and their farm profit was examined by testing the following null hypothesis: *"There is no relationship between cosmopoliteness of the poultry farmers and their farm profit."*

As shown in the table 4.4 the co-efficient of correlation between the concerned variables was computed and found to be 'r'= 0.600** which led the following observation

- Firstly, the relationship showed a positive trend.
- Secondly, a very low relationship found to exist between two variables.
- The computed value of 'r'= 0.600** was greater than the table value with 78 df at 0.01 level of probability.
- Hence, the concerned null hypothesis was rejected.
- The correlation co-efficient between the two concerned variables was significant.

4. 3.7 Relationship between Farming knowledge of the poultry farmers and their farm profit

The relationship between age of the poultry farmers and their farm profit was examined by testing the following null hypothesis: *"There is no relationship between farming knowledge of the poultry farmers and their farm profit."*

As shown in the table 4.4 the co-efficient of correlation between the concerned variables was computed and found to be 'r'= 0.607** which led the following observation

- Firstly, the relationship showed a positive trend.
- Secondly, a very low relationship found to exist between two variables.
- The computed value of 'r'= 0.607** was greater than the table value with 78 df at 0.01 level of probability.

- Hence, the concerned null hypothesis was rejected.
- The correlation co-efficient between the two concerned variables was significant.

4.3.8 Relationship between Training of the poultry farmers and their farm profit

The relationship between age of the poultry farmers and their farm profit was examined by testing the following null hypothesis: *"There is no relationship between training of the poultry farmers and their farm profit."*

As shown in the table 4.4 the co-efficient of correlation between the concerned variables was computed and found to be 'r'= 0.622** which led the following observation

- Firstly, the relationship showed a positive trend.
- Secondly, a very low relationship found to exist between two variables.
- The computed value of 'r'= 0.622** was greater than the table value with 78 df at 0.01 level of probability.
- Hence, the concerned null hypothesis was rejected.
- The correlation co-efficient between the two concerned variables was significant.

4.3.9 Relationship between Annual expense of the poultry farmers and their farm profit

The relationship between age of the poultry farmers and their farm profit was examined by testing the following null hypothesis: *"There is no relationship between annual expense of the poultry farmers and their farm profit."*

As shown in the table 4.4 the co-efficient of correlation between the concerned variables was computed and found to be 'r'= 0.801** which led the following observation

- Firstly, the relationship showed a positive trend.
- Secondly, a very low relationship found to exist between two variables.
- The computed value of 'r'= 0.801** was greater than the table value with 78 degrees of freedom at 0.01 level of probability.
- Hence, the concerned null hypothesis was rejected.
- The correlation co-efficient between the two concerned variables was significant.

4.3 Problem and Suggestions of poultry farming

Problems in connection with poultry farming have been analyzed in this section. The poultry farmers were asked to state whether they faced any problem in conducting the poultry business; and what might be the possible solutions of these problems. For the sake of analytical conveniences, the problems and constrains were categorized into three general groups; economic and technical, marketing, social and natural problems which are discussed below:

4.4.1 Economic and technical problems

It was found that farmers faced some economic and technical problems relating to the rearing of poultry. These are discussed below.

4.4.1.1 Lack of capital

From the survey results it is clean that lack of capital had a major problem in the way of improving the poultry business. It can be seen from (Table-4.13) that 65% of poultry farmers mentioned this problem. This problem was acute because the farmers required substantial amount of money to run the poultry business.

4.4.1.2 Higher prices of feed

A higher price of feed was one of the most important constraints of poultry farming. It was a severe constraint to the improvement of poultry farming. It may be noted from Table 4.13 that about 55 % of the poultry farm owners reported against feed price.

4.4.1.3Lack of Institutional credit facilitates

The availability of credit was another major problem in the study areas. Poultry faming is a very capital-intensive farm business. Many people were interested to establish poultry farms, but they were not coming forward. Table.4.13 indicates that about 40% of poultry owners could not expand their poultry enterprise due to unavailability of adequate amount of credit.

4.4.1.4 Poor conception about poultry housing

Proper housing is essential for the growth, sound health and production of meat and egg. Table 4.13 reveals that, on average poultry farmers had poor conception about poultry housing. They considered lack of training facilities as one of the constraints to the development of their poultry farming. This problem was reported by 55 % of poultry farmers.

4.4.1.5 Inadequate knowledge about poultry diets

Balance diet is essential for the poultry growth and eggs production. About 60% of the poultry farmers reported that they had insufficient knowledge about the proper combination of balanced diets of poultry birds (Table 4.13). They also reported that they did not know how to prepare balanced diet for poultry birds.

4.4.1.6 Unavailability of day-old chick

Unavailability of adequate number of day-old chicks and pullet were another crucial problem for the owners of poultry farms. Table 4.13 reveals that 50% poultry farmers reported it as a serious problem in poultry rearing.

4.4.1.7 Unavailability of training facilities

Unavailability of training facilities was another crucial problem for the poultry farmers. Table 4.13 reveals that 45% poultry farmers reported it as a serious problem in poultry rearing.

4.4.1.8 Lack of lighting facilities

Lighting and heating were important factors of poultry farming. But the electricity was not always available due to frequent disruptions of power supply in the areas. Table 4.13 indicates that 30% of the farmer mentioned against this problem.

4.4.1.9 Inadequate health care and veterinary services

It is true that prevention is better than cure. To prevent certain diseases a number of medicines and vaccines are required, but few some of which are not easily available. Preventive and curative medicines are inadequate for the poultry industry. So inadequate health care and veterinary services were another important problem in raising poultry birds. Most of the poultry farm owner felt that the availability of the veterinary services were inadequate with respect of the demand for individual owner. Moreover, supply of vaccines and medicines were quite insufficient. Some of the respondents reported that when the medicines were available in the market, they could not buy those because prices were too high. About 55% of poultry farm owners felt these problems (Table 4.13)

4.4.2 Marketing problems

There were some problems faced by the sample farmers in marketing their products, which are highlighted below

4.4.2.1 Lower price of eggs

The price of egg remained low in our country. It was alleged that illegal import of eggs from India by smugglers was responsible for the low price of egg,

particularly in winter season. About 45% of the poultry farm owners mentioned low price of egg as a problem (Table 4.13)

Table 4.13 Problem and constraints in raising poultry birds

Problem and constraints	Poultry farms n=80		Rank order
	Number	%	
A. Economical and technical			
i) Lack of capital	52	65	1
ii) High price of food	44	55	5.5
iii) Lack of institutional credit facilities	32	40	13.5
iv) Poor conception of poultry housing	44	55	5.5
v) Inadequate knowledge about poultry diets	48	60	3
vi) Non-availability of day old chick	40	50	9
vii) Non-availability of training facilities	36	45	11.5
viii) Lack of lighting facilities	24	30	17
ix) Inadequate health care and veterinary services	44	55	5.5
B. Marketing			
i)Lower price of eggs	36	45	11.5
ii) Lower price of meat	40	50	9
iii) High price of day-old chick	28	35	15
iv) Non-availability of feed throughout the year	24	30	17

v) High price of day old chick	44	55	5.5
C. Social and Natural			
i) Problems of theft	4	5	21
ii) Outbreak of disease	52	65	1
iii) Social stigma associated with poultry rearing	12	15	20
iv) Pollution of environment	32	40	13.5
v) Poultry creates family disruption	20	25	19
vi) Predatory animals	24	30	17
vii) Problems of natural calamities	40	50	9

4.4.2.2 Lower price of meat:

Another problem faced by the poultry farm owners is the lower price of meat. About pre-half (50%) of the owners of layer farms reported it as a problem (Table 4.13)

4.4.2.3 High price of day-old chick

High price of day-old chicks and pullet was another crucial problem reported by the respondents. About 56% of the owners of poultry farms faced this problem (Table 4.13)

4.4.3 Social and natural problems

It was found that farmers were facing some social and natural problems in producing eggs and meat. These are discussed below:

4.4.3.1 Outbreak of disease

Outbreak of poultry diseases is a common problem for the development of poultry industry in Bangladesh. Akbar (1991) estimated that around 30 percent of poultry birds had to die every year due to various diseases. As a result, the loss was estimated at taka 800 crores.

New Castle Disease, Fowl Pox, Foul Cholera and Infectious Bursal Disease were common diseases of poultry birds. The study revealed that most of the selected farmers reported poultry disease as a serious problem in maintaining poultry birds. Sixty five percent (65%) In this study 65 percent of poultry farmers faced this problemthis problem (Table 4.13)

4.4.3.2 Pollution of environment:

Another problem associated with poultry rearing was that faces of chicken polluted environment. It appears that 40% of poultry farm owners reported that poultry rearing entailed low status in the society. Theft of poultry birds was identified as a social problem in our country. About 5% of poultry farm owners respectively reported it as a constraint (Table 4.13)

A. Suggestions given by the producer to overcome the problems

To overcome the difficulties of poultry farming and to make the poultry farming more profitable, the farmers of the study areas were asked to suggest solutions to

the problems identified above. The owners of the poultry farms made the following suggestions:

I. The government and non-government organizations should play a vital role in making poultry feed easily available in the country.

II. In order to provide necessary veterinary services to the owners of poultry farms, the government should establish new veterinary care centers with adequate veterinary technicians, field assistants and modern logistic supports.

III. For the greater interest of the poultry industry, the government should give incentives to the private pharmaceutical companies to come forward to supply necessary medicine and vaccines and vitamins for poultry rising at reasonable prices.

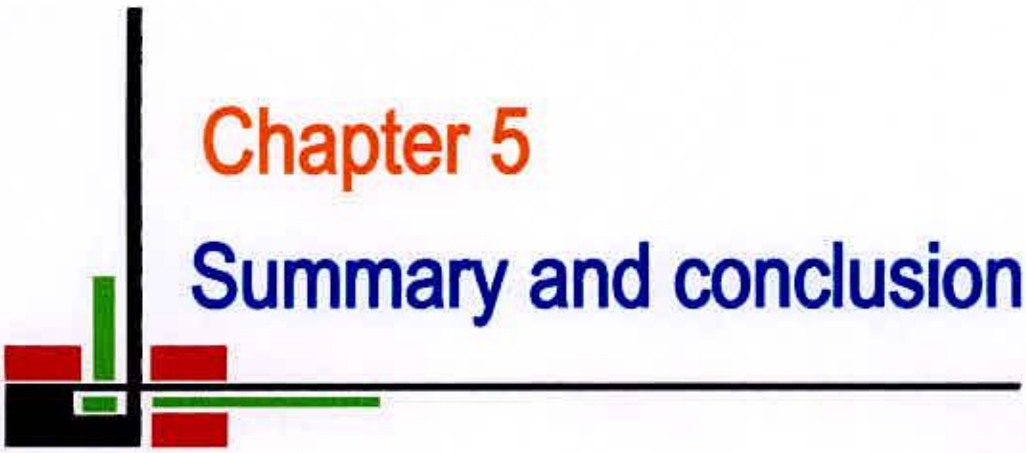
IV. To get rid of the problem of credit, the provision of short-term loan on easy terms for poultry farming should be made with immediate effect.

V. Since most of the poultry farmers did not have formal training on farm management, poultry husbandry and poultry disease and its control, the Department of Livestock Services (DLS) of the government and NGOs may arrange short-term training courses on those topics. If these training programmes become effective, the profitability of poultry farming is expected to improve.

VI. Availability of day-old chick was a big problem in running poultry farms. Most of the respondents suggested that necessary arrangements should be made for easy availability of day-old chicks.

VII. Poultry farm owners suggested that regular supply of electricity should be ensured.

VIII. Low prices of meat and eggs and price fluctuation did not provide adequate incentives to the owners of the poultry farms. Price stabilization and/or floor price schemes should be introduced to ensure relatively stable income for meat and egg producers. Besides, smuggling of eggs from India must be stopped to safeguard the interest of poultry farms in the country.



Chapter 5

Summary and conclusion

CHAPTER V

SUMMERY CONCLUSION & RECOMMENDATIONS

5.1 Summary

Bangladesh is still unable to supply sufficient food to her people either in quantitative or qualitative terms. Animal protein is considered the most qualitative one for human body. We can increase proteins by establishing poultry farming on commercial basis and to meet the increasing demand for egg and meat, a large number of unemployed youth have already come forward to initiate poultry farms. With this view in mind the specific objectives of the study were:

i) To identify and describe some major socioeconomic characteristics of poultry farmers.

ii) To determine the profitability of the small poultry farms.

iii) To explore relationship between profitability of small poultry farm and socioeconomic characteristics

iv) To identify the major problems facing by the farmers in conducting poultry business and suggest policy implication based on the findings.

Dhaka district was selected purposively as a study area because this district is one of the leading poultry producing area of Bangladesh. Savar Upazilla was selected randomly from the 20 Upazilla of Dhaka District as the study area. After preliminary visit four villages namely Shadapur, Chakulia, Genda and Beraid were selected randomly as the study area. Most of the farm owners in this area used to produce poultry farm. Data for the study were collected from July to August in 2007. A random sampling technique was applied for selecting sample. Total number of farms in the study area about 169. Through random sampling 80 samples were selected for the study. Among the 150 farmers, 30 farmers were small, 30 were medium and 20 farmers were large.

To fulfill the objectives, a survey schedule or questionnaire was prepared to collect data and necessary information. The necessary information and data were collected from primary sources by the researcher himself during the period from July 2007 to August 2007. The data was so collected were then summarized, tabulated and analyzed as per the main objectives of the study

5.2 The major findings of the study are presented below:

Profitability analysis was done through gross margin, net return and benefit cost ratio. For estimating the profitability indicators it is necessary to calculate different types of cost.

5.2.1 Day- old chick cost

Cost of day-old chick was also estimated at the prevailing market rate in the study areas. Per farm per year costs of day-old chicks were estimated at the Tk 79, 691, and Tk 1,88,290 for small, medium, large and all poultry farms respectively. It is clear from cost of day old chick was relatively much higher for large layer farms than for small and medium farms.

5.2.2 Feed cost

Feed cost was the largest cost item for poultry farms. Cost of feed included ready-made food (Which included rice bran, wheat bran, fish meal, oil cake, oyster shell, soybean, salt, vitamins, D.L. Metheonin, mineral, premix etc). Little home supplied feeds were used. The purchased feeds were valued according to the average paid by the poultry farmers. In this study, total feed costs per year for the layer farms were estimated at Tk 1,16,499.00 tk 1,99.321.00 and tk. 2,19,691.00 for small, medium, large and all farms respectively. Large poultry farmers obviously incurred much higher feed cost than small and all poultry farms were estimated at Tk 15, 11,541.00, Tk 26,21,288.00, tk. 38,59,244.00 and tk 27,43,298.00 respectively. It is clear that per farm per year feed cost was comparatively higher for poultry than poultry farm

5.2.3 Vaccine, Medicine & Veterinary charge

Vaccine, medicine and veterinary charges were calculated by taking into account the actual cost incurred by the poultry farmers. Doctor's fees and medicine were the two major components of the total veterinary charges. Insemination was also

another minor cost. About 80% of veterinary costs of poultry were for drugs, which were sold at a competitive price without a subsidy.

5.2.4 Electricity cost

Electricity was another cost item of poultry farms. The annual electricity costs Per unit were estimated at Tk 20,158.00, Tk.31, 265.00, Tk 38,541.00 and 27,957.00 for small medium, large and all poultry farms respectively. So, it is obvious that cost of electricity was much higher for large poultry farm than for small and medium poultry farms.

5.2.5 Housing cost

The housing and equipment costs were calculated by taking into account of the depreciation cost of the housing shed, repairing cost, interest etc. These costs were basic domestic cost made of competitive price.

5.2.6 Transportation cost

There is also some transportation costs such as transportation cost of DOC, transportation cost of feed etc. these were made at a competitive price without a subsidy.

5.2.7 Human labour cost

Labour was the most important domestic factor. It was another important cost item of raising poultry. Labour was broadly classified into two categories: 1) Family labour and 2) hired labour. Family labour includes the labour supplied by the owner himself and in some cases other family members such as his wife,

brothers, sisters, sons and daughters. Similarly, hired labours consist of causal labour and annual labour.

5.2.8 Tools & Equipments cost

Tools and equipments are necessary for successful poultry farming. Poultry farmers generally used feeder, water jar, egg-tray, Iron case, fan, litter, detol, bulb, spade etc. The costs of tools and equipment were determined by applying straight-line depreciation method for one year. The costs of tools and equipment per farm per year covered about Tk. 44,677.00, Tk. 69,457.00, Tk. 96,651.00 and Tk. 71,544.00 for small, medium, large and all poultry farms respectively. In general, large poultry farmers incurred higher tools and equipment costs than small and medium poultry farmers.

5.2.9 Interest on operating capital

Interest on operating capital was computed by taking all cash expenses incurred for various operations in poultry farming, such as expenses on chicks, feed, hired labour, vaccine and medicine, transportation, electricity etc.

The study revealed that on an average the total costs per poultry farm per year were Tk 2, 88,581.00 and 3, 24,661.00 for broiler and layer farm, respectively. The gross returns per poultry farm per year were Tk 3, 54,093.00 and 4, 64,971.00 for broiler and layer poultry farm, respectively. The net returns per poultry farm per year were Tk 65,512.00 for a broiler and Tk 1, 40,310.00 for layer poultry farm, respectively. This implies that layer poultry farm was more profitable than broiler poultry farm.

So, the findings suggest that there is an enough scope and potentiality for poultry development in this country. The findings suggest that most of the selected variables had significant impacts on the production of broiler and layer poultry farms.

5.3 Conclusion and policy Recommendations

It was revealed in the study that a poultry farming was a profitable business. The findings, therefore, suggest that there is a wider scope for the development of poultry farming in this country. Production of this enterprise is helpful in development generation and poverty alleviation, which are now the major concern of the planning process of the country.

Although a number of problems and difficulties were found in keeping poultry birds in study areas, it is very helpful to the country that a number of poultry farms had already been established in the study areas. To overcome the difficulties of poultry keeping and to make the business profitable in the study area the following conclusion were drawn:

- The results of the present study clearly indicate that small-scale commercial poultry farming is a profitable business. The profit could possibly be ensured, if feed supply is insured at fair prices.
- Unavailability of adequate number of quality day-old chicks in research area. They need quality day-old chick to operate the poultry business frequently.

- Maximum poultry farmers were relatively poor people. They had very small capital to invest in poultry rearing business. They need capital to operate the poultry business frequently.
- Due to various diseases, veterinary services are essential for poultry farmers. But proper veterinary service is not available for poultry farmers. Medicine and vaccine is available in research area. Price is also very high.
- Proper management and technical knowledge is necessary for poultry rearing business. It can be concluded that knowledge like balanced diet of poultry, proper housing concept, and proper knowledge on optimum temperature is also necessary for develop the poultry industry.
- Lower price of live weight poultry is a major problem in poultry rearing business. It should be standardized.

5.4 Recommendations:

On the basis of the salient findings of the study, certain implications that can be derived for policy makers and extension personnel to design suitable development *strategy* for increasing the poultry production in the study area are indicated below

- ❖ Feed manufacturing factories should be established in the study areas for the adequate supply of feed at reasonable price. Government support or private initiative should be encouraged for establishment of feed factories.
- ❖ Government and NGOs establish hatcheries in the local areas to increase the supply of quality day old chick.
- ❖ Facilities of institutional loan to the owners of the poultry farm should be made so that they can get the credit on easy terms.
- ❖ For the greater interest of poultry farming, the government should give incentive to the private pharmaceutical companies to produce and supply necessary medicine vitamins and vaccine for poultry raising.
- ❖ Since few of the farmers had formal training on farm management, poultry husbandry and poultry diseases and its control, short term training programmes on these topics should be arranged by the Department of Livestock Services (DLS) and NGOs. If these training programmes can effectively be conducted, the profitability of poultry farming has a greater change of success in our country.
- ❖ Govt. should take necessary action to set up the standard price of poultry and poultry products

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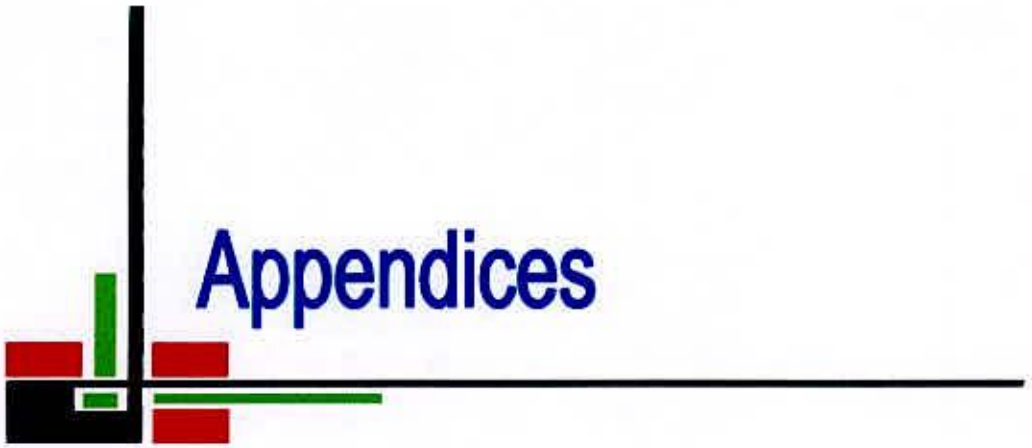
Appendices

APPENDIX A

DEPARTMENT OF AGRICULTURAL EXTENSION AND INFORMATION SYSTEM
SHER-E-BANGLA AGRICULTURAL UNIVERSITY
DHAKA-1207

An Interview Schedule for a research study entitled

"Contribution of small-scale poultry farming in Bangladesh"

[The information collected through this interview schedule will be kept confidential and only be used for academic purpose]

Sample no: ----------

Name of the farmer: ----------
Village: ---------- Union: ----------
Upazilla: ---------- District: ----------

1. Age:
   How old are you? ---------- Years.

2. Level of education:

   Please give the (√) mark?

   a) Can't read and write.
   b) Can sign only.
   c) Didn't go to school but my literacy level is equivalent to ---------- level.
   d) I have passed class ----------
   e)

3. Family size:

   How many members are there in your family?

   Total: ----------

4. Land ownership & tenure:

Please mention your farm size according to the following heads.

SL no.	*Types of land*	*Local unit*	*Hectare(ha)*
1.	Home & homestead Area		
2.	Poultry farm area		
3.	Own land under own cultivation		
4.	Own land given to other on borga		
5.	Land taken from others on borga		
6.	Land taken from others on lease.		
Total:			

5. Poultry farm size:

Please give the (√) mark?

a) Up to 500
b) 500-1000
c) 1000 & above

6. Types of poultry farming:

Please give the (√) mark?

a) Broiler
b) Layer
c) Indigenous chicken
d) Others:

7. Annual Income:

Please mention your annual income from the following different sources (last year)

A. Agriculture

SL. No.	*Sources of income*	*Amount(Tk) Yearly*
1.	Crops	
	a) Rice	
	b) Wheat	
	c) Jute	
	d) Vegetables	
	e) Others	
2.	Livestock	
	a) Milk	
	b) Meat	
3.	Fisheries	
4.	Poultry	
	a) Egg	
	b) Meat	
	c) Litter	
Total:		

B) Non-agriculture

SL. No.	*Source of Income*	*Amount Tk(monthly)*
1.	Service	
	a) Own	
	b) Others members	
2.	Business	
3.	Daily wage	
4.	Others:	
Total:		

Grand Total = A+B= ----------Tk.

8. Cosmopoliteness:

Please mention your frequency of visits to the following places

SL. No.	*Place of visit*	*Frequency of visit (times/year)*			
		Regular	*Often*	*Occasional*	*Never*
1.	Visit to other poultry farm in own village	10 or more times/month	6-9 times/month	1-5 times/month	0
2.	Visit to other poultry farm in other village	10 or more times/year	6-9 times/year	1-5 times/year	0
3.	Visit to livestock Upazilla office	8 or more times/year	4-7 times/year	1-3 times/year	0
4.	Visit to livestock district office	6 or more times/year	3-5 times/year	1-2 times/year	0
5.	Visit to National poultry farm	5 or more times/year	3-4 times/year	1-2 times/year	0
6.	Visit to poultry exhibition fair	4 or more times/year	2-3 times/year	1 times/year	0

9. Poultry farming knowledge

SL. No	*Items*	*Score*	*Mark Obtained*
1.	What is vaccination?		
2.	What is the common poultry disease?		
3.	What is sterilization?		
4.	How do you treat sick birds?		
5.	What is poultry rearing?		
6.	How do you clean of poultry shed?		
7.	What is poultry housing?		
8.	Have you knowledge about disposal of dead birds?		
9.	How do you manage litter?		
10.	What is bird flue?		

10. Annual cash costs of poultry farming (Broiler/Layer)

SL. No.	*Items*	*Home supplied*		*Purchased*	
		Amount	*Price per unit*	*Amount*	*Price per unit*
1.	Purchase day old chick				
2.	Feed cost				
3.	Vaccine & Medicine				
4.	Veterinary charge				
5.	Electricity or fuel				
6.	Water supply				
7.	Shed preparation				
8.	Equipment				
9.	Transportation				
10.	Labour				
11.	Land use cost				
12.	Others				
	Total cash cost:				

11. Training:

Have you received any training for poultry farming?

a) Yes
b) No

If yes then fill up the following table

Name of Institution	*Duration for training*	*Title of training*

12. Annual production & consumption:

Poultry items	*Production*	*Consumption(per day/per head)*	*Sales(month/year)*	*Price(Tk)*
Egg				
Meat				
Litter				
Aged bird				

13. Annual profit

Annual income- Annual cost =----------Tk

14. Was your bird affected by bird flue?

a) Yes

b) No

If yes what type of measure have you taken?

(----------)

15. Factors affecting profitability of production (Last year information)

Technical/Natural problems	*Number of poultry affected*	*% of poultry affected*	*Number of poultry died*	*% of poultry died*
Disease name				
1)				
2)				
3)				
4)				
Natural problems				
1)				
2)				
3)				
4)				

16. Problems faced by poultry growers

SL. No	*Different problems*	*Rank*

(10 for very high problem, 8 for high problem, 6 for medium problem, 4 for low problem, 2 for very low problem and 0 for no problem.)

17. Suggestions to overcome the problems

SL. No	*Suggestions*	*Value*

Thank you for your kind co-operation.

Signature of the interviewer
(----------)
Date: ----------

APPENDIX B

Correlation matrix showing interrelationship among the variables

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
X_1	1								
X_2	-0.115	1							
X_3	-0.039	-0.026	1						
X_4	-0.139	0.496**	0.153	1					
X_5	-0.147	0.572**	0.239**	0.810**	1				
X_6	-0.074	0.849**	0.052	0.584**	0.543**	1			
X_7	-0.202	0.875**	0.096	0.702**	0.664**	0.923**	1		
X_8	0.034	0.518**	0.104	0.666**	0.571**	0.638**	0.622**	1	
X_9	-0.126	0.564**	0.268*	0.752**	0.949**	0.545**	0.647**		1

* Correlation is significant at 0.05 level of Probability
** Correlation is significant at 0.01level of Probability

X_1 = Age
X_2 = Education
X_3 = Family size
X_4 = Farm size
X_5 = Annual income
X_6 = Cosmopoliteness
X_7 = Farming knowledge
X_8 = Training
X_9 = Annual expense

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