

**FINANCIAL PROFITABILITY AND RESOURCE USE
EFFICIENCY OF BROILER FARMING IN A SELECTED
AREA OF BANGLADESH**

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AREA OF BANGLADESH**

BY

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CERTIFICATE

This is to certify that thesis entitled, “**FINANCIAL PROFITABILITY AND RESOURCE USE EFFICIENCY OF BROILER FARMING IN A SELECTED AREA OF BANGLADESH**” submitted to the Faculty of Agribusiness Management, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE in AGRICULTURAL ECONOMICS**, embodies the results of a piece of bona-fide research work carried out by **ASMA AKTER**, Registration No. **08-02773** 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: May, 2015
Place: Dhaka, Bangladesh

.....
Dr. Jahangir Alam
Supervisor



*Dedicated to
My
Beloved Parents*

ABSTRACT

In the agrarian and largely subsistence economy of Bangladesh, broiler plays a crucial role in supplying nutrition and generating income and employment opportunities. The present study was undertaken to investigate the socio-economic characteristics of the broiler farmers, to estimate the costs, returns and profitability of broiler enterprise and to determine the contribution of the key variables to the production of broiler farms. For achieving these objectives, 80 broiler farms were selected randomly from Dhamrai upazila of Dhaka District. Both tabular and econometric techniques were used to find out the results. Costs and returns were calculated separately through tabular analysis to find out the profitability of broiler production. The results of the analysis showed that on average total cost of broilers per farm per year was Tk. 301142.103. It was found that the variable cost per farm per year stood at Tk. 238728.73 which accounted for 79.28 percent of total cost. The total fixed cost per farm per year accounted to Tk. 62413.373. It is evident from the study that the gross return per farm per batch stood at Tk. 431400. The net return over total cost per farm per year was calculated at Tk. 130257.90. The benefit cost ratios of broiler farming were 1.80 on variable cost basis and 1.43 on total cost basis. Findings of the study clearly indicated that broiler production was a profitable enterprise. Cobb-Douglas production function analysis was used to estimate the contribution of the key variables of the production of broiler farms. The functional analysis indicated that most of the selected variables had significant impact on the production of broiler farms. This study also identified some economic, marketing, technical, social and natural problems in broiler production. Finally, on the basis of findings of this study, some recommendations were made for the development of broiler farming in Bangladesh.

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CONTENTS

Chapter	Title	Page
	ABSTRACT	i
	ACKNOWLEDGEMENT	ii-iii
	CONTENTS	iv-xiii
	LIST OF TABLES	ix
	LIST OF FIGURES	x
	ABBREVIATION	xi
1	INTRODUCTION	1-9
	1.1 Background of the Study	1-3
	1.2 History of Broiler Birds in Bangladesh	3-4
	1.3 Importance of Broiler in Bangladesh	4-7
	1.3.1 Socio-economic Importance	4-6
	1.3.2 Nutritional Importance	6-7
	1.4 Justification of the Study	8-9
	1.5 Objectives of the Study	9
	1.6 Organisation of the Thesis	9
2	REVIEW OF LITERATURE	10-20
3	METHODOLOGY	21-28
	3.1 Introduction	21
	3.2 Selection of the Study Area	21
	3.3 Method of Investigation	22
	3.4 Sampling Procedure	22
	3.5 Preparation of the Survey Schedule	22-23
	3.6 Collection of Data	23
	3.7 Problems Faced in Collecting Data	23-24
	3.8 Processing and Tabulation of Data	24

CONTENTS (cont.)

Chapter	Title	Page
	3.9 Analysis of Data	24-25
	3.9.1 Analytical Techniques	24-25
	3.9.1.1 Tabular Analysis	24-25
	3.9.1.2 Functional Analysis	25
	3.10 Procedure for Evaluation of Costs and Returns	26-28
	3.10.1 Calculation of Feed Cost	26
	3.10.2 Day Old Chick Cost	26
	3.10.3 Human Labor Cost	26
	3.10.4 Veterinary Expenses	26
	3.10.5 Housing Cost	26-27
	3.10.6 Cost of Tools and Equipment	27
	3.10.7 Interest on Operating Capital	27
	3.10.8 Litter Cost	27-28
	3.10.9 Transportation Cost	28
	3.10.10 Electricity Cost	28
	3.11 Calculation of Benefits	28
	3.12 Gross Margin	28
	3.13 Net Return	28
4	PROFILE OF THE STUDY AREA	29-34
	4.1 Introduction	29
	4.2 Location	29
	4.3 Physical Features and Topography	29
	4.4 Climate, Temperature and Rainfall	32-33
	4.5. Area, Population and Literacy Rate of the Dhamrai Upazilla	33
	4.6. Non- government Organizations (NGOs)	33

CONTENTS (cont.)

Chapter	Title	Page
	4.7 Religion and Culture	33
	4.8 Agriculture and Use of Modern Technology	34
	4.9 Roads, Communication, Transport and Marketing Facilities	34
5	SOCIOECONOMIC CHARACTERISTICS OF THE BROILER FARMERS	35-39
	5.1 Introduction	35
	5.2 Age Distribution of Broiler Farmers	35-36
	5.3 Educational Level of Broiler Farmers	36
	5.4 Occupational Status of the Broiler Farmers	37
	5.5 Marital Status of the Broiler Farmers	37-38
	5.6 Family Size of the Broiler Farmers	38
	5.7 Income Level and other Sources of Income	38-39
6	PROFITABILITY OF BROILER FARMING	40-46
	6.1 Introduction	40
	6.2 Cost of Broiler Production	40-43
	6.2.1 Variable Cost	40-43
	6.2.1.1 Feed Cost	40-41
	6.2.1.2 Day-Old-Chick Cost	41
	6.2.1.3 Labour Cost	43
	6.2.1.4 Veterinary and Medicine Cost	43
	6.2.1.5 Electricity Cost	43
	6.2.1.6 Litter Cost	43
	6.2.1.7 Transportation Cost	43
	6.3 Fixed Cost	44-46
	6.3.1 Housing Cost	44

CONTENTS (cont.)

Chapter	Title	Page
	6.3.2 Tools and Equipment Cost	44
	6.3.3 Interest on Operating Capital	44
	6.4 Returns from Broiler Production	44-46
	6.4.1 Gross Return	44
	6.4.2 Gross Margin	46
	6.4.3 Net Return	46
	6.4.4 Benefit Cost Ratio	46
7	PRODUCTION FUNCTION ANALYSIS	47-52
	7.1 Introduction	47
	7.2 Broiler Production and Relative Factors	47-48
	7.2.1 Functional Analysis	47-48
	7.3 Interpretation of Results	48
	7.3.1 Feed (X_1)	48
	7.3.2 Day-Old Chick (X_2)	49
	7.3.3 Hired Labor (X_3)	49
	7.3.4 Veterinary Expenses (X_4)	49
	7.3.5 Electricity (X_5)	50
	7.3.6 Litter (X_6)	50
	7.3.7 The co-efficient of Multiple Determination (R^2)	50
	7.3.8 Goodness of Fit (F-value)	50
	7.3.9 Returns to Scale	50
	7.4 Resource Use Efficiency	50-52
	7.5 Conclusions	52
8	PROBLEMS OF BROILER FARMING AND SUGGESTIONS	53-58
	8.1 Introduction	53
	8.2 Economic Problems	53-54

CONTENTS (cont.)

Chapter	Title	Page
	8.2.1 Lack of Capital	53
	8.2.2 Higher Price of Feed	53
	8.2.3 High Price of Day-Old-Chick	53
	8.2.4 Price Fluctuation of Broiler	54
	8.2.5 Non-availability of Credit	54
	8.3 Marketing Problems	54
	8.3.1 Rumor	54
	8.3.2 Lower Price of Broiler	54
	8.3.3 Late Payment	54
	8.4 Technical Problems	54
	8.4.1 Electricity Problems	54
	8.4.2 Lack of Training Facilities	54
	8.4.3 Non -availability of DOC	54
	8.5. Social and Natural Problems	55-56
	8.5.1 Social Restriction	55
	8.5.2 Political Unrest	56
	8.5.3 Outbreak of Diseases	56
	8.6 Policy Guidelines for Solving the Problems	56-58
9	SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	59-63
	9.1 Introduction	59
	9.2 Summary	59-62
	9.3 Conclusions	62
	9.4 Recommendations	62-63
	9.5 Limitations of the Study	63
	REFERENCES	62-66
	APPENDIX	67-72

LIST OF TABLES

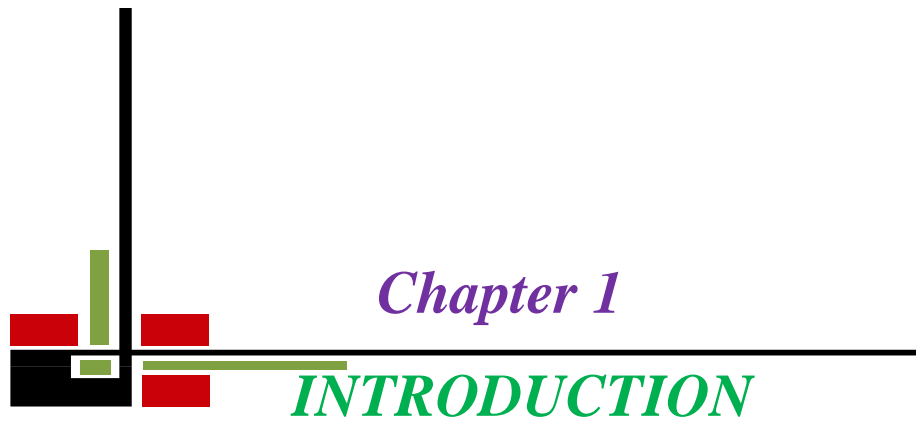
Table	Title	Page
1.1	Number of poultry and production of meat over the years in Bangladesh.	3
1.2	Total value of poultry resources in Bangladesh.	6
1.3	The production of meat and eggs from FY 2007-08 to FY 2013-14.	7
1.4	Comparative food value of broiler and other poultry species meat.	7
1.5	Nutrients contents of chicken meat and other animals (per 100 gm).	7
4.1	Description of agricultural land type in 2013	35
4.2	Monthly average temperature, humidity and rainfall of the study area in 2014	32
4.3	Area, population, household, sex ratio and literacy rate of Dhamrai upazilla	33
4.4	Major cropped area and production by Dhamrai upazila	34
5.1	Marital status of the broiler farmers	38
5.2	Family size of broiler farmers	38
6.1	Total costs of broiler production per farm per year	41
6.2	Gross return from broiler production per farm per year	45
6.3	Gross margin, net return, and benefit cost ratio per broiler farm per year	45
7.1	Estimated values of co-efficient and related statistics of Cobb-Douglas production function for broiler farms (n=80)	49
7.2	Marginal value products (MVP_{xi}) and marginal factor cost (MFC_{xi}) of different inputs included in production function	52
8.1	Problem faced by the broiler farmers	55

LIST OF FIGURES

Figure	Title	Page
4.1	Map of Dhamrai upazila	30
4.2	Map of Dhaka district	31
5.1	Age distribution of broiler farmers	35
5.2	Education level of broiler farmers	36
5.3	Occupational status of broiler farmers	37
5.4	Annual family income of broiler farmers	39
6.1	Cost of broiler production (variable and fixed)	42
6.2	Gross return, total cost, gross margin and net return for broiler farms (Taka/farm/year)	46

ABBREVIATIONS

ABFL	: Aftab Bhumukhi Farm Limited
BBS	: Bangladesh Bureau of Statistic
BRDB	: Bangladesh Rural Development Board
GOB	: Government of Bangladesh
DLS	: Department of Livestock Services
DOC	: Day-Old-Chick
<i>et al.</i>	: Et alia (L.) and others
GDP	: Gross Domestic Product
i.e	: (L. idest), that is
M.S.	: Master of Science
NGOs	: Non-Government Organizations
%	: Percentage
Etc.	: Etcetera
gm.	: Gram
Kg.	: Kilo Gram
Tk.	: Taka
IOC	: Interest on Operating Capital
IR	: Interest Rate
OC	: Operating Capital
Ltd.	: Limited Company
GP	: Grand Parent
BARC	: Bangladesh Rural Advancement Committee
PES	: Poultry Expert System
PROSHIKA	: Proshikkon Shikka and Unnoyan Karma Suchi
ASA	: Association of Social Advancement
SSS	: Society for Social Service
P.S.C	: Primary School Certificate
J.S.C	: Junior School Certificate
S.S.C	: Secondary School Certificate
H.S.C	: Higher School Certificate
No.	: Number
ln	: Natural log



Chapter 1
INTRODUCTION

Chapter 1

INTRODUCTION

1.1 Background of the Study

Bangladesh is a densely populated developing country and its economy mostly depends on agriculture. The overall contribution of the agriculture sector is 16.33 percent to GDP at current price (GOB, 2014). About 47.33 percent of total human power of Bangladesh is related to agriculture (GOB, 2014). Livestock plays a crucial role in the agricultural economy. About 36 percent of the total animal protein comes from the livestock products in our everyday life (DLS, 2014). It also helps to earn foreign exchange every year. In Bangladesh, about 25 percent people are directly engaged in livestock sector, and 50 percent partly associated in livestock production (DLS, 2014). The contribution of livestock sub-sector to the GDP is 1.78 percent (GOB, 2014). Broiler production has a considerable significance to the rural, urban as well as the national economy and also is an important source of animal protein. The poultry industry in Bangladesh started to grow in 1947 and currently became a vibrant agricultural sub-sector and supplying about 95 percent of chicken meat and eggs in the country. Poultry is a part of subsistence farming system in Bangladesh and broiler is one of the main products of poultry farming. Broiler is most vital due to its contributions to national economy in the spheres of generating employment opportunity, additional income and improving the nutritional level. Broilers are chickens bred and raised specifically for meat production.

Total poultry production in Bangladesh is 2626.28 millions in number whereas chicken covers 2213.94 millions. A total of 7.98 million tones of chicken meat were produced during the year 2012 (DLS, 2013). Poultry meat particularly from broiler is superior to other meats available for human consumption from the point of its palatability, tenderness and digestibility. Poultry meat and eggs offer considerable potential for meeting human needs for dietary animal supply.

In the past, poultry farming was not considered as an important occupation. The villagers have been keeping the chickens mainly for their domestic consumption. From the beginning of early 1947 in response to the wide market opportunity, a commercial poultry sector (broiler and layer) has emerged using intensive production

techniques and is getting more and more popularity. Local breeds are not commercially reared due to low productivity, poor nutrition, and high mortality. At present, broiler production and marketing in the country has been contributing a lot in terms of both economic and nutritional point of view. The demand for broiler has been escalating day by day and millions of people have been getting engaged in broiler production and marketing in the country. Broiler has a great demand as compared to other meat due to the limitation and religious taboos in the concern of pork and beef. The poultry sector has emerged as the most flourishing and promising commercial sector in recent years. It is also one of the fastest growing sectors with bright future and plays a crucial role in supplying nutritious food and generating income. As a least developed country, unemployment, inadequate nutrition and poverty are the major problems in Bangladesh. About 26 percent of her population lives below the absolute poverty line (BBS, 2014). Bangladesh is a densely populated country where 1174 people lives per square kilometer (GOB, 2014).

Commercial broiler farming serves as a ready source of income among the poor people and not only creates the employment opportunity for educated unemployed youth but also for women. It has been using as an important tools for protecting the migration of rural poor people to the urban areas. Now, millions of rural women are involved in poultry rearing under the poverty alleviation programmes of Non Governmental Organizations (NGOs) and the Department of Livestock Services (DLS). The per capita availability of cultivated land in the country is decreasing day by day, for this reason the scope of development livestock industry through the development of large animals is limited. Therefore, people from different parts of the country become interested in developing poultry farming on commercial basis. Thus, the number of chicken has increased significantly over the past several years (Table 1.1). As a result, the productions of meat and per capita availability of animal protein have increased.

Table 1.1: Number of poultry and production of meat over the years (2007- 08 to 2013-14) in Bangladesh.

Year	Number of poultry (Million)			Production of Meat (Million ton)
	Chicken	Duck	Total	
2007-08	2124.7	398.4	2523.1	0.83
2008-09	2213.94	412.34	2626.28	0.91
2009-10	2280.35	426.77	2707.12	1.06
2010-11	2346.86	441.20	2788.06	1.13
2011-12	2428.66	457.00	2885.66	1.04
2012-13	2490.10	472.53	2962.64	1.04
2013-14	2553.11	488.61	3041.72	7.98

Source: GOB, 2014.

1.2 History of Broiler Birds in Bangladesh

History of broiler enterprise in Bangladesh is very recent. Commercial broiler chicks were not available in Bangladesh a few decades ago. In 1935, an improved variety of birds (White Leghorn) was first imported in India from foreign countries. Raising of improved type of birds was then started in the Government poultry farm. Later, people became interested in raising the chickens in their own houses after knowing about their better production capacity. In 1947, six poultry farms were first established in different places of Bangladesh for supplying eggs and chicks to the villagers. During this period, several small poultry farms were also established under village aid programme for rural poultry development. In 1962-63, the Directorate of Livestock Services also started about 91 small poultry units in 91 upazilas with the objectives of supplying improved birds to the villagers. In 1964, a commercial poultry farm named Eggs and Hens Ltd. was established at Gazipur near Dhaka city by late Mr. Ekramul Hossain, which was recognized as a mother commercial poultry farm in the private poultry sector. (DLS, 2014). The Department of Poultry Science of former East Pakistan Agricultural University, (now Bangladesh Agricultural University, Mymensingh) brought day-old chicks from Pakistan International Airlines and started producing broiler experimentally in the University Poultry Farm. In Bangladesh, poultry farming on commercial and scientific line was started in 1970. After the

liberation of Bangladesh, BIMAN Bangladesh Airlines started a commercial poultry farm in the name of Biman Poultry Complex Ltd. at Savar, Dhaka. Its aim was mainly to supply meat for flight catering needs of the Biman Bangladesh Airlines, but it also fulfilled the demand for eggs and day-old chicks for private poultry farms. It reared 'Starbo' parent stock of Shaver Poultry Breeding Company of Canada. During late 1980s, the Department of Livestock Services (DLS), Bangladesh imported "Arbon Acres" broiler parent stocks to increase meat production through popularizing commercial poultry in the country. DLS took programme of distributing day-old chicks of commercial strains to farmers through its various regional and central poultry farms. Since then, commercial poultry started to gain popularity and during the 1990s, the poultry production started taking the shape of an industry with the establishment of a large number of small and large broiler and layer hatcheries.

1.3 Importance of Broiler in Bangladesh

As a under developed country, poverty, unemployment and malnutrition are the major problems of Bangladesh. According to the Government estimation, the total number of educated but unemployed people in the country is about 3.6 million. The worst victims of malnutrition in the society are usually the children and mothers. In Bangladesh, about 50 percent children are born under weight and 55 percent children have stunted growth. About 83 percent of the children below the age of six suffer from anemia (GOB, 2012). In this situation, poultry rising appears to be a good way of mitigating the protein gap, employment generation and poverty alleviation in the shortest possible time. The financial benefits from poultry farming is also noteworthy, which in turn encourages the new investments in the poultry sector and therefore, poultry has become one of the most important emerging agro-industry in the country.

1.3.1 Socio-Economic Importance

Broiler farming is an important component of the poultry industry and it plays a significant role in agro-based economy. With a view to popular broiler farming and to meet the uprising demand for meat, a good number of NGOs have already come forward to initiate small broiler development programmes. Broiler has a shorter life cycle and its production requires relatively less capital and land than that of crop, dairy and fish production.

Table 1.2. Total value of poultry resources in Bangladesh

Particulars	Commodity type	Number	Price/unit (Tk.)	Total (Tk.)
No.of grand parent birds		130000	3400	442000000
No.of parent birds	Layer	360000	1360	489600000
	Broiler	4200000	1360	5712000000
No.of Faumi parent birds		200000	1360	272000000
No.of commercial birds	Layer	1920000	220	422400000
	Broiler	351200000	100	70240000000
	Cockrel	19500000	120	2340000000
No.of Faumi/Sonali birds	Pullet	8550000	250	2137500000
	Cock	8550000	150	1282500000
No.of indigenous birds	Poultry/chicken	120000000	120	14400000000
	Duck	37300000	100	3730000000
	Pegion	7000000	40	280000000
Total number of feed mills		57	0	0
Production of commercial feed	Layer	750000MT	0	0
	Broiler	750000MT	0	0
	Indigenous birds	750000MT	0	0
Total no. of eggs	Indigenous	1500000000	4	6000000000
	i.e.backyard	3500000000	3.5	12250000000
	Commercial			
Total				119998000000

Source: Alam *et al.*, 2008.

The broiler farming provides more cash income within a short time and creates employment opportunity for the rural people particularly for small farmers, landless labors, unemployed people and destitute women. Income earned from sale proceeds generally is used to meet farm and family expense. It also helps them to satisfy their various economic needs. Expansion of poultry industry creates various job opportunities for the unemployed people through the establishment of hatchery, feed mill, Pharmaceutical Company, equipment manufacturing and marketing of poultry. As a result, it helps improve the socio-economic conditions of the people of Bangladesh. Poultry waste is an excellent source of organic manure, which is utilized for growing crops. The manure obtained from the poultry consists of more essential nutrients of nitrogen, phosphate and potash than other organic manure. About 40 adult birds raised on deep litter can produce about ten quintals of organic manure having

three percent nitrogen, two percent potassium and phosphorus (Rahman, 2004). In recent years, manure price has gone up, so, poultry excreta have become a considerable source of income to the poultry farmers. If the poultry manure is utilized properly in the crop fields, it can produce organic food grains. Poultry litter is also used as feed for fish. Therefore, additional income may be obtained from the use of poultry excreta.

This industry provides various opportunities for increasing the Gross Domestic Product (GDP), growth rate plus equitable distribution through arranging food security as well as ensuring self-employment at a large scale. The poultry sector is playing a vital role in reduction of poverty, malnutrition and unemployment problems of the country. Thus the contribution of poultry industry to the national economy is very significant.

1.3.2 Nutritional Importance

Poultry meat can efficiently and rapidly fill up the shortage of body requirement. In the context of different nutrients in chicken meat and other animals, poultry is easily digestible with less fat compared to other animals' meat and it is generally accepted by all religions and casts. Among the different types of poultry meat, broiler meat is gaining increasingly popularity to the consumers. Broiler meat is tender, tasty, soft, pliable, textured, nutritious and flexible breast bone cartilage. The production statistics of meat and eggs is shown in Table 1.3.

Table 1.3. The production of meat and eggs from FY 2007-08 to FY 2013-14

Product	Production					
	Unit	2009-10	2010-11	2011-12	2012-13	2013-14
Meat	Lakh tonnes	12.64	19.86	23.32	36.20	30.21
Eggs	Lakh	57424	60785	73038.9	76173.80	67452.80

Source: DLS, 2014.

The poultry meat provides various nutrients, which are very essential for building up our body and it is necessary to provide properly balanced diet for human body.

Table 1.4 The food value of broiler meat compared to other chicken and poultry meat.

Poultry	Energy calorie	Protein (gm.)	Fat (gm.)	Mineral (gm.)	Riboflavin (microgm.)	Moisture (%)
Chicken(broiler)	219	24	6.6	3.9	160	63.93
Chicken(layer)	104	20.2	0.5	3.8	90	65.4
Duck	326	16.0	28.6	4.1	240	64.0
Koiel	168	25.0	6.8	4.7	-	-
Pigeon	279	18.6	22.1	3.8	240	-
Tarki	268	20.1	20.2	3.9	140	-

Source: USDA, 2012.

Food of animal origins provides higher proteins, vitamins and minerals than that of food of plant origin. It includes beef, goat meat, poultry meat, etc. Among these, poultry meat is the most desirable source of animal protein and highly accepted by most of the people of Bangladesh. The context of different nutrients in chicken meat and other animals are presented in Table 1.4 and table 1.5. Chicken meat contains large amount of high quality and easily digestible vitamins and minerals.

Table 1.5 : Nutrients content of chicken meat and others (per 100 gm).

Nutrients	Chicken meat	Beef	Egg	Milk
Water (gm.)	63.93	66.60	74.60	87.70
Food energy (K.cal)	219.00	197.00	158.00	64.00
Protein (gm.)	24	20.20	12.10	3.30
Ash (gm.)	1.00	0.90	11.90	0.70
Fat (gm.)	6.6	12.30	11.90	3.60
Saturated fatty acid (gm.)	1.8	4.70	3.30	2.05
Unsaturated fatty acid (gm.)	4.0	5.75	6.63	1.25
Cholesterol (mg.)	60.00	70.00	550.00	11.00

Source: USDA, 2012.

1.4 Justification of the Study

Bangladesh is an agro-based country in the South Asia region, having small territory, but large population. It is characterized by her low productivity, food shortage, external dependence, poverty, unemployment and malnutrition. It had a modest beginning of industrialization but due to various reasons, progress of industrialization has stagnated. Given this situation, poultry farming seems to be a good way to solve the problems of the country in the shortest possible time.

Broiler plays an important role in subsistence economy in this country. The climate of Bangladesh is suitable for broiler farming, so the broiler birds can be raised easily to fulfill daily requirements of nutrient value. Broiler farming has a great potential for providing additional income to both male and female members of rural and urban families through creation of employment opportunities. Broiler has shorter life cycle and its production requires less capital compared to other meat producing animals.

Broiler farming has been accepted rapidly as a profitable agribusiness all over the country. The majority of the people irrespective of caste and religion prefer chicken. As a result, the price of this product has gone up. Having received the signal of higher price and demand in the domestic market, recently a tendency to establish small scale commercial farms is observed among people both in rural and urban areas. Poultry is shaping up as an industry day by day. Many NGOs have come forward to give them assistance for setting up small poultry farms. However, the number of poultry farm is not increasing in recent year as rapidly as it was expected due to many reasons. Low profitability may be the prime reason. The present study is an attempt to find out the recent picture of broiler production in an area of Dhaka district.

The study expects to provide useful and important information to broiler producers, intermediaries, consumers and other concerned people of Bangladesh. The findings of the study are also expected to be helpful to the broiler farmers and traders for taking appropriate decision regarding further expansion of commercial broiler farming and production of live broiler.

The Government, policy makers, planners and other concerned agencies will get help to formulate development policies regarding more effective broiler farming in the country by using the information of the study. The results of this study will provided

some basic information to policy maker, production economics specialists, and extension workers, enable them to formulate policies regarding effective production plan of broiler farming. The study will also provide information to the researchers, who are interested in conducting studies in future.

1.5 Objectives of the Study

The overall objective of this research is to investigate various socioeconomic aspects of broiler farming in a selected area of Dhaka district. The specific objectives of the study are as follows:

1. To identify the socioeconomic characteristics of broiler farmers;
2. To determine the financial profitability of broiler farming;
3. To measure the resource use efficiency of broiler production;
4. To identify the constraints to broiler farming;
5. To suggest policy guidelines for profitable broiler farming in the country.

1.6 Organisation of the Thesis

The remainder of the thesis is structured as follows: Following introduction in chapter 1, chapter 2 provides the literature or the theoretical underpinning for the study while chapter 3 is concerned with the research methods detailing about the general process of research and analytical approach of the study. Description of the study area has been presented in chapter 4. In chapter 5 socio-economic characteristics of broiler farmers are described. Chapter 6 discusses the profitability of broiler farming. Chapter 7 presents production function analysis. Chapter 8 includes constraints to broiler farming and some policy guidelines to solve those constrains. Finally, chapter 9 contains general conclusions and recommendations based on the empirical results of the study.



Chapter 2

REVIEW OF LITERATURE

Chapter 2

REVIEW OF LITERATURE

Review of literature is an attempt for reviewing the findings that give a proper instruction in designing the future research problem and validating the new findings. It also helps conduct the research work successfully by providing various knowledge and information related to the proposed study. With this end in view, a literature review was carried out in line with the present study. In this section, the most common and relevant studies that were conducted in the past at home and abroad are highlighted.

Ahmed and Begum (1997) studied the performance of 1-757 and Isa-vedette broilers in different seasons of the year. The study was undertaken to recommend which type of broilers would be economically viable under the condition of Bangladesh, about 12,500 broilers reared in 22 batches; 8 in rainy (4700), 7 in winter (4200) and 7 in summer season (3600). All the broilers were produced from Aftab Bahumukhi Farms Ltd. Kishoreganj. The study 1 revealed that the total cost of production per bird was the highest (Tk. 77.86) in rainy season for Isa-vedette while it was the lowest (Tk. 61.831) in summer for the 1-757. Labour cost was found to be 11.11 percent for 1-757 compared to 10.10 percent for Isa-vedette broilers. The study also revealed that profit margin of 1-757 broilers was the highest Tk. 21.52 per bird in winter season and the lowest Tk. 7.78 per bird in summer season. The study also showed that mortality of 1-757 broilers was comparatively low (2.6 percent) in rainy season than (7.17 percent) in summer season. The study recommended 57 and Isa-vedette broiler as profitable for producing in Bangladesh.

Hasan (1997) examined the relative profitability of poultry rearing of four different categories of farms under the supervision of Bangladesh Rural Advancement Committee (BRAC) in the Mirpur upazila of Kushtia. The study revealed that, on average, the total cost per poultry farm per year was Tk. 1367.65, 6259.13, 24558.76 and Tk. 76703.75 for Key rarer, Model rarer, Chick rarer and Mini Hatcheries, respectively. The gross returns and net returns per poultry farm per year were Tk. 6533.25 and Tk. 5165.00; Tk. 17150.40 and Tk. 10899.27; Tk. 42996.50 and Tk.

18437.74; Tk. 92611.20 and Tk. 45907.45, for Key rarer, Model rarer, Chick rarer and Mini Hatcheries, respectively.

Alam *et al.* (1998) conducted a study on profitability of poultry farms under traditional, semi-intensive and intensive management. The authors found that cost per bird was Tk. 33.61 for traditional, Tk. 51.28 for semi-intensive and Tk.106.68 for intensive farms. The benefit cost ratio was 2.94:1 for traditional, 1.31:1 and 1.22:1 for intensive farms. The number of man-days used per farm per day was 0.15 for traditional, 1.73 for semi-intensive and 3.24 for intensive farms. Each type of farm was found to have generated income and employment and contributed towards the alleviation of poverty and malnutrition.

Bhuiyan (1999) studied an economic analysis of small poultry farming of Kotwali Thana in Mymensingh District. He worked on a total of 60 poultry farms taking 30 broiler farms and 30 layer farms from the Sadar upazila of Mymensingh district. The study revealed that on average the total costs per poultry farm per year were Tk. 299482 and Tk. 1314620 for broiler and layer farms, respectively. The gross returns per year were Tk. 355,772 and Tk. 437477 for broiler and layer farms. It was revealed that most of the selected variable inputs had some significant impacts on the production of the broiler and layer 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 contribution of key variable to poultry farming income. She found that total costs per broiler per farm per year stood at Tk. 238051, Tk. 525095, Tk. 1420630 and Tk. 663943 for small, medium, large and all farms, respectively. For layer farms total costs per farm per year stood at Tk. 215255, Tk. 432179, Tk. 1192688 and Tk. 535129 for small, medium, large and all farms, respectively.

Karim (2000) studied an economic analysis of broiler enterprise under contract farming system in an area of Bangladesh. Cobb-Douglas production function was used in the study to examine the effects of the independent variables on gross return in broiler production. Total costs per bird per batch were estimated at Tk. 78.43, Tk. 78.51, Tk. 78.32 and Tk.78.31 for small, medium, large and all broiler farms respectively. The average gross returns per bird per batch stood at Tk. 89.21, 89.40,

90.71 and Tk. 89.87 for small, medium, large and all farms, respectively. Gross margins for per bird were Tk. 17.88, 17.56, 18.83 and Tk. 18.12 for small, Medium, large and all farms. The net returns per bird for small, medium, large and all broiler farms were Tk. 1.80, 10.85, 12.40 and Tk. 11.75, respectively. Findings of the study clearly indicate that all the broiler farms made good profit, where large farms earned a little higher profit.

Ahmed (2001) conducted a study on comparative economic analysis of broiler production under Proshika's supervision and Private management in some selected areas of Tangail district. The study revealed that total costs per farm per year stood at Tk. 173839.40 and Tk. 146325.55 under Proshika's supervision and Private management. The total costs per bird, on average were estimated at Tk. 72.53 and Tk. 70.38 under Proshika's supervision and Private management farms respectively. The variable cost per farm per year under Proshika's supervision and Private management stood at Tk. 133363.70 and Tk. 133119.88, respectively, which accounted for 86.69 and 90.97 percent of their respective total. The total fixed cost per farm per year amounted to Tk. 20485.70 for Proshika's supervision and Tk. 15177.80 for Private management. Gross returns per farm per year stood at Tk. 205623.39 and for farms under Proshika and Private management, respectively. The study revealed that broiler rising under Proshika's and Private management were profitable but broiler production under Private management was more Profitable.

Rahman *et al.* (2001) completed a study on prospects and problems of poultry industry in selected areas of Bangladesh with particular reference to marketing practices. For the study Gazipur & Kishoregonj districts were purposively selected. They selected 130 respondents which included 25 contract growing farmers, 4 traders of broiler and 20 fanners and 45 traders of layer. They identified six channels in broiler marketing. The average cost of raising broiler per batch stood at Tk. 73322 for 1000 birds and the net return per broiler farm per batch was accounted for Tk. 8058. The average marketing cost of broiler in Dhaka city and in Kishorgonj for wholesaler-cum-retailers and retailers were estimated at Tk. 2844, Tk. 2046, Tk. 2543 and Tk.2370 per 1000 birds, respectively.

Biswas *et al.* (2001) organized economic analysis of poultry rearing by rural women. They found that poultry rearing by rural women was profitable although they faced various problems relating to social, financial and management. Scientific method of poultry rearing was not adopted by rural women in the study areas. As a consequence, they losses as many of the birds died by diseases. Further, they did not clean the poultry house with disinfectant that increased disease attack.

Rashid (2001) conducted a comparative economic analysis of broiler and layer production in some selected areas of Sadar Upazila in Mymensingh district. To find out profitability, the researcher took a sample of 70 farmers of which 36 were layer and 34 were broiler. The result showed that the gross cost per bird per day stood at Tk. 1.3826, Tk. 1.2289, Tk. 1.1716 and Tk. 1.2480 for small, medium, large and all layer farms. The net return per bird per day was calculated at Tk. 2444, Tk. 0.3845, Tk. 0.4721 and Tk. 0.3667 for small, medium, large and all broiler farms. So the results showed that layer farmers were more profitable than broiler farms. Finally, the researcher identified some major problems of layer and broiler farms and suggested some policy guideline.

Islam (2002) studied the economics of poultry farms of different sizes in some selected areas of Dhaka city. He found that the overall mean profitability in terms of net returns from 113 birds was Tk. 1691 with a benefit cost ratio of 1 : 2 : 1. Important implications emerging from the findings of the study include the lack of electricity in the remote rural areas where its supply is frequently interrupted, even if available, broiler rearing without electricity is also feasible and profitable that to generates income, alleviate poverty and socio-economic improvement of the hard core poor families.

Bhuiyan (2003) conducted a study comparative economic analysis of poultry production under supervision of ABFL and farmer own management in some selected areas of Kishorcganj district. The study revealed that in ease of broiler farm total cost per year was Tk. 833860 and Tk. 653952 under ABFL supervision and farmers own management. Respectively the figures for layer farm per 18 months were Tk. 3281098 and Tk. 709712, respectively the cash expenses of broiler farm per year were Tk. 77.413 and Tk. 607177 for ABFL supervised farm and fanners own management farm, respectively, which accounted for 92.51 and 92.84 percent of their total costs. The

cash expenses of layer farm per 18 months were estimated at Tk. 2937367 and Tk. 6380011. The gross returns of broiler farm per year were Tk. 1101786 and 884482 under ABFL supervision and farmers own management, respectively. The average gross returns at layer farm per 18 months stood at Tk. 6266456 and Tk. 1008381. The net returns over full cost of broiler farm per year were Tk. 267926 and Tk. 230530 under ABFL supervision and farmers own management, respectively.

Tohura (2004) conducted a study on economics of small-scale commercial broiler farming in Sadarupazila of Rangpur district. The study revealed that on average the total cost per farm per year was Tk. 786615. It was found that the variable cost per farm per year was Tk. 774689, which accounted for 98.48 percent of total cost. The total fixed cost per farm per year amounted to Tk. 11926 which shared 1.52 percent of total cost. It is evident from the study that the gross return per farm per year stood at Tk. 176643. The net return over total cost per farm per year was calculated at Tk. 390028.

Alam (2004) conducted a study on backward and forward linkages of poultry farming in some selected areas of Savar upazila under Dhaka district. This study was conducted mainly to understand the dynamics of poultry farm and to determine the cost and returns of poultry farming and explore the backward and forward linkages of the study. Backward and forward linkage effects created great potentials of capital investment by private entrepreneurs.

Bairagi (2004) examined an economic study of contract broiler farming under Aftab Bahumukhi Farm Limited . Aftab Bhumukhi Farm Limited (ABFL) is one of the commercial integrated farms that introduced contract growing of broiler and layer in 1994 and integrated it with a supply chain to survey the urban consumer. The study analyzed the economics of broiler farming with special reference to an understanding of the supply chain management. It suggested that ABFL should gain experiences and bring about efficiency at the contract growers level.

Khatun et al. (2005) conducted a study on growth performance of broiler under different management. All the management producers were similar for birds under the study. Broiler performance in terms of live weight gain, feed consumption, feed conservation efficiency, livability, cost affectivity, meat yield characteristics were

evaluated. The study found that the live weight gain, feed consumption, livability and cost affectivity of broiler production were better on salt system than other two management system.

Kulkarni (2006) examined the correlation of need based expert system on commercial poultry production. They studied 75 commercial poultry farms, 44 layer and 31 broiler farms in Ranga Reddy district and Andhra Pradesh, India and identified the correlates of their information need and explored the applicability of need based expert system called Poultry Expert System (PES). Scientific orientation, income and term size were found to be the crucial factors determining the information need of different categories of poultry farms. Income and farm size had the highest direct and indirect effects, respectively, on the applicability of PES. Significant inter correlation was found between information need and the applicability PES (poultry expert system).

Peter and Mia (2006) undertook a study on poverty alleviation and broiler raising programs of BKB and BRDB in selected areas of Bangladesh. The study revealed that 410 and 268 man-days of employment opportunity were created per farm per year under BKB and BRDB. Average annual income per household under BKB and BRDB increased from Tk. 48758 and Tk. 28815 (187%) to Tk. 140065 and Tk. 73437 (35%), respectively over five years. Average amount of savings per household increased from Tk. 1280 and Tk. 497 (12 times) to Tk.16805 and Tk. 8291 (16 times). About 63% and 83% of total households under BKB and BRDB were enable to overcome the poverty situation. The broiler farming households with limited institutional facilities developed their economic status towards poverty reduction within a short time.

Ironkwe and Ajayi (2007) Studied on profitability of broiler production in oyibo Local Government Area of Rivers State, Nigeria. This study analyzed the profitability of broiler production in five communities in Oyibo Local Government Area, Rivers State, Nigeria. They provided descriptive statistics, gross margin and return-to-management analysis. It was concluded that broiler production as part of a poultry investment or as a whole business venture is profitable. The results revealed that the investment after six months yielded a net profit of 100%. The net profit had a positive value because the birds grew to heavy weights over a short period of time,

thereby attracting high prices and return. These are clear indications that broiler production is a viable venture.

Etuk *et al.* (2007) conducted a study on resource use efficiency of broiler enterprise in Cross River State, South Eastern Nigeria. This study was conducted to estimate the broiler production functions based on data obtained from broiler enterprises around the Calabar municipality of Cross River State, South Eastern Nigeria. They found that broiler production in the Calabar municipality required more feed and floor space to optimize mass gain, whereas, the evident higher marginal value product compared to feed cost was indicative of irrational use of feed resource by farmers.

Rahaman (2007) conducted an economic analysis of broiler production under contract farming system in a selected area of Bangladesh. The study considered sixty farmers to show the profitability and sustainability under contract growing system in Bajitpur upazila of Kishoregonj district. The total cost of broiler per farm per batch was estimated at Tk. 2754758.16, Tk. 2090541 and Tk. 3886383.67 for small, medium and large farms, respectively. Net returns were Tk. 64554, Tk. 64804 and Tk. 200285 for small, medium and large farms, respectively. Finally, he made some recommendations for the development of broiler farm in Bangladesh.

Islam (2006) conducted an economic study on broiler farming and its impact on livelihood improvement in selected areas of Gazipur district. The researcher took fifty farmers for the analysis. The study revealed that most of the broiler farmers were at the age group of 23-45 years. For an average per batch per farm of 100 birds, total cost, gross return, gross margin and net return were estimated at Tk. 96075.42, Tk. 106650, Tk. 13239.50 and Tk. 10574.58 respectively. Gross return and net return indicated that broiler farming was a profitable business. The study identified some economic, marketing, technical, social and natural problems, with their provable solution.

Leone and Estevez (2008) studied on economic and welfare benefits of environmental enrichment for broiler breeders. Design to enrich the environment is crucial in the effort to fully address the biological needs of domestic animals. They investigated the potential benefits of cover panels for broiler breeder reproductive

performance in a commercial setting. The result demonstrate that environment enrichment is not only beneficial for broiler breeder welfare, but can also be economically advantageous, resulting in a win-win situation for poultry welfare and production.

Akther and Rashid (2008) conducted a comparative efficiency analysis on broiler farming under Aftab bahamuhkhi farm limited supervision and farmers under own management. A total of 90 farmers were selected under both management from three upazilas named Bajitpur, Kuliarchar and Kishoregonj Sadar. The Cobb-Douglas production function was used in the present study to examine the effects of the independent variables on gross return in broiler production. The total cost and average net return per batch per farm for 1000 birds were estimated Tk. 99429 ; Tk. 106330 and Tk. 4259 ; Tk. 3631 for the Aftab bahamuhkhi farm limited supervised farmers and own managed farmers, respectively. The study identified some major problems of broiler farming and suggested some recommendations for the development of broiler farming.

Raihan *et al.* (2008) conducted a study on trade and poverty linkages of the poultry industry in Bangladesh. This industry is particularly important in the sense that it is a significant source for the supply of protein and nutrition in a household's nutritional intake. With a high population and income growth, urbanization and high income elasticity of demand, the demand for poultry products will be increased day by day. The poultry industry in Bangladesh is very important for the reduction of poverty and creation of employment opportunities. In order to protect the poultry sector from fierce foreign competition, the government has adopted various measures. There is also a serious lack of technical know-how among the people involved in this industry. They concluded that the poultry sector received adequate access to credit mainly from NGOs, access to working capital by smaller firms in particular still remains a major hurdle.

Sultana (2009) conducted a study on profitability of broiler farming in some selected areas of Mymensingh. This analysis showed the profitability of broiler production in Mymensingh district. The Cobb-Douglas production function was used in the study to examine the effects of the independent variables on gross return in broiler production. She found that the average total cost of broiler per farm per batch for 500 birds was

Tk. 63366.84 where total variable cost for per batch was Tk. 60946.29 and total fixed cost Tk. Was 2420.55. Gross return for batch was Tk. 70150.00 and gross margin for per batch was Tk. 9203.71.

Akhter (2009) conduct a study on comparative profitability of broiler farming under Aftab bahumukhi farm limited supervision and farmers under own management. The Cobb-Douglas production function was used in the study to examine the effects of the independent variables on gross return in broiler production. The study revealed that average, total cost of raising broiler per batch per 1000 birds was estimated at Tk. 99,429.00 and Tk. 1,06,330.00 for ABFL supervised farms and farms under own managed farms, respectively. The average variable costs and fixed costs per batch per 1000 birds were calculated at Tk. 96,218.00 and Tk. 1, 02,926.00, respectively. The average gross margin per batch per farm for 1000 birds were at Tk. 7,470.00 and Tk. 7,035.00 for the ABFL supervised farms and for farmers' own managed farms, respectively and average net returns were estimated at Tk. 4,259.00 for ABFL supervised farms and Tk. 3,631.00 for farmers' own managed farms respectively. The statistical analysis showed that profit earned by ABFL supervised broiler farms and own managed broiler farms were not significantly different.

Halcyan (2011) conducted a socioeconomic study on household poultry rearing in some selected areas of Mymensingh district. In the study, researcher selected sixty household farmers in Sadar upazilla and Trishal upazila under Mymensingh district. The Cobb-Douglas production function was used in the study to examine the effects of the independent variables on gross return in broiler production. The total cost, average gross return, net return and benefit cost ratio were Tk. 9810, Tk. 11087, Tk. 1277 and 1.13 respectively. It was concluded that socioeconomic development can be achieved with the help of household poultry farming.

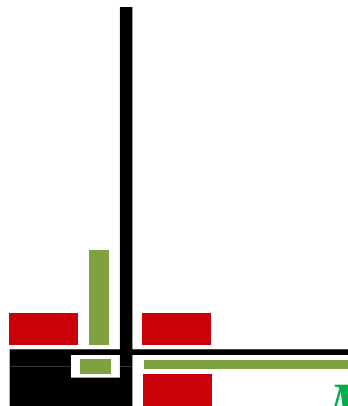
Rana et al. (2012) conduct a study on profitability of small scale broiler production in some selected areas of Mymensing. This study aimed to determine the cost, return, and profitability of broiler production in some selected areas of Mymensingh district. This study estimated the average cost of raising broiler to be Tk. 8, 35,910.65 per farm per year. It was found that the variable cost per farm per year stood at Tk. 8, 23,735.93 which accounted for 98.54 percent of total cost. The total fixed cost per farm per year amounted to Tk. 14,041.66. It was evident from the study that the gross

return per farm per year stood at Tk. 10, 78,022.39. The net return per farm per year was calculated at Tk. 2, 42,111.47. The findings revealed that broiler production was a profitable enterprise. Cobb-Douglas production function was applied to explore the specific effect of factors on broiler production. It was observed that most of the included variables had significant impact on broiler production.

Khan (2013) conducted an economic study on broiler farming in selected peri-urban areas of Bangladesh. The Cobb-Douglas production function was used in the study to examine the effects of the independent variables on gross return in broiler production. The results of the analysis showed that on average the total cost of broiler per farm per batch of 500 birds was Tk. 83305. It was found that the variable cost per farm per batch (500 birds) stood at Tk. 80175 which accounted for 96.24 percent of the total cost. The total fixed cost per farm per batch amounted to Tk. 3130. It was evident from the study that the gross return per farm per batch stood at Tk. 12375. The net return over total cost per farm per batch was calculated at Tk. 9245. The benefit cost ratios of broiler farming were 1.15 percent on variable cost basis and 1.11 percent on fixed cost basis. Findings of the study clearly indicated that broiler production was a profitable enterprise.

Mitu (2013) conducted an economic study on sonali poultry production in selected areas of Gazipur district: economic study. The Cobb-Douglas production function was used in the study to examine the effects of the independent variables on gross return in broiler production. The major findings of the study was that total cost for 1000 birds were estimated at Tk. 120613 per batch, respectively. Variable cost constituted the major part of the total costs. Average variable costs for 1000 birds stood at Tk. 115432 where average fixed cost for 1000 birds was estimated at Tk. 5181 per batch only. Average gross margin and average net returns for 1000 birds was estimated at Tk. 57240 and Tk. 52059 per batch. An average gross return for 1000 birds was estimated at Tk. 172672 per batch. Benefit Cost Ratio was estimated 1.4 for Sonali poultry production.

It is clear from the above discussion that there are many economic studies on poultry farming in Bangladesh. The present study updates the profitability and resource use efficiency status of broiler production with some more insights. Moreover, this study was conducted using latest data to get recent information regarding production and will help both the researcher and the farmers concerned with broiler farming.



Chapter 3
METHODOLOGY

Chapter 3

METHODOLOGY

3.1 Introduction

The reliability of a survey research depends, to a great extent, on the appropriate methodology used in the research. Use of improper methodology very often leads to erroneous results. Proper methodology is determined by the nature, aims and objectives of the study. It also depends on the availability of necessary funds, materials and time. There are several methods of collecting data for survey research. The present study was based on primary data, which were collected from the field survey and on secondary data. Those were collected from reliable sources. In this study, survey method was chosen because it is less expensive, it requires less time and after all it is simple and easy technique. But it has also some shortcomings. The main shortcoming of this method is that the investigator has to depend upon the memory of the respondents. To overcome the shortcoming, repeated visits were made to collect data in the study area and the questions were asked in such a manner that the respondents could answer from memory. The design of the survey for the present study involved some necessary steps.

3.2 Selection of the Study Area

Selection of the study area is an important step for conducting a study. It depends on the objectives of the research. For the present study, Dhamrai upazila area of Dhaka district was selected randomly. Primary data was collected from Sharifbhag, East kayet para and Shambhag and Dhamrai villages. The main reasons for selecting the study area were as follows:

1. Easy communication facility from the Sher-e-Bangla Agricultural University campus to the study area.
2. Availability of large number of broiler farms in the study area.
3. Expected better cooperation from the owners of broiler farms since the area is well known to the researcher.

3.3 Method of Investigation

The method of data collection indeed depends upon nature, aim and objectives of the study. There are several methods of data collection of which survey method is one of them. For this study, survey method has been adopted for collecting data. Necessary data have been collected by the researcher herself by using questionnaire through face to face interview. The respondents were broiler farm owners, from the study areas.

3.4 Sampling Procedure

It is very difficult to make a farm business survey covering all farms. For this reason sampling is done to select representative farms to minimize cost in terms of time and resources for the study. A sample of representative farms was therefore, chosen which could represent a reasonably true picture of the region. In selecting samples for a study, two things were taken into consideration. The sample was as large as to allow for adequate degree of freedom in the statistical analysis and administration of field research, processing and analysis of data were manageable with the limits imposed by physical, human and financial resources. There are 398 villages in Dhamrai Upazila. From there 4 villages were randomly selected for the study. There are 200 broiler farms in four villages. Among them 80 broiler farms were randomly selected for the present study. Generally there are two types of broiler such as white feature and brown feature. The researcher was collected data from white feather (Coff-500) broiler farmers.

3.5 Preparation of the Survey Schedule

The success of the research and survey depends on the proper design of the interview Schedule. Keeping in view the objectives of the study, interview schedule was prepared to collect the expected information. Before preparing the final schedule, draft schedule was prepared in accordance with the objectives of the study. Then the schedule was pre- tested to verify the relevance of the questions and the nature of the response. After pre testing and necessary adjustment, final survey schedule was developed. The final survey schedule was developed in logical sequences including items of information as noted below:

1. Socio-economic condition of the broiler farmer;
2. Broiler farm related information;
3. Sources of income of farm families;

4. Cost of day-old-chick;
5. Cost of feed;
6. Cost of human labor;
7. Vaccine and medicine cost;
8. Cost of tools and equipment;
9. Housing cost;
10. Income from broiler;
11. Problems faced by broiler farmers and
12. Suggestion of broiler farm owners to solve those problems.

For the present study, data were collected during the month of October and November 2014 through face to face interview with the respondents. For collecting data a number of field visits were made by the researcher herself during the period.

3.6 Collection of Data

Collection of accurate and reliable data from the field is not an easy task. The result of any study depends on the accuracy and reliability of data. Reliability of data mostly depends on the method of data collection. For the accuracy of the survey, schedules must be unambiguous. To ensure reliability, data were collected from the sample respondents by direct interview with interview schedules designed for the study. Schedules are used for collecting information from the broiler farmers. During the interview, each respondent was given a brief introduction about the nature and purpose of the study. So, they could talk freely. Irrelevant questions were avoided to save time for the respondent and researcher. To attain accuracy and reliability of data, care and caution were taken in the course of the data collection. Attention was paid to the mode of the respondent and a congenial relationship was maintained between the respondent and researcher. Secondary data were collected from different journals, published paper as well as from different organizations such as Bangladesh Bureau of Statistics (BBS), Bangladesh Economic Review, etc.

3.7 Problems Faced in Collecting Data

In collecting primary data, following problems and difficulties were faced by the researcher:

1. Most important problem was the time limitation for collecting primary data.

2. Most of the farmers in the selected areas hesitated to give actual information about their income sources. Because they thought that the researcher was government agent; therefore they were shy of giving actual information.
3. Another important problem faced by researcher in selected areas was that the researcher had to depend solely on the memory of the respondents for collecting data because they did not keep any written record.
4. Most of the respondents in the study areas did not have any knowledge about research study. It was therefore difficult to explain the purpose of this research to convince them.
5. Sometimes, the farmers did not cooperate willingly with the researcher. They did not find any benefit to give information to the researcher.
6. On many occasions farm respondents were not available at home and in such cases the researcher had to give extra effort and time to collect the information from them.

3.8 Processing and Tabulation of Data

The processing of data is necessary on the basis of objectives of the study. After collection of data from the field all data for the present study were then coded, tabulated, summarized and processed for analysis. The data have been transferred into SPSS sheet from the interview schedules. Finally, required numbers of tables were prepared and results were obtained by using various statistical techniques.

3.9 Analysis of Data

3.9.1 Analytical Techniques

Data were analyzed with a view to achieving the objectives of the study. For this study, the following techniques were used.

- a) Tabular analysis and
- b) Functional analysis

3.9.1.1 Tabular Analysis

The collected data were analyzed on the basis of the objectives of the study. Tabular analysis is an analysis that is generally used to find the crude association or variations between variables. In the present study, tabular techniques were applied with the help of some statistical measures like the sum average, percentage, etc., to show the comparative performance of broiler farming. Profitability analysis was done on the

basis of variable Cost, fixed cost, etc. The following profit equation was applied to assess the profitability of broiler farms.

$$\Pi = P_b Q_b + P_L Q_L - \sum (P_{xi} \cdot X_i) - TFC$$

Where,

Π = Profit (Tk./farm/year);

P_b = Per unit price of live broiler (Tk./kg);

Q_b = Quantity of live broiler (Kg./year);

P_L = Per unit price of used litter and excreta (Tk./kg);

Q_L = Quantity of waste litter (Kg./farm/year);

P_{xi} = Per unit price of ith (variable) inputs used in the broiler farm (Tk.);

X_i = Quantity of ith (variables) inputs used in Kg;

$i = (1, 2, 3, \dots, 80)$ and

TFC = Total fixed cost

3.9.1.2 Functional Analysis

To determine the contributions of the most important variables to the returns of a broiler farm, the Cobb-Douglas production function was used in the present study.

The model took the following shape:

$$Y = a X_1^{b_1} X_2^{b_2} X_3^{b_3} X_4^{b_4} X_5^{b_5} X_6^{b_6} e^{U_i}$$

The function was estimated as follows:

$$\ln Y = \ln a + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + b_6 \ln X_6 + U_i$$

Where,

Y = Gross return (Tk./kg);

a = Constant or intercept value;

X_1 = Cost of feed for ith farm (Tk./year);

X_2 = Cost of day old chicks for ith farm (Tk./year);

X_3 = Cost of hired labor for ith farm (Tk./year);

X_4 = Veterinary expenses for ith farm (Tk./year);

X_5 = Cost of electricity for ith farm (Tk./year);

X_6 = Cost of litter for ith farm (Tk./year)

U_i = Error term;

$i = 2, 3, \dots, 80$;

$b_1, b_2, b_3, b_4, b_5, b_6$ = Regression co-efficient of respective variables and

\ln = Natural log.

3.10 Procedure for Evaluation of Costs and Returns

The cost items were classified into two broad categories, i.e. (1) Fixed cost and (2) Variable costs. The costs and returns were estimated per farm for the reference year. The cost items were divided under the following heads.

3.10.1 Calculation of Feed Cost

Feed was the largest and the major cost items of broiler farms. The efficient utilization of this cost possibly helps a farm to achieve the maximum level of profit. Cost of feed included ready feed, such as rice bran, wheat bran, bone meal, fish meal, oil cake, salt, mineral, vitamin, oyster shell, etc.

3.10.2 Day Old Chick Cost

Day old chicks cost is another major cost of broiler production. Day old chicks cost was the money value of total broiler birds, purchased by the owners of the broiler farms in the present study. This cost was calculated by multiplying the total number of day-old-chicks by the price of each chick.

3.10.3 Human Labor Cost

There are broadly two different kinds of labor, (1) hired labor and (2) family labor. Again, hired or family labors were of two categories i.e., male and female. The children and female man-days were converted into adult equivalent male man-days using the ratios, 1 adult man = 1.5 adult women = 2 children

3.10.4 Veterinary Expenses

Veterinary expense is another important cost item of broiler production. Veterinary services included cost of vaccine, medicine and fees of doctors. Total medicine costs were calculated by taking into account real cost incurred on the above items.

3.10.5 Housing Cost

Maximum broiler houses were tin-shed with pucca floor. In the present study, housing cost was calculated by applying straight line depreciation method. In this method, the depreciation during each period is same. The amount of depreciation to be charged during a year is worked out as follows:

$$\text{Depreciation} = \frac{(\text{Original value} - \text{Salvage value})}{\text{Life of the house}}$$

3.10.6 Cost of Tools and Equipments

Tools and equipment are necessary for successful broiler farming. The broiler farmers generally used brooder, water pot, feeder, fan, bulb, the heating material etc. Cost of tools and equipment were determined by applying straight line depreciation method.

3.10.7 Interest on Operating Capital

Interest on operating capital was charged on taking all variables costs incurred for various operations in broiler farming such as day-old-chick cost, feed cost, hired labor cost, veterinary services and medical cost, electricity cost, transportation cost and litter cost. As the variable cost items were short time investments, interest rate (IR) on these items was charged at the rate of 5 percent per annum. It was assumed that if the owners of broiler fanners had put money in bank, he would have received an income in the form of interest money at the above rate. The cost of land use may be estimated using one of the alternative concepts:

Interest on operating capital (IOC) was computed by the following formula:

$$\text{IOC} = \frac{\text{OC} \times \text{IR} \times \text{Time consideration}}{2}$$

Where,

OC = Operating capital;

IR=Interest rate.

3.10.8 Litter Cost

Quality litter is essentially required for rearing birds in open type houses in the climatic condition of Bangladesh. The management of litter is very difficult because proper litter materials are not easily available in Bangladesh. In developed countries, wood shaving is generally used as litter materials because of its higher absorbing capacity. In some

countries, sugarcane bagasse after proper processing is used as litter. Unfortunately for Bangladesh, wood shaving and processed sugarcane bagasse are not easily available. Bangladesh has to largely depend on rice husk as litter. In the study area, the broiler farms used rice husk as litter. The actual money incurred was taken as the litter cost.

3.10.9 Transportation Cost

The transportation cost of broiler farmers included expenses on transportation for purchasing day old chicks, feed collection, paddy husk collection, veterinary services, collection of market information, etc.

3.10.10 Electricity Cost

It is another cost for broiler enterprise. Electricity is needed for maintaining temperature inside the broiler house or for protecting the birds for hot and cold climate.

3.11 Calculation of Benefits

The return items included values of live broiler, used litter and excreta. The value of broiler was calculated on the basis of weight (kg) of live broilers sold, multiplied by the average prices of broiler.

3.12 Gross Margin

Gross margin is defined as the differences between gross return and variable cost. For short run as well as for farm planning, gross margin analysis is widely used.

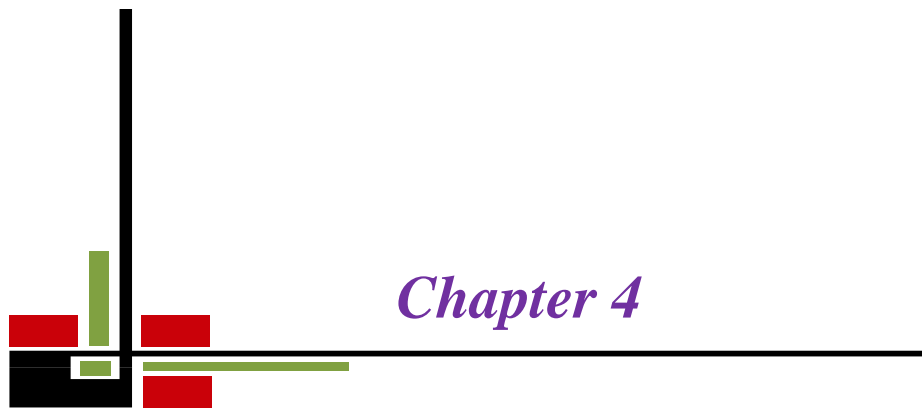
3.13 Net Return

Net return on total cost was arrived at by deducting all the costs from the gross return.

3.14 Benefit Cost Ratio

Benefit cost ratio was calculated by the following formula

$$\text{BCR} = \frac{\text{Total Benefit}}{\text{Total Cost}}$$



Chapter 4

PROFILE OF THE STUDY AREA

Chapter 4

PROFILE OF THE STUDY AREA

4.1 Introduction

A brief description of the study area is presented in this chapter. The knowledge of the study area is essential to understand and interpret the findings of the study. The description of the study area includes location, physical features and topography, climate, temperature and rainfall, population, religion and culture, agriculture, NGOs, communication and marketing facilities of the study area.

4.2 Location

The study area covers Dhamrai upazila of Dhaka District. Countryside of Dhamrai upazila (Sharifbhag , East Kayetpara, Shambhag and Dhamrai village) was selected for this purpose. It is bounded in the south by Savar upazilla, in the north by Saturia upazilla in Manikganj District, in the east by Kaliakoir upazilla in Gazipur District and in the west by Singair upazilla in Manikgonj District. It lies between 23°54.5' north latitude and 90°13' east longitude. It comprises a total area of 307.4 sq. km including an area of 5.98 sq. km of river (Wikipedia, 2013).

4.3 Physical Features and Topography

The study area is covered by both high and low land. The feature of the soil varies from sandy loam to clay loam. The land surface of the study area is plain and fertile. The soil texture and structure of these areas are almost similar. Sometimes the low land areas get affected by the overflow of the river. The favorable water level, flat topography and loamy soil have encouraged rapid expansion of ground water irrigation technologies.



Figure 4.1: Map of Dhamrai Upazila

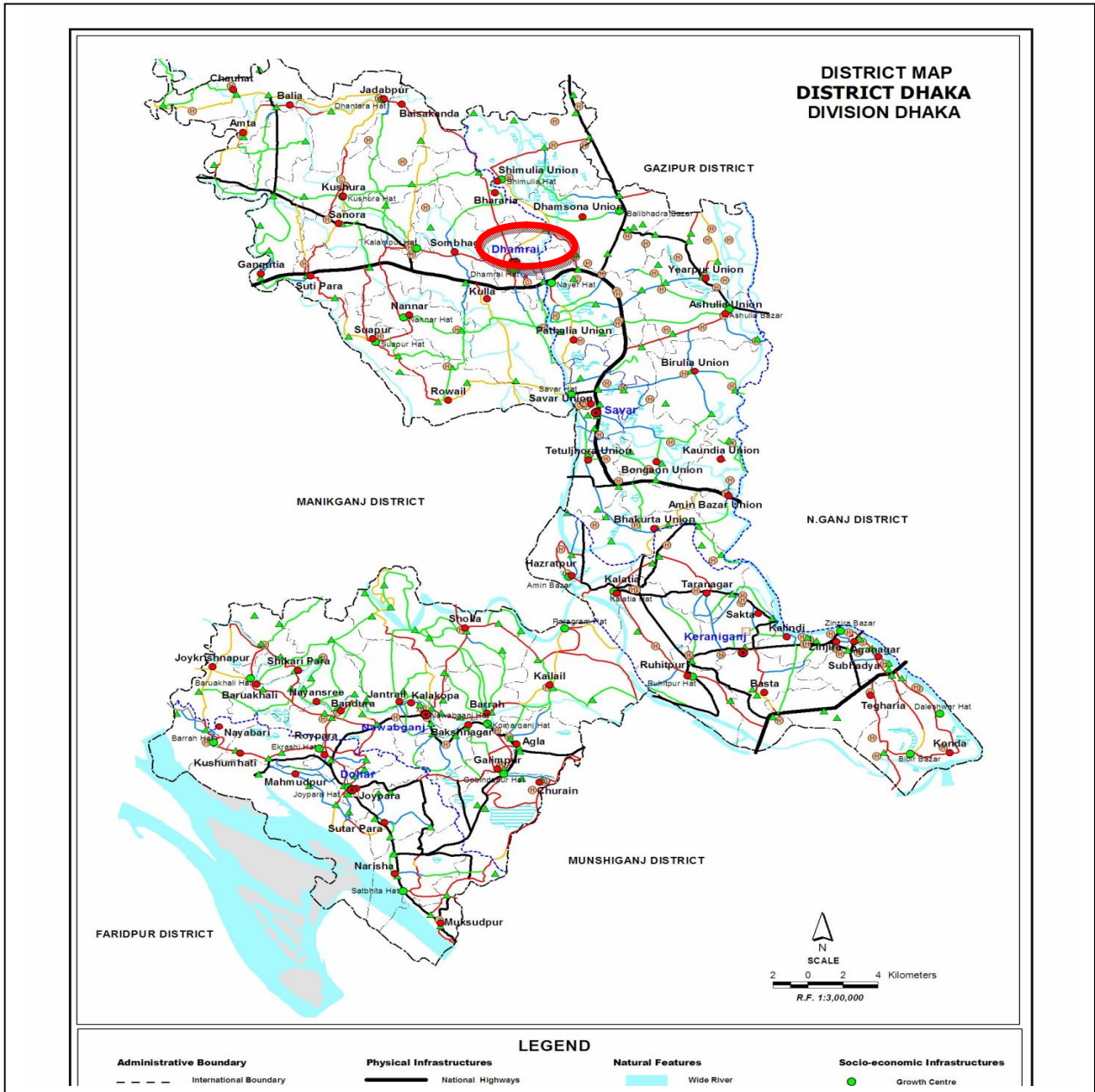


Figure 4.2: Map of Dhaka District

Table 4.1 Description of agricultural land type in 2013

(Hectare)

District	High land	Medium high land	Medium low land	Low land	Very low land	Total
Dhaka	10777	19198	43608	16773	2685	93041

Source: BBS, 2013.

4.4 Climate, Temperature and Rainfall

The climatic condition of the study area covered is not different from that of other parts of the district. Due to heavy rainfall, summer is often cooler.

Table 4.2: Monthly average temperature, humidity and rainfall of the study area in 2014.

Months	Maximum temperature (0°c)	Minimum temperature (0°c)	Average humidity (%)	Rainfall (mm)
January	25.4	12.7	71	7.7
February	28.1	15.5	64	28.9
March	32.5	20.4	62	65.8
April	33.7	23.6	71	156.3
May	32.9	24.5	76	339.4
June	32.1	26.1	82	340.4
July	31.4	26.2	83	373.1
August	31.6	26.3	82	316.5
September	31.8	25.9	83	300.4
October	31.6	23.8	78	172.3
November	29.6	19.2	73	34.4
December	26.4	14.1	73	12.8

Source: Banglapedia, 2014.

Table 4.2 shows that maximum and minimum temperature in the study area ranged from 33.7°C to 12.7°C. The average maximum temperature was the highest in April which was 33.7°C and the average minimum temperature was recorded in January which was 12.7°C. The average humidity percentage of the study area was recorded as 83% in July and September and the lowest humidity percentage was recorded as 62% in March. The maximum average rainfall is about 373.1 mm in July and the lowest during the month of January (Banglapedia, 2014).

4.5 Area, Population and Literacy Rate of the Dhamrai Upazilla

Total area of Dhamrai upazilla is 307.4 sq. km. having population 412418 with a sex ratio 101:100 (Table 4.3). The literacy rate is 50.8% and number of household is 94776.

Table 4.3: Area, population, household, sex ratio and literacy rate of Dhamrai upazilla.

Name of the area	Area sq. km	No. of household	Population			Sex ratio	Literacy rate %
			Male	Female	Total		
Dhamrai	307.4	94776	207078	205340	412418	101:100	50.8%

Source: BBS, 2013.

4.6 Non- government Organizations (NGOs)

A large number of non-government organizations (NGO's) like BRAC, PROSHIKA, ASA, Grameen Bank, SSS (Society for Social Service) etc. are engaged in Different types of rural development programmes in the study area. In recent years, NGOs are providing technical supports in livestock, poultry, fisheries, homestead gardening, handicraft etc. They are also engaged in educational programmes. They provide loans in small amount (microcredit) to poor women and landless farmers.

4.7 Religion and Culture

Most of the villagers in the study area are Muslims except a few. The non-Muslim villagers are mostly Hindus. The relations between Muslims and Hindus are cordial. The villagers are very faithful on their own religion. Their livings are simple and

straight forward. They are in general cooperative to each other in all sorts of social functions and the hospitality of the villagers is noteworthy.

4.8 Agriculture and Use of Modern Technology

Agriculture is the biggest field of employment of the people in the study area. In Dhamrai upazilla, the principal agricultural crop is rice which is grown in three seasons such as Aus, Aman and Boro. The winter crops such as wheat, potato, mustard, and vegetables like brinjal, cucumber, bottle gourd, bean, tomato, lalshak etc are also grown in the study area. Modern technology namely deep and shallow tubewells, power tiller, HYV seeds, chemical fertilizers, insecticides are widely used in the study area. Major cropped areas and production in Dhamrai upazilla are shown in Table 4.4

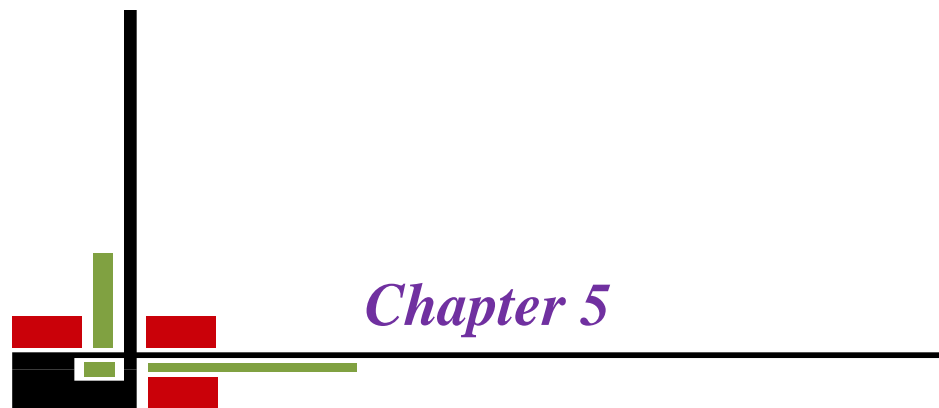
Table 4.4 Major cropped area and production by Dhamrai upazilla in 2012- 2013.

Particular	Aus	Aman	Boro	Wheat	Jute	Potato	Tomato
Area (Acres)	994	28719	41718	173	10529	1033	305
Production (Metric ton)	585	18167	70234	158	8390	6986	1246

Source: BBS, 2014.

4.9 Roads, Communication, Transport and Marketing Facilities

Transport, communication and marketing facilities are the main agricultural infrastructure and play an important role in agricultural as well as economic development of a country. Without well developed transport system, it becomes impossible for the rural people to enjoy the facilities of modern technology. Buses, bicycles, rickshaw, tempo and van services are the major means of transport in the study area. The marketing systems in these Upazilla headquarters are moderately good. There are many markets and Hat in the study area. Generally farmers purchase daily necessities including agricultural inputs and sell their products to the village markets and to the middlemen e.g. Paikers, Beparies, Aratdars etc. The villagers seldom receive fair price of their products.



Chapter 5

***SOCIOECONOMIC CHARACTERISTICS OF
THE BROILER FARMERS***

Chapter 5

SOCIOECONOMIC CHARACTERISTICS OF THE BROILER FARMERS

5.1 Introduction

This chapter provides a brief description of the socioeconomic characteristics of broiler farmers in the study area. Decision making behavior of an individual is determined to a large extent by his socioeconomic characteristics. The socioeconomic characteristics considered in the present study were age, education, occupation, family size, land ownership, sources of family income, etc.

5.2 Age Distribution of Broiler Farmers

Age distribution of broiler farm owners is very important in maintaining profitable operation of a farm business. The selected broiler farmers were grouped into three categories according to their ages. The different age groups of the broiler farm owners are presented in Figure 5.1. The age of the selected broiler farmers was observed to be ranging from a minimum of 18 to a maximum of 58 years.

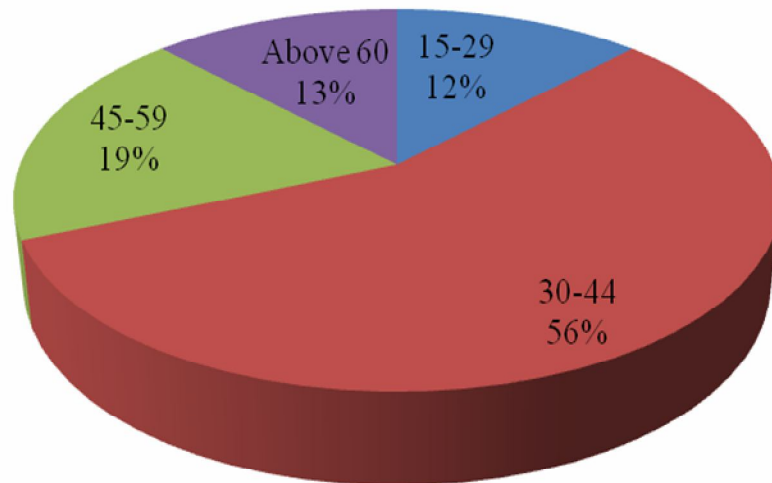


Figure 5.1: Age distribution of broiler farmers

It is clear from the table that farmers between 25-45 years of age accounted for 68 percent of the total sampled broiler farmers while farmers aged less than 25 years constituted 11 percent. There are only 21 percent sample farmers whose age were 46 years and above. Figure 5.1 revealed broiler farmers were of mostly middle aged group.

5.3 Educational Level of Broiler Farmers

Education plays an important role for a broiler farm owner and helps a farmer to have day-to-day information about the existing modern techniques together with changes in various management practices. It enables a man capable of managing scare resources and hence to earn maximum profit. To examine the educational level of the broiler farmers, education were classified into six categories such as can sign only, P.S.C, S.S.C, H.S.C, and above H.S.C. Figure 5.2 displays the educational level of the respondents. The Figure reveals that 34 percent of the total respondents attained secondary educational level. Farmers who can sign only, P.S.C, S.S.C, H.S.C and above H.S.C constituted 12 percent, 25 percent, 16 percent, 9 percent, and 4 percent, respectively.

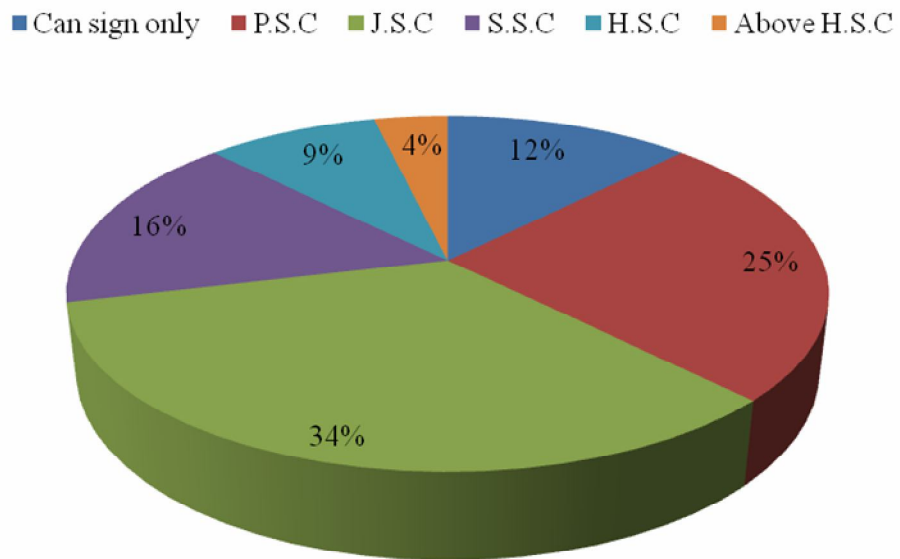


Figure 5.2: Educational level of the owners of broiler farmers

5.4 Occupational Status of the Broiler Farmers

Occupation is one of the important attributes of socio-economic characteristics. The work in which a man is engaged throughout the year is known as his main occupation. In Bangladesh, rural people's occupations are increasingly diversified. About 50% of rural people do not own any land. They seek off-farm and non-farm

■ Broiler Farming ■ Agriculture ■ Business ■ Service ■ Others

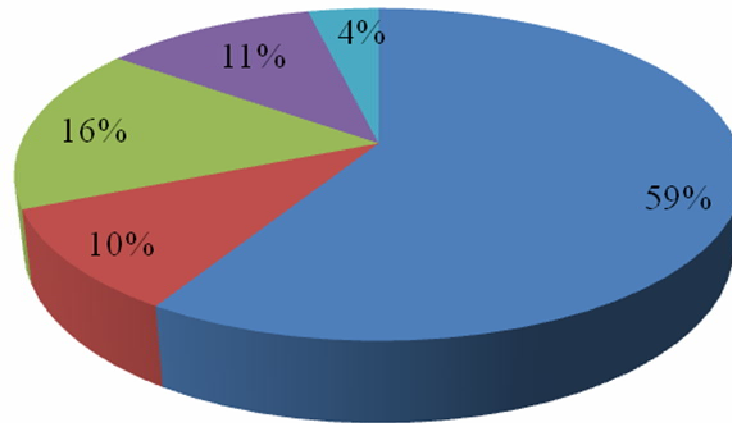


Figure 5.3: Occupational status of the broiler farmers

income earning opportunities. In the selected area, the broiler farmers were engaged in different occupations along with broiler farming. In the case of main occupation, broiler farming accounted for 59 percent, business accounted for 16 percent, agriculture accounted for 10 percent and service and others accounted for 11 and 4 percent, respectively (Figure 5.3).

5.5 Marital Status of the Broiler Farmers

Table 5.1 shows that 85 percent of the broiler farmers were married and rest 15 percent were unmarried. Most of the broiler farmers belonged to high age group and they were married.

Table 5.1: Marital Status of the Broiler Farmers

Category	Number	Percent
Married	68	85
Unmarried	12	15
Total	80	100

Source: Field Survey, 2014.

5.6 Family Size of the Broiler Farmers

In the study area, family size has been considered as one which has a total number of People living together with the same head of the family. The family member includes wife, sons, unmarried daughter, father, mother and brother. The total numbers of persons of all families were divided into four age categories according to their family size. The different family size of broiler farmers is presented in Table 5.5.

Table 5.2: Family size of broiler farmers

No. of family members group	No. of farm family	Percent	Average family size
1-3	10	12.5	5.012
4-5	37	46.3	
6-7	23	28.8	
Above 7	10	12.5	
Total	80	100.0	

Source: Field Survey, 2014.

Table 5.2 indicates that 12.5 percent families of broiler farmers consisted of 1-3 members, 46.3 percent families consisted of 4-5 members, 28.8 percent families consisted of 6-7 members, and 12.5 percent families consisted of above 7 members. The average family size of our country is 4.40 (BBS, 2013). But in the study area it was found 5.012 for broiler farmer, which is larger than average family size of the country.

5.7 Income Level and Other Sources of Income

Family income of the farmers comprises different sources. Annual family incomes of broiler farmers come from broiler farming, business, agriculture, service, and others.

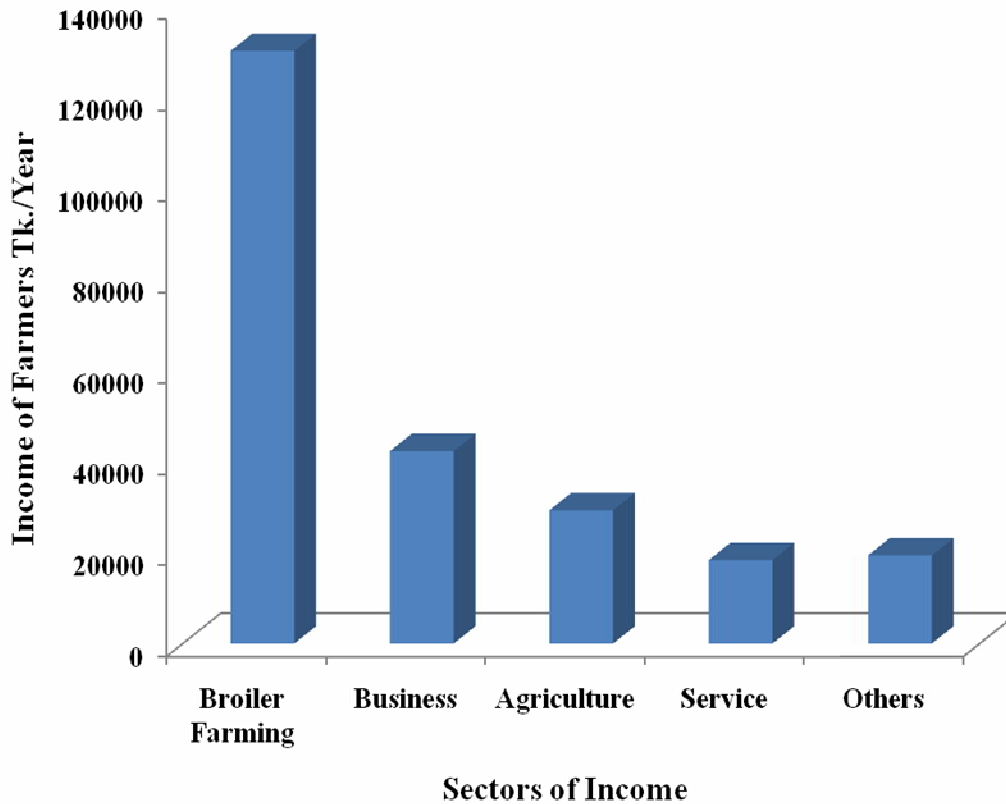
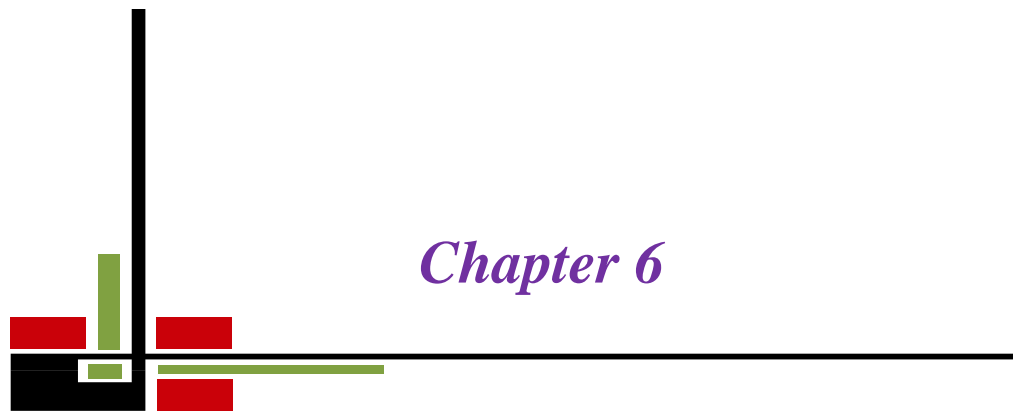


Figure 5.4: Annual family income of broiler farmers

Annual family incomes of broiler farm owners are shown in Figure 5.4. The figure indicates that the family income derived from broiler farming was greater than other sources. On average, annual family income from broiler farming was Tk. 130258, which covers 54.14 percent of the total income. On the other hand, average annual income from business of broiler farmers were estimated at Tk. 42295, which was 17.58 percent of the total income.



Chapter 6

PROFITABILITY OF BROILER FARMING

Chapter 6

PROFITABILITY OF BROILER FARMING

6.1 Introduction

The aim of this chapter is to estimate the costs, returns and profitability of raising broiler birds and to focus on the main factors affecting return of broilers production. In estimating cost of rearing broiler birds, total costs per farm per year were considered. Variable costs were determined for day old chick, feed, veterinary expenses, hired labor, litter costs, electricity cost and transportation cost. On the other hand, fixed cost included housing cost, tools and equipment, family labor, and interest on operating capital etc. On the return side, gross margin, net return, returns per taka invested on total cost were estimated. The item wise costs and return of broiler production are discussed below.

6.2 Cost of Broiler Production

The cost here refers to the total amount of funds used in production. In the present study, the total cost of broiler production was estimated at Tk. 301142.103 per farm per year. Table 6.1 represents the total costs of broiler production. Total variable cost and total fixed cost were Tk. 238728.73 and Tk. 62413.373 that were 79.28 and 20.72 percent of total cost, respectively. The item wise costs of broiler production are discussed below.

6.2.1 Variable Cost

6.2.1.1 Feed Cost

In Bangladesh, demand for poultry feed is increasing day by day with the increase in poultry population. It was the largest cost item of broiler farms. In this study the average feed cost per farm per year was calculated. Most of the farmers used ready feed that was purchased mixed feed, which included fish meal, bone meal, rice bran, wheat bran, oil cake, oyster shell, minerals, salt, vitamin, etc. and some used handmade feed. The purchased feeds were valued according to the average prices actually paid by the owners of the boiler farm. On average, price of per kg. feed was Tk. 40. Table 6.1 shows that the average feed cost per farm was Tk. 120507.60 covering 40.03 percent of the total cost.

Table 6.1 Total cost of broiler production per farm per year

Cost items	Unit	Unit Price	Per farm per year		Percentage of total Cost
			Quantity	Total Cost	
A. Variable cost	Tk.			238728.73	79.28
a) Feed cost	Tk.	40	3012.69	120507.60	40.03
b) Day-old-chick cost	No	40	1865	74600	24.77
c) Hired labour	Man-day	350	29	10150	3.37
d) Veterinary service and medicine cost	Tk.			20500	6.80
e) Electricity cost	Tk.			4788.13	1.59
f) Litter cost	Tk.			3970	1.32
g) Transportation cost	Tk.			4213	1.40
B. Fixed cost	Tk.			62413.373	20.72
a) Housing cost	Tk.			30888.75	10.25
b) Family labour cost	Man-day	350	10	3500	1.16
c) Tools & equipments cost	Tk.			4151.75	1.38
d) Interest on operating capital	Tk.			23872.873	7.93
Total cost (A+B)	Tk.			301142.103	100

Source: Field Survey, 2014

6.2.1.2 Day-Old-Chick Cost

Day-old-chick cost was another crucial cost item for broiler raising. The farmers of the study areas mainly collected day-old-chick from hatcheries through their local agents. The local hatchery imported parent stock from breeder farm and produced hybrid chicks for local commercial farms. It appears from Table 6.1 that the cost of day-old-chick was calculated at Tk.74600 which covered 24.77 percent of total cost.

6.2.1.3 Labor Cost

Labor cost is an important component in broiler enterprise and this has implication for income and employment generation. In calculating the cost of farm operation, the services of both hired and family labor were taken into consideration. Family labor includes the operator himself and other working members of the family while the hired labor includes permanent hired labor, and labor employed on daily contract basis. The cost of family labor was estimated on the basis of the principle of opportunity cost. It is revealed from Table 6.1 that the cost of hired labor per farm per year was Tk. 10150 which covered 3.37 percent of the total cost. On the other hand, family labor cost was calculated at Tk. 3500 which covered 1.16 percent of the total cost.

6.2.1.4 Veterinary Service and Medicine Cost

The broiler farm owners in the study area were very careful about the possibility of their broiler diseases. Vaccine, medicine, doctor's fee were the major component of veterinary expenses. Table 6.1 shows that the average veterinary cost per year was Tk. 20500 which covered 6.80 percent of the total cost.

6.2.1.5 Electricity Cost

It is another important cost item for broiler enterprise. Electricity is needed for maintaining temperature inside the broiler house or for protecting the birds from hot and cold climate. It is evident from table 6.1 that the annual electricity cost was Tk. 4788.13 which covered 0.75 percent of the total cost.

6.2.1.6 Litter Cost

It is another important cost for broiler enterprise. In the selected areas paddy husk was used as litter. The average litter cost per farm per year amounted to Tk. 3970 which was 1.32 percent of the total cost.

6.2.1.7 Transportation Cost

It is evident from Table 6.1 that transportation cost per farm per year stood at Tk. 4213 which covered 1.40 percent of the total cost.

6.3 Fixed Cost

6.3.1 Housing Cost

For broiler enterprise, construction of farmhouse claims an important part of the production cost. A house is required for broiler birds to protect them from sunshine, rainfall, cold weather, storms, and wild animals. It also provides comfortable condition for broiler birds. In the study areas, most of the farm houses were tin shed pucca floor fenced by the iron net. Average life time of farm house is considered 20 years. Table 6.1 shows that total housing cost per broiler farm per year was Tk. 30888.75 representing 10.25 percent of the total cost.

6.3.2 Tools and Equipment Cost

For successful broiler farming tools and equipment are necessary. The major tools and equipment used by the broiler farmers were feeds brooder, water pot, electrical instruments, feeder and heating materials. The tools and equipment cost per farm per year was Tk. 4151.75 which covered 1.38 percent of the total cost.

6.3.3 Interest on Operating Capital

It is evident from table 6.1 that interest on operating capital per farm per year was Tk. 23872.873 which covered 7.93 percent of the total cost.

6.4 Returns from Broiler Production

The main aim of the commercial broiler farms, like all other businesses is to earn profit by selling broiler birds. The purpose of this section is to estimate the gross return and net return (Profit) from raising broiler. To determine the gross return from broiler farming, it was necessary to calculate the return earned from selling live broiler birds and chicken dropping. Gross return was determined by adding income earned from sale of live broiler, used litter and birds excreta.

6.4.1 Gross Return

Table 6.2 shows the average gross return received by each broiler farmers from his farm business. It can be noticed from the Table that, on average, price of live broiler received by broiler farmers was Tk. 120. An average farmer produced 3545 kg broiler per year. The gross return per farm per year was Tk. 431400 (Table 6.2).

Table 6.2 Gross return from broiler production per farm per year

Items	Unite	Unite Price	Per farm/year	
			Quantity (Kg)	Value(Tk.)
1.Live broiler	Kg	120	3545	425400
2.Used litter & excreta	Sack			6000
Total (1+2)	-			431400

Source: Field Survey, 2014

6.4.2. Gross Margin

Gross margin is defined as the difference between gross return and variable costs. The argument for using gross margin analysis is that the farm owners like to maximize return over variable cost. Moreover in the context of short run analysis and farm planning, the gross margin analysis is widely used. It is evident from Table 6.3 that gross margin per farm per year was Tk. 192671.27.

Table 6.3 Gross margin, net return, and benefit cost ratio per broiler farm per year

Margins & Returns	Per farm /Year	Percent
A. Gross return	431400	
B. Total variable cost	238728.73	79.28
C. Total cost	301142.103	100
D. Gross margin (A-B)	192671.27	
E. Net return (A-C)	130257.90	
F. Return per taka invested (Variable cost basis) A/B	1.80	
G. Return per taka invested (Total cost basis) A/C	1.43	

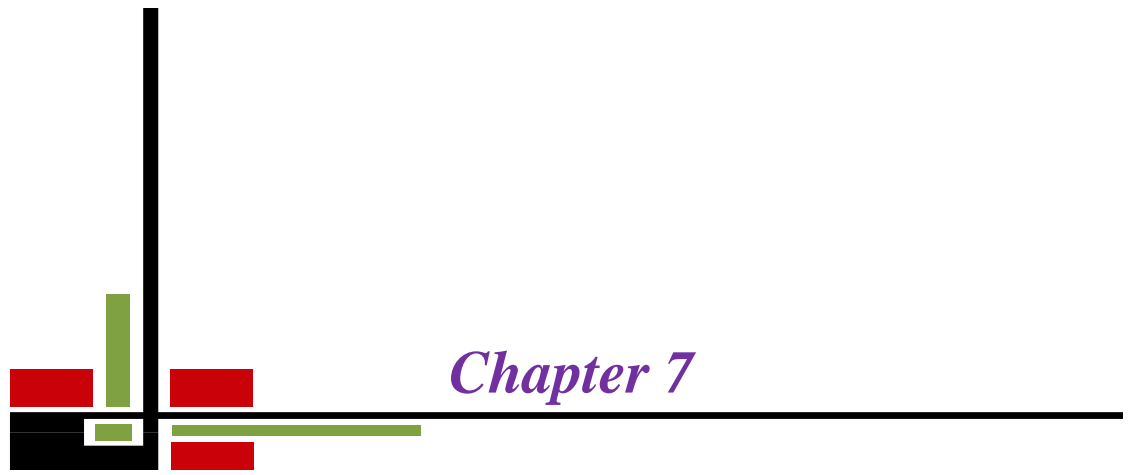
Source: Field Survey, 2014

6.4.3 Net Return

Net return on total cost was arrived at by deducting all the costs from the gross return. Table 6.3 shows that net return per broiler farm per year stood at Tk. 130257.90.

6.4.4 Benefit Cost Ratio

Benefit cost ratio implies return per taka invested. It helps to analyze the financial efficiency of the farm. It is evident from the study that the benefit cost ratios of broiler farming were 1.80 on variable cost basis and 1.43 on total cost basis. Thus it emerges that broiler farming is a profitable enterprise.



Chapter 7

PRODUCTION FUNCTION ANALYSIS

Chapter 7

PRODUCTION FUNCTION ANALYSIS

7.1 Introduction

The focus of this chapter is to relate main factors affecting returns of broiler production operation in the framework of functional analysis. Cobb-Douglas production function was applied to determine the effects of resources used on gross returns of broiler production.

7.2 Broiler Production and Relative Factors

Production function refers to the relationship between the inputs of factor services and the output of rearing broiler. Rearing of broiler was considered to be explained by a number of inputs namely feed, day-old-chicks, hired labor, veterinary expenses, housing cost and litter. On the other hand, unexplained variables were considered to be electricity, land use cost and family labor.

7.2.1 Functional Analysis

To explore the effects of variable inputs both liner and Cobb-Douglas production function models were estimated initially. The results of Cobb-Douglas models appeared to be superior on theoretical and econometric grounds like

i) adequate fit of the data, ii) computation feasibility, iii) sufficient degrees of freedom to allow for statistical testing. So this model was accepted.

Cobb-Douglas production function analysis was done taking 80 broiler farms. The function was specified as:

$$Y = aX_1^{b_1} X_2^{b_2} X_3^{b_3} X_4^{b_4} X_5^{b_5} X_6^{b_6} e^{U_i}$$

The function transformed into the following log liner form:

$$\ln Y = \ln a + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + b_6 \ln X_6 + U_i$$

Where,

Y= Gross return (Tk./kg);

a=Constant or intercept value;

X₁= Cost of feed for ith farm (Tk./year);

X₂ = Cost of day-old chick for ith farm (Tk./year);

X_3 = Cost of hired labor for ith farm (Tk./year);

X_4 = Veterinary expenses for ith farm (Tk./year);

X_5 = Cost of tools and equipment (Tk./year);

X_6 = Cost of litter for ith farm (Tk./year)

U_i = Error term;

$i = 2, 3, \dots, 80$;

$b_1, b_2, b_3, b_4, b_5, b_6$ = Regression co-efficient of respective variables

and

\ln = Natural log.

7.3 Interpretation of Results

The estimated Co-efficient and related statistics of the Cobb-Douglas production function for broiler production are presented in Table 7.1. Major characteristics of the model are noted below:

- i) For testing the significance level of individual co-efficient 1 and 5 percent probabilities were used.
- ii) Total variation of output was measured by multiple co-efficient of determination R^2 .
- iii) Goodness of fit for different types of inputs were measured by F-values.

7.3.1 Feed (X_1)

The regression co-efficient of feed cost was 0.431 and significant at 1% level. It implies that 1 percent increase in feed cost, keeping other factors remaining constant, would result in an increase of return by 0.431 percent (Table 7.1).

7.3.2 Day-Old Chick (X_2)

The regression co-efficient of expenditure on day-old-chicks cost was 0.206 which was significant at 1% level. The results of the analysis indicated that 1 percent increase in day-old-chicks cost, keeping other factors constant, would result in an increase of the gross return by 0.206 percent for broiler farms (Table 7.1).

7.3.3 Hired Labor (X_3)

The regression co-efficient of hired labor cost was 0.176 which was significant at 5% level. It implies that one percent increase in the human labor, keeping other factors constant, would result in an increase of the gross return by 0.176 percent (Table 7.1).

7.3.4 Veterinary Expenses (X₄)

The regression co-efficient of veterinary expenses was 0.016, which was significant at 5% level. It implies that an increase in one percent of veterinary cost, remaining other factors constant, would result in a increase of the gross return by 0.016 percent (Table 7.1).

Table 7.1 Estimated values of co-efficient and related statistics of Cobb-Douglas production function for broiler farms (n=80)

Explanatory Variables	Estimated values of coefficient		
	Co-efficient	Standard error	T-Values
Intercept	1.986	.430	4.617
Feed (X ₁)	.431***	.072	5.991
Day-old chicks(X ₂)	.206***	.068	3.033
Hired labor (X ₃)	.176**	.074	2.387
Veterinary expenses (X ₄)	.016**	.022	.714
Tools and equipment (X ₅)	.180**	.056	3.009
Litter (X ₆)	-.124	.053	-2.136
R ²	0.957		
Adjusted R ²	0.953		
F-value	227.621***		
Returns to scale	0.885		

Note: *** Significant at 1% level

** Significant at 5% level

The estimated Cob Dauglas function of broiler production was-

$$\text{Log } Y = 1.986 + 0.431 \log X_1 + 0.206 \log X_2 + .176 \log X_3 + 0.016 \log X_4 + 0.098 \log X_5 + 0.180 \log X_6 + (-.124) \log X_7.$$

7.3.5 Tools and Equipment (X₅)

The regression co-efficient of feed cost was 0.180 and significant at 5% level. It implies that 1 percent increase in tools and equipment cost, keeping other factors remaining constant, would result in an increase of return by 0.180 percent (Table 7.1).

7.3.6 Litter (X_6)

For litter cost, the regression co-efficient was negative and insignificant.

7.3.7 The Co-efficient Of Multiple Determinations (R^2)

The co-efficient of multiple determinations was 0.953. It suggested that 95 percent of the variation in the gross returns was explained by the independent variables included in the model.

7.3.8 Goodness of Fit (F-value)

F value finds out whether the explanatory variable does actually have any significant influence on the dependent variables. The F-value of broiler production was 227.621 and highly significant at 1 percent level implying that all the included explanatory variables were important for explaining the variation in return of broiler production.

7.3.9 Returns to Scale

It is the rate at which output changes when all inputs are changed proportionally. If output and all inputs changes in same proportion, it is known as constant returns to scale, if changes in output is less than changes in all inputs, it is known as decreasing returns to scale and if changes in output is greater than changes in all inputs, it is known as increasing returns to scale. Returns to scale of broiler farms were computed by adding co-efficient of regression of broiler farms. The sum total of all the production co-efficient of the equation for broiler production was 0.885. This indicates that the production function exhibits decreasing returns to scale.

7.4 Resource Use Efficiency

To accomplish the aim of profit maximization i.e., for efficient allocation of resources, one should use more of the resources, so long as the value of the added product is greater than the cost of added amount of the resources in producing it. The resources are considered to be efficiently used to maintain the maximum profit when the ratio of marginal value product (MVP) to marginal factor cost (MFC) approaches one; or MPV and MFC are equal for each input. The marginal value product (MPV) is obtained when the marginal physical product (MPP) is multiplied by the product price. The price of one unit of input is called marginal factor cost (MFC).

The optimum use of a particular input would be ascertained by the equality condition of MVP and MFC:

$$\frac{MVP}{MFC} = 1$$

The marginal productivity of a particular resource represents the additional to gross returns in value terms caused by an additional one unit of that resource with other inputs being held constant. The most useful estimate of MVP is obtained by taking resources (X_i) as well as gross return (Y) at their geometric means. Since all the variables of this model were measured in monetary unit in the function represented the MVP, which was computed by multiplying the production co-efficient (elasticity, in this particular case) of a given resource with the ratio of geometric means of output and input variables.

$$\frac{dy}{dx_i} = b_i \frac{Y(G.M)}{X_i(G.M)}$$

Where,

Y = Mean value (GM) of output.

X_i = Mean value (GM) of i th input.

$i=1,2,3,4$.

Therefore MVP (X_i) = $b_i \frac{Y(G.M)}{X_i(G.M)} P_{y_i}$

b_i = Co-efficient

P_{y_i} = Per unit price of output

G.M = Geometric mean

Hence, these MVPs indicate the value product per input can be used to express the ratio of MVP and MFC. The criteria of resource use efficiency is that a ratio equal to unity indicates the optimum factor use, a ratio more than unity indicates that the gross return could be increased by using more of the resource and the value of less than unity indicates excess use of resource which should be decreased to minimize the loss. The estimated MVP of different inputs are presented in Table 7.2

Table 7.2 Marginal value products (MVP) and marginal factor cost (MFC) of different inputs included in production function

Variables (Quantity)	Geometric mean	Co- efficient	MVP	MF C	Ratio of MVP to MFC	Comment
Output (Y)	3088.16					
Feed (X₁)	2589.72	0.431	61.70	40	1.54	Underutilized
Day-Old Chick (X₂)	1711.63	0.206	44.59	40	1.11	Underutilized
Hired labor(X₃)	27.47	0.176	2374.6	350	7.37	Underutilized
Veterinaryan d medicine (X₄)	202.55	0.016	29.27	50	0.59	Overutilized

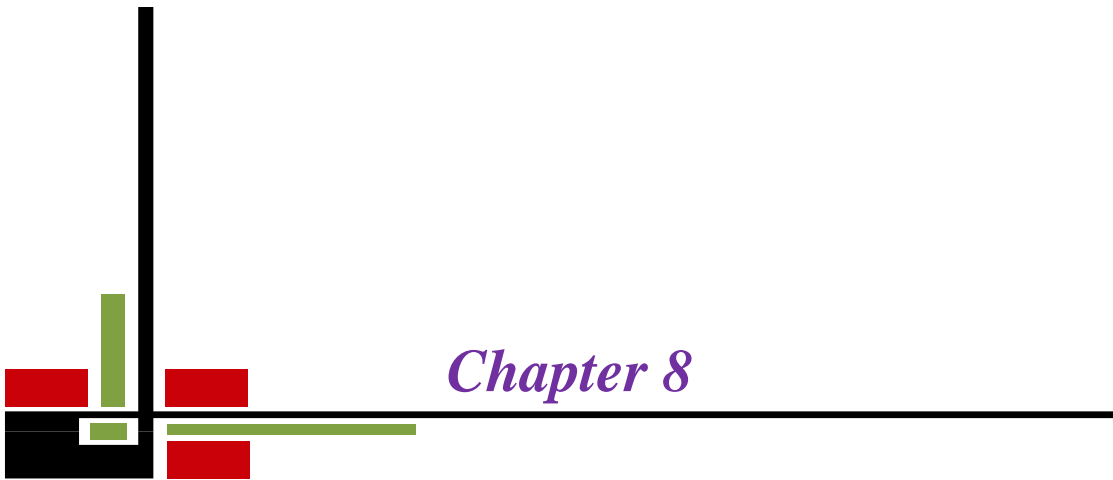
Source: Field survey, 2014.

From Table 7.2 it is evident that, the ratio of MVP and MFC of broiler feed (1.54), day-old chick (1.11) and hired labor (7.37) was positive and greater than unity indicated that the use of feed, day-old chick and hired labor for broiler production was under used. So, the broiler farmer needed to increase the use of these inputs to attain the efficient level respectively.

On the other hand, the ratio of MVP and MFC of Veterinary and medicine (0.59) was positive and less than unity indicated that the use of veterinary and medicine for broiler production was over used. So, the broiler farmer was needed to decrease the use of these inputs to attain the efficient level respectively.

7.5 Conclusions

The overall performance of Cobb-Douglas production function model for broiler farms was satisfactory as indicated by the estimated R^2 and F-value. The estimated values of the model, confirm that the selected variables had significant impacts on the gross return of broiler farms.



Chapter 8

***CONSTRAINTS TO BROILER FARMING
AND POLICY GUIDELINES***

Chapter 8

CONSTRAINTS TO BROILER FARMING AND POLICY GUIDELINES

8.1 Introduction

Broiler industry of Bangladesh is rapidly expanding but the current scenario of broiler farming is that almost every day there are new farms coming up and some of the old ones are closing down. It appears that the business environment is quite hazy and full of risk and uncertainty. Broiler industry of Bangladesh is passing through crisis time as it has been suffering from various problems. In the existing socioeconomic conditions of Bangladesh, there are various problems in production and marketing of broiler. The problems faced by broiler farmers and its solutions are given below:

8.2 Economic Problems

8.2.1 High Price of Day-Old-Chick

High price of day-old-chick was another problem of broiler farming. Table 8.1 shows that 95 percent of farm owners reported this problem. They told the researcher due to this problem their production plan was sometimes disrupted and ultimately that problem was outcome.

8.2.2 Higher Price of Feed

Major part of expenses of broiler farmer was incurred in purchasing feed. Recently feed price has gone up which disrupted the broiler production in the study area. Table 8.1 shows that 83.75 percent of farmers reported this problem. Farmers collected feed from local agents. Local agents sell feed at a high price.

8.2.3 Price Fluctuation of Broiler

The farmers are not sure of their profit margin. Risk and uncertainty is a major problem for broiler production. Table 8.1 shows that 77.5 percent farm owners reported this problem. Sometime price of broiler became so high and sometime it went down the cost of production.

8.2.4 Lack of Capital

Availability of cash capital is necessary for establishing and operating broiler farms. It appears from Table 8.1 that 75 percent of broiler farmers mentioned this as a problem. Institutional credit was hardly available and it required complicated procedure, so farmers borrowed money from other people or mahajan against high rate of interest. For this reason farmers faced the problem of loan repayment.

8.2.5 Non-availability of Credit

The farmers did not receive institutional credit. They had to solve this problem by receiving loan from individuals with high interest rate. Table 8.1 shows that 56.25 percent farm owners could not expand their poultry business due to financial constraints.

8.3 Marketing Problems

8.3.1 Rumor

The broiler farming of Bangladesh is affected by various rumors. For this reason the popularity of broiler is decreasing. A few days ago it was affected by the rumor of avian influenza. As a result, demand for broiler decreased unexpectedly and price of broiler fell down. The owners of broiler farms had to incur tremendous losses. Table 8.1 shows that 75 percent farmers reported this problem.

8.3.2 Lower Price of Broiler

Lower price of broiler is the most important marketing problem. Farmers complained that they were not getting reasonable price. Sometimes, the price of broiler was lower than the cost of production. Table 8.1 shows that 71.25 percent farmers reported this problem.

8.3.3 Late Payment

Late payment is another problem of broiler farming. The owners bought inputs from various intermediaries who did not pay all value of the product in cash. For this reason they could not start activities for the next batch. Table 8.1 shows that 62.5 percent farm owners faced this problem.

Table 8.1 Problems faced by the broiler farmers

Problems	Number of responding farmers (n=80)	Percent	Ranking
A. Economic Problem			
a. Higher price of DOC	76	95	1
b. Higher price of feed	67	83.75	2
c. Price fluctuation of broiler	62	77.5	3
d. Lack of capital	60	75	4
e. Non-availability of credit	45	56.25	5
B. Marketing Problem			
a. Rumor	60	75	1
b. Lower price of broiler	57	71.25	2
c. Late payment	50	62.5	3
C. Technical Problem			
a. Non-availability of day-old chicks	52	65	1
b. Electricity problem	46	57.5	2
c. Lack of training facilities	45	56.25	3
D. Social and natural problems			
a. Political unrest	50	62.5	1
b. Out break of diseases	45	56.25	2
c. Social restriction	30	37.5	3

Source: Field survey, 2014.

8.4 Technical Problems

8.4.1 Non Availability of DOC

Non - availability of adequate number of DOC is another important problem. Table 8.1 shows that 65 percent of farmers reported this problem. Recent political unrest restricted the movement of DOCs hampered their supply at the farm level.

8.4.2 Electricity Problem

Electricity is one of the crucial needs in raising broiler. But inadequate supply of electricity in the study area hampered broiler production. Farmers had to use oil lamp

in case of load shading. Table 8.1 shows that 57.5 percent farmers faced this problem in broiler raising. Load shading is an important problem that hampered production.

8.4.3 Lack of Training Facilities

The broiler farmers reported that they lacked modern knowledge on broiler farming. Their performance would be improved if they could be trained on improved technique of broiler farming.

8.5. Social and Natural Problems

8.5.1 Political Unrest

Political unrest reduces profit margin of the farm business by increasing the cost of inputs and decreasing the price of broiler. Table 8.1 indicates that 62.5 percent farm owners identified this as an important problem.

8.5.2 Outbreak of Diseases

Outbreak of diseases is a serious problem for the development of broiler farming. During the last few years, a number of broiler diseases were observed in Bangladesh. Those diseases include, Gumboro, Ranikhet, Fowl pox, cholera, and Coccidiosis. Most often broiler farm owners had to bear a tremendous loss due to Ranikhet and Gumboro. Table 8.1 shows that 56.25 percent of farmers reported this problem.

8.5.3 Social Restriction

There is a notion that the broilers pollute the environment of the surrounding areas of broiler farms. It generates bad smell which leads to a quarrel with the farm owners. Table 8.1 shows that 37.5 percent of broiler farmers faced this problem.

8.6 Solutions for the Problems

After studied the mentioned area affirmation problems were found and the followings possible solutions could be taken according to farmers opinion.

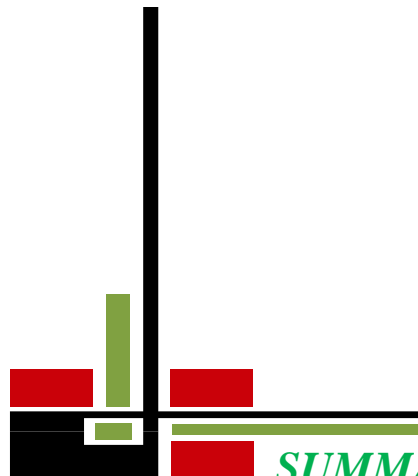
1. Poultry is one of the potential sub-sectors of agriculture in Bangladesh. Thus for the national interest, the government should provide financial support to the farmers. Since most of the farmers complained about higher feed and day-old-chick price, the government intervention is needed here to untap market for feed

in the study area and financial help is also needed from the government in this situation.

2. In case of non-availability of feed at proper time, proper steps should be taken by the government and other concerned authority to give incentives to the private feed manufacturing sectors and hatcheries to continue their production smoothly, where about 60 percent according to Daily Star Weekend Magazine parent stock farms have gone out of production.
3. Government should fix a price limit for broiler farmer to get rid the problem of price fluctuation of broiler.
4. Most of the respondents suggested that government should increase its services by supplying necessary DOC at lower price.
5. To get rid the problem of shortage of fund, short term loan for broiler farming should be made on easy terms and conditions by government agencies and NGOs.
6. In the study area, the farmers suggested that public media's like television, radio, newspaper should play an active role against the rumors regarding diseases of broiler birds. Government should take steps to ensure the stable and reasonable price of broiler by ceiling price schemes and providing price incentives.
7. The poultry market in Bangladesh faced a considerable amount of trouble due to recent bird flue creating awareness and taking precautions against avian influenza to keep consumers safe and avoid a human outbreak. Extreme caution needs to be maintained by poultry farm workers as well as buyers so that the disease does not spread to humans.
8. The respondents suggested that government and NGOs should take proper steps for training on broiler rearing, especially to young boys and girls, providing access of people to research and training institutes for broiler rearing.
9. The crowded condition that exists in poultry farms of Bangladesh is the perfect condition for any virus to spread. It is very important for the poultry industry to change its practices. Poultry should be raised in smaller scale under

less stressful, less crowded and more hygienic conditions with outdoor access.

10. For solving disease and environmental problems, it is important for everyone, especially all the farmers, to cooperate and comply with the prevention strategy that the government has come up with. In case of bird flue problem, government should provide ample compensation to the farmers whose farms were destroyed using culling method.
11. The empirical results of this study showed that technical advice from livestock experts improved cost efficiency in the study area. In view of this, the government through the Ministry of Fisheries and livestock should train more veterinarians and animal husbandry graduates to be deployed to the various broiler farming village communities to enable the broiler farmers receive technical advice from a professional source instead of relying more on their fellow farmers for technical advice. This could help improve the efficiency level of the farmers.
12. Finally, for efficient management of broiler farming, adequate supply of electricity should be ensured. Besides, the provision of short term loan for broiler fanning should be made on easy terms and conditions to save the farmers from the exploitation of money lenders.



Chapter 9

SUMMARY, CONCLUSIONS AND RECOMENDATIONS

CHAPTER 9

SUMMARY, CONCLUSIONS AND RECOMENDATIONS

9.1 Introduction

This chapter presents the summary, conclusions and recommendations of the study. In presenting the summary, contents from preceding chapters are discussed in brief. This presentation is followed by conclusions and recommendations of the study.

9.2 Summary

The research work was carried out on the financial profitability and resource use efficiency of broiler farming in a selected area of Bangladesh. Livestock is an important subsector of agriculture in Bangladesh. Poultry is one of the most important segments of the livestock subsector. Poultry rearing has emerged as an integral part of agri-business of the farming community. Poultry farming on commercial basis is a recent endeavor started practically during the eighties in Bangladesh. At present a large number of poultry farms have been established on commercial basis throughout the country. As a developing country, Bangladesh is badly suffered by the problems of poverty, unemployment and malnutrition. Poultry production can play an important role in solving these problems within the shortest possible time. The importance of broiler farming can be realized from two stand points such as, economic point of view and nutritional point of view. It creates a great opportunity of employment for the large number of unemployed people. It gives maximum return with minimum expense as compared to other meat producing animals. In respect of nutrition, broiler meat is an excellent source of protein of high biological values as it contains the most essential amino acids, carbohydrates, minerals, fats and vitamins which are the most nutritious components of human diet.

Broiler can efficiently and rapidly meet the shortage of protein as it produces meat in the least possible time. Poultry farming in Bangladesh was largely a backyard venture in the past. The villagers generally kept indigenous chicken under traditional and semi-intensive conditions mainly for their domestic consumption with very little commercial motives. Most of the people of Bangladesh used poultry farming to meet their home consumption and if there was any surplus, they used it for the purpose of

business. In the past they never thought to invest much on poultry farming. But in course of time, the scenario has changed. At present, the poultry enterprise has developed commercially and the number of birds and their commercial farms has been increasing day by day. Recently, a good number of exotic strains and day-old commercial chicks are available from public and private hatcheries. Broiler farming has a great potential for providing additional income to both males and females of the rural and urban areas through creation of employment opportunities. At present, millions of people are engaged in this industry directly or indirectly. However, poultry industry has been suffering from various problems due to lack of appropriate policy planning for which sufficient research work is necessary. The specific objectives of this research program were as follows:

1. To identify the socioeconomic characteristics of broiler farmers;
2. To determine the financial profitability of broiler farming;
3. To measure the resource use efficiency of broiler production;
4. To identify the constraints to broiler farming;
5. To suggest policy guidelines for profitable broiler farming in the country.

In order to achieve these objectives, random sampling technique was followed. Dhamrai upazilla under Dhaka District was selected as the study area because a large number of broiler farms have been established there. A total of 80 broiler farmers were selected for this purpose. To fulfill the objectives, a questionnaire was prepared to collect data and necessary information. The data were collected from primary source by the researcher herself during the period from October and November 2014. Primary data were collected from broiler farm owners, while the secondary data were collected from various journals, reports, theses, bulletins, and publications of BBS, newspapers, magazines and official records of the government.

The socio-economic characteristics of broiler farm owners were studied. It was observed that 67.5 percent of the total broiler farmers aged between 25-45 years. People of different education level are involved in broiler farming. About 34 percent of the broiler farm owners were educated up to secondary level. In case of occupation, 59 percent respondents were engaged in broiler farming as their main occupation, while 40 percent respondents took it as subsidiary occupation. 85 percent broiler

farmers are married. Around 46.3 percent of the broiler farmer has a family size of 5 people and the average family size of broiler farmers was. The overall annual average income of the broiler farmers was Tk. 109,289. Cost and return were calculated to estimate the profitability of broiler farms. The total cost per farm per year was estimated at Tk. 301142.103 where Variable cost stood at 79.28 percent and fixed cost stood at 20.72 percent of the total cost.

Feed cost was the major single cost item of raising broiler birds. It was found that the average cost of ready feed per kg was Tk. 40. It was the most important cost item, that amounted to Tk.120507.60 and represented 40.03 percent of the total cost. Expenditure on day-old-chicks per farm per year was estimated at Tk.74600 which represents 24.77 percent of the total cost. Price per bird was Tk. 40. Hired labour cost was another important cost item for broiler farm owners. Hired labor cost per farm per batch was Tk. 10150 which represents 3.37 percent of total cost. Veterinary service and medicine cost is another cost item for broiler farm owners. Average veterinary service and medicine cost per farm was Tk.20500 which represents 6.80 percent of total cost. Average electricity cost per farm was Tk. 4788.13 which accounted for 1.59 percent. Average litter cost was Tk. 3970 which represents 1.32 percent of the total cost. Average transportation cost per farm was Tk. 4213 which represents 1.40 percent of the total cost. Average housing cost per farm was Tk. 30888.75 which accounted for 10.25 percent of the total cost. The cost of tools and equipment per farm stood at Tk.4151.75 which represents 1.38 percent of the total cost. Interest on operating capital per farm stood at Tk. 23872.873 which accounted for 7.93 percent of the total cost.

Average annual gross return per farm per year stood at Tk. 431400. Average gross margin amounted to Tk. 192671.27. Average net return per farm per year was Tk. 130257.90. The benefit-cost ratio per farm per year was 1.80 on variable cost basis and 1.43 on total cost basis. The BCR was higher than one. So the findings suggest that broiler farming is profitable and there is enough scope and potentials for broiler farming development in the country. Cobb-Douglas production function analysis was done to estimate the effects of variable cost namely feed cost, day-old-chick cost, hired labor, veterinary expenses, electricity cost, and litter cost of broiler farms. The

findings suggested that all the selected variables excepting litter had significant impacts on production of broiler farming.

9.3 Conclusions

It can be concluded that rising of broiler is a profitable business in the study area. There is a wider scope for the development of broiler farming in this country. The findings suggest that the enterprise is helpful in employment generation and poverty alleviation which are now the major concern of the planning process of the country. Poultry is making a key contribution to the national economy through creating employment, generating local income and improving nutrition level of the low income people. Lot of problems and difficulties were found in broiler production in the study area. To overcome the difficulties of broiler raising and to make broiler production more profitable in the country, the following recommendations are put forward in order to improve the existing production of live broiler.

9.4 Recommendations

On the basis of findings of the study, the following recommendations are made:

1. Feed standardization and quality control act of poultry feed has to be formulated.
2. Necessary steps should be taken by the government to reduce price of day-old-chick. Adequate financial support should be provided to establish more hatcheries throughout the country.
3. Government should offer price support during the critical situation to make sure that broiler producers receive minimum profit.
4. Regular monitoring and promotion of quality control system for hatcheries, feed producers, vaccine producers and importers are required to ensure high quality of day-old-chicks, feed and vaccines.
5. There is a need for a better co-ordination among the different stakeholders like hatchery owners, government organizations, broiler farmers, and input dealers at market level.

6. More research should be undertaken to improve the quality of breed, feed, vaccine, and management to understand the actual demand and supply condition and there by disseminate the information.
7. Government and mass media should take initiative to reduce information gap, prevent rumor like bird flue.
8. Tax holidays should be declared for broiler farmer and other private stakeholder and easy credit facilities should be arranged for them.
9. Better extension service should improve for monitoring the over use of veterinary medicine.

9.5 Limitations of the Study

The present study contains few limitations which are as follows:

1. There was a limitation of time. To get a satisfactory and reliable data, sufficient time was needed. But data for this study were collected and analyzed by the researcher within a very short time.
2. The researcher had depended on the memory of the respondents because they did not keep written records. Thus, the analysis on profitability may contain little bias.
3. The study covered only 80 samples from a small area. This sample size was not sufficient for arriving at a strong conclusion. If the study could cover more areas and more samples, the results and conclusions of the study might have been more meaningful and more useful.
4. The findings of the study are based on the data from a specific area (Dhamrai Upazila in Dhaka district) of Bangladesh. These findings should therefore be interpreted cautiously, if any greater generalizations are sought for different regions with distinct geophysical conditions of Bangladesh.



REFERENCES

REFERENCES

- Ahmed, M.F.U. (2001). A comparative Economic Analysis of Broiler Production under PROSHIKA supervision and private management in some selected areas of Tangail district. M.S.Ag.Econ.thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.
- Ahmed, S.U. and Begum, A. (1997). The performance of 1-757 and Isa-Vedette Broilers in Different Seasons of the Year. *The Journal of Bangladesh Agricultural University*. 2(1): 102-108.
- Akhter, S. and Rashid, H.M.A. (2008). A Comparative Efficiency Analysis of Broiler Farming under Aftab bahamuhkhi Farm Limited Supervision and Farmers Own Management. *Bangladesh Journal of Livestock Research*. 7(1&2): 50-54.
- Akhter, S. (2009). Profitability Analysis of Broiler Farming in Some Selected Areas of Mymensing.M.S.thesis, Department of Agricultural Economics. Bangladesh Agricultural University, Mymensingh.
- Alam, J. *et al.* (1998). An Economic Study on Poultry Farms in Bangladesh. *Bangladesh Journal of Livestok Research*. 1(2)-5(2) : 164-174.
- Alam, J. *et al.* (2008). A Study on Highly Pathogenic Avian Influenza in Bangladesh. Bangladesh Livestok Research Institute ,Dhaka, P. 61.
- Alam, S.M. (2004). A study in Backward and Forward Linkage of Poultry Farming in Some Selected Areas of Savar Upazila under Dhaka district. M.S.Ag.Econ.thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.
- Bairagi, S.K. (2004). An Economic Study of Contract Broiler Farming under Aftab Bahumukhi Farm Limited. M.S.Ag.Econ. thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.
- Banglapedia (2014). National Encyclopedia of Bangladesh. Asiatic Society of Bangladesh, Dhaka.
- BBS (2012). Statistical Year Book of Bangladesh, Bangladesh Bureau of Statistics, Statistical Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

- BBS (2013). Statistical Year Book of Bangladesh, Bangladesh Bureau of Statistics, Statistical Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.
- BBS (2014). Statistical Year Book of Bangladesh, Bangladesh Bureau of Statistics, Statistical Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.
- Begum, S. (2000). An Economic Analysis of Broiler and Layer Production in some Selected Areas of Mymensingh District. M.S.Ag.Econ.thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.
- Bhuiyan, A.H. (2003). A Comparative Economic Analysis of Poultry Production under Supervision of Aftab Bahumukhi Farm and Farmers own Management in some Selected Areas of Kishoreganj District. M.S.Ag.Econ. thesis, Bangladesh Agricultural University, Mymensingh.
- Bhuiyan, A.U. (1999). An Economic Analysis of Small Poultry Farming of Kotwali Thana in Mymensingh District. M.S.Ag.Econ. thesis, Bangladesh Agricultural University, Mymensingh.
- Biswas, M.A.A., Akther, M.A. and Aziz, S.A. (2001). An Economic Analysis on Poultry Rearing by Rural Women. *Bangladesh Journal of Livestock Research*. 8 (1&2): 41-47.
- DLS (2013). A Brief of Organizational Structure and other Activities. DLS Report, Department of Livestock Services, Dhaka, Bangladesh.
- DLS (2014). A Brief of Organizational Structure and other Activities. DLS Report, Department of Livestock Services, Dhaka, Bangladesh.
- Etuk, E.A., Agom, H., Isika, D.I. and Idiong, M.A. (2007). Resource Use Efficiency of Broiler Enterprises in Cross River State. *International Journal of Poultry Science*. 6(1): 23-26.
- GOB (2012). Bangladesh Economic Review, Economic Adviser's Wing Finance Division, Ministry of Finance, Government of People's Republic Bangladesh.
- GOB (2014). Bangladesh Economic Review, Economic Adviser's Wing Finance Division, Ministry of Finance, Government of People's Republic Bangladesh.
- Halcyan, (2011). A Socioeconomic Study on Household Poultry Rearing in some Selected Areas of Mymensingh District. Paper presented to the Bangladesh Animal Husbandry Society Conference, Dhaka, December, 2011.

- Hasan, A. (1997). Relative Profitability of Poultry Rearing of Four Different Categories of Farms under the Supervision of Bangladesh Rural Advancement Committee (BRAC) in the Mirpur Upazila of Kushtia. *Bangladesh Journal of Agricultural Economics*. 5(2) :73-84.
- Ironkwe, M. O. and Ajayi, F.O. (2007). Profitability Analysis of Broiler Production in Oyibo Local Government Area of Rivers State, Nigeria. *Global-Journal-of-Agricultural Sciences*. 6(2) :195-200.
- Islam, A. (2002). An Economic Analysis of Poultry Farm of Different Sizes in some Selected Areas of Dhaka City. M.S.Ag.Econ. thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.
- Islam, A. (2006). An Economic Study on Broiler Farming and its Impact on Livelihood Improvement in Selected Areas of Gazipur District. *Bangladesh Journal of Livestock Research Institute*. 6(3):111-118.
- Karim, M.A. (2000). An Economic Analysis of Broiler Enterprise under Contract Farming, M.S.Ag.Econ. thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.
- Khan, R.T.M. (2013). An Economic Study on Broiler Farming in a Selected Peri-Urban Areas of Bangladesh. M.S.Ag.Econ. thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.
- Khatun, M.S., Alam, J. and Rahman, M.M. (2005). Growth Performance of Broiler under Different Management System. *Bangladesh Journal of Livestock Research Institute*. 4(2): 78-86.
- Kulkarni, (2006). Correlation of Need Based Experts System on Commercial Poultry Production. *Journal of Research ANGRAU*. 33(1): 60-64.
- Leone, E.H. and Estevez, I. (2008). Economic and Welfare Benefits of Environmental Enrichment for Broiler Breeders. *Journal of Poultry Science Association*. 7(1):14-21.
- Mitu, A. (2013). A Study Sonali Poultry Production in Selected Areas of Gazipur District: An Economic Study. M.S.Ag.Econ. thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.
- Peter, J.I. and Mia, M.I.A. (2006). Poverty Alleviation and Broiler Raising Programs of BKB and BRDB in selected Areas of Bangladesh. *Journal of Bangladesh Agricultural University*. 4(2): 413-422.

- Rahman, M.M. (2007). An Economic Analysis of Broiler Production under Contract Farming System in a Selected Area of Bangladesh. A paper presented on 3rd International Poultry Show and Seminar. BCFCC, Dhaka. Organized by World Poultry Science Association- Bangladesh.
- Rahman, M. M. (2004). An Economic Analysis of Broiler Production under Contract Farming System in a Selected Area of Bangladesh. Poultry Khamar Bichitra (Monthly Magazine, 188, Elephant Road, Hatirpool, Dhaka-1205, March 2004.
- Rahman, M.M., Karim, M.R. and Kabir, H. (2001). Prospects and Problems of Poultry Industry in Selected Areas of Bangladesh with Particular Reference to Marketing Practices. *The Journal of Bangladesh Veterinarian*. 18(2) :23-28.
- Raihan, M. (2008). A Study on Trade and Poverty Linkages Case Study of the Poultry Industry in Bangladesh. Poultry Khamar Bichitra (Monthly Magazine, 188), Elephant Road, Hatirpool, Dhaka-1205, March 2008.
- Rana, M. S., Mamun, K. M. and Sattar. M. N. (2012). Profitability of Small Scale Broiler Production in some Selected Areas of Mymensingh. M.S.Ag.Econ. thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.
- Rashid, M. (2001). A Comparative Economic Analysis of Broiler and Layer Production in some Selected Areas of Sadar Upazila in Mymensingh District. Proceeding of the first National Conference of Bangladesh, Anima Husbandry Association, February 23-24, BRAC, Dhaka, Bangladesh.
- Sultana, N. (2009). An Economic Analysis of Broiler Production in some Selected Areas of Mymensingh District. M.S. Ag. Econ. thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.
- Tohura, (2004). An Economic Study of Small Scale Commercial Broiler Farming in Sadar Upazila of Rangpur District. M.S.Ag.Econ. thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.
- USDA, (2012). (<http://www.nal.usda.gov/fnic/foodcom/search/>).
- Wikipedia, (2013). A free encyclopedia (www.wikipedia.com).



APPENDIX
SURVEY SCHEDULE FOR SAMPLE FARMERS DEPARTMENT OF
AGRICULTURAL ECONOMICS SHER-E-BANGLA AGRICULTURAL
UNIVERSITY

Research Title:

Financial Profitability and Resource Use Efficiency of Broiler Farming in a Selected Area of Bangladesh.

Sample No:

Name of the respondent:

Marital Status:

Address:

Village:

Union:

Upazila:

District:

1. Family details:

Name	Relation with the HH	Age	Education	Occupation	
				Main	Subsidiary
Total					

* Education: Can sign only -1, P.S.C-2, J.S.C-3, S.S.C-4, H.S.C-5, Above H.S.C -6

*Occupation: Broiler Farming-1, Agriculture-2, Business-3, Others-4

2. Information of broiler raised

Batch no	No. of broiler raised	Number of died	Production (kg)	Sold (kg)	Price(TK.)/kg	Rearing duration days

3. Cost Information

I. Cost of DOC

Number of DOC	Price per DOC (TK.)	Total value (TK.)

II. Feed Cost

Items	Unit	Quantity		Price (TK.)	Total cost (BDT)
		Home supplied	Purchased		
Grain					
Bran					
Oil Cake					
Fish meal					
Bone meal					
Common Salt					
Drinking Water					
Mixed feed (Company Name_____)					

III. Human Labor Cost

Activity	Labour Man-days; (8 hours/day)			Wage rate	Monthly wage
	Family	Hired	Total		
Feeding					
Cleaning shed					
Night Guard					
Monthly employed labor					

IV. Veterinary care

Activities	Quantity/Frequency	Unit Price (Tk.)	Total Cost (BDT)
Doctors visit			
Medicine			
Vitamin			
Vaccine			
Total			

V. Fixed Equipment

Information about broiler house

Items	Number	Price	Total Value
Tin shaded Broiler House			
Half Building			
Building			
Water pot			
Visquine			
Heating Material			
Fan			
Light			
Feeder			
Bamboo Case			

Vi. Utilities (per month)

Description	Unit	Amount Tk.
Power/Electricity		
Water		
Total		

Vii. Other Expenses

Description	Total Amount Tk.
Transportation Expenses	
Miscellaneous Expenses	
Total	

4. Where do you get your fund?

Sources of fund	Amount (TK)	Installment period	Interest
Own source			
Bank			
NGO			
Lending from others			

5. Production

Description	Unit	Amount	Price	Total Value
Broiler Product				
Litter				

6. Do you have any change in the followings with broiler farming?

Description	Before	After
Income		
Food Habit		
House		
Family Planning		
Child Schooling		
Savings		
Asset		
Social status		

Scale: 1=Improved, 2=Not Improved

7. Where do you collect information /services about the followings?

Particulars	From where	Satisfaction level	Comment if any
Veterinary care			
Medicine			
Feed			

Satisfaction level: 1= Satisfied, 2 = Dissatisfied

9 .Which Types of Remedial Action Taken?

Diseases	Measure
Bird flue	
Typhoid	
Paratyphoid	
Cholera	
Food poisoning	

1=Vaccine, 2= Oral medicine , 3 =Prevention, 4= Weather factor management

10. Household Income

Occupation	Income	Total
Broiler Farming		
Business		
Agriculture		
Day labor		
Service		
Others		

11. The way of cleaning Litter.

a) Scientific

b) Non scientific

12. What type of problems do you face in Broiler farming?

Problems	Nature of Problem	Solution
Higher price of DOC		
Higher price of feed		
Lower Price of broiler		
Out break of diseases		
Unavailability of veterinary doctor		
Electricity problem		
Social restriction		
Political unrest		
Financial problem		
Rumor		
Non-availability of credit		
Late payment		
Lack of training facilities		
Non-availability of day-old chicks		

Signature with date