

**PROFITABILITY AND RESOURCE USE EFFICIENCY
OF BROILER FARMING IN SOME SELECTED
AREAS OF GAZIPUR DISTRICT**

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AREAS OF GAZIPUR DISTRICT**

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CERTIFICATE

This is to certify that thesis entitled, “**PROFITABILITY AND RESOURCE USE EFFICIENCY OF BROILER FARMING IN SOME SELECTED AREAS OF GAZIPUR DISTRICT**” submitted to the Faculty of Agribusiness Management, Sher-e-Bangla Agricultural University, Dhaka-1207, 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 **KAMRUN NAHAR JEBA**, Registration No. **13-05713** 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: JUNE, 2020

Place: Dhaka, Bangladesh

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**DEDICATED TO MY
BELOVED
PARENTS**

PROFITABILITY AND RESOURCE USE EFFICIENCY OF BROILER FARMING IN SOME SELECTED AREAS OF GAZIPUR DISTRICT

ABSTRACT

Bangladesh, being a predominantly agrarian country, encompasses a large pressure of population and to satisfy nutrient content and other needs, broiler plays a crucial role in providing nutrition and generating income and employment opportunities. This study examines the socio-economic status, profitability and resource use efficiency of broiler production in selected areas of Gazipur district. A total of 60 broiler farms from five villages of Kaliakhair Upzila of Gazipur district were selected by adopting simple random method by using interview schedule through face to face interview. Both tabular and Cob-Douglas production function were used to find out the results. The study showed that on average total cost of per thousand broilers per year was Tk. 942025. It was revealed that the variable cost per thousand broilers annually was Tk. 885348 which constitutes 93.98 percent of total cost. The total fixed cost of per thousand broilers per year was Tk. 56677. It was evident that the gross return per thousand broilers per year was Tk. 1338400. The net return over total cost of per thousand broilers per year was Tk. 396375. The benefit cost ratios of broiler farming were 1.51 and 1.42 on variable cost basis and total cost basis, respectively. The study showed that broiler production was a profitable enterprise. The study indicated that out of six variables included within the function, three variables have positive impact on the return of broiler farms. The study also determined the resource use efficiency of some specific variables such as feed, day-old chick, human labor and veterinary services on output among which feed and day old chick were underutilized where human labor and veterinary services were over utilized. This study also identified some economic, marketing, technical, social and natural problems faced by farmers during rearing the broiler. Finally, on the premise of findings of this study, some recommendations were made such as the farmers should be provided with reasonable price of feed and day-old chick, credit and training facilities and proper price of broiler product for the development of this enterprise in Bangladesh.

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ABBREVIATIONS

ABFL:	Aftab Bhumukhi Farm Limited
AERS:	Agricultural Economics & Rural Sociology
ASA:	Association of Social Advancement
BARC:	Bangladesh Rural Advancement Committee
BBS:	Bangladesh Bureau of Statistic
BRDB:	Bangladesh Rural Development Board
DOC:	Day-Old-Chick
<i>et al.:</i>	Et alia (L.) and others
Etc.:	Etcetera
FY:	Fiscal Year
GOB:	Government of Bangladesh
GDP:	Gross Domestic Product
gm.:	Gram
H.S.C:	Higher School Certificate
i.e:	(L. idest), that is
IOC:	Interest on Operating Capital
IR:	Interest Rate
Kg.:	Kilo Gram
ln:	Natural log
Ltd:	Limited Company
MELA:	Micro Enterprise Loan Activity
M.S.:	Master of Science
No.:	Number
NGOs:	Non-Government Organizations
OC:	Operating Capital
PDBF:	Palli Daridro Bimuchon Foundation
%:	Percentage
PES:	Poultry Expert System
PROSHIKA:	Proshikkon Shikka and Unnoyan Karma Suchi
P.S.C:	Primary School Certificate
RUE:	Resource Use Efficiency
SSS:	Society for Social Service
S.S.C:	Secondary School Certificate
Tk.:	Taka



CHAPTER 1

INTRODUCTION

Chapter 1

INTRODUCTION

1.1 Background of the study

Bangladesh is predominantly an agrarian country. Bangladesh has done remarkable progress in the agriculture sector. Bangladesh is now a novel epitome in food grain production despite decreasing arable land, population growth, flood, drought, salinity induced by global climate change and adverse climate. Bangladesh is moving forward leaving the world average production behind. Agriculture has been playing a vital role in socio-economic and sustainable development through upliftment of rural economy, by among others, nursing food security by attaining autarky in food grains production and alleviation of poverty. The agriculture sector contributes about 14.23 percent to the country's Gross Domestic Product (GDP) and employs around 40.60 percent of the total labor force (BBS, 2020).

Agriculture sector can be divided into four sub-sectors such as crops, livestock, fisheries and forest. Annual growth rates of GDP at constant prices by agriculture's sub-sectors are presented in Table 1.1. It shows that annual growth rate of GDP at constant price for livestock sector is increased from FY2014-15 to FY2018-19.

Table 1.1: Annual growth rates of GDP at constant prices by sub-sectors (Base: 2005-06)
(In Percentage)

Sub-sector	Year				
	2014-15	2015-16	2016-17	2017-18	2018-19
Crops	1.83	0.88	0.96	3.06	1.75
Livestock	3.08	3.19	3.31	3.40	3.47
Fisheries	6.38	6.11	6.23	6.37	6.29
Forestry	5.08	5.12	5.60	5.51	5.58

Source: BER, 2019

The contribution of agriculture and its sub-sectors to GDP are shown in Table 1.2. The magnitude of contribution of agricultural sector to the GDP was 10.11 percent in 2019. The magnitudes of contribution of crops, livestock, and fisheries sub-sectors to the GDP were 7.05,

1.47 and 3.57 percent, respectively. It also shows that contribution of four sub-sectors under agriculture sector decreased to some extent in FY2018-19 from preceding fiscal year.

Table 1.2: Contribution of different sub-sectors to GDP at constant price (Base: 2005-06)

(In Percentage)

Sub-sector	Year				
	2014-15	2015-16	2016-17	2017-18	2018-19
Agriculture	12.32	11.70	11.12	10.67	10.11
Crops	8.87	8.35	7.86	7.51	7.05
Livestock	1.73	1.66	1.60	1.53	1.47
Fisheries	3.69	3.65	3.61	3.56	3.50
Forestry	1.72	1.69	1.66	1.62	1.58

Source: BER, 2019

Livestock sub-sector comprises an integral component of the country's crucial and largely subsistence economy. This sector provides essential animal protein for human nutrition, necessary draught power, cash income to the family, fuel for rural households, organic manure for crop production and feed for fishes, earns foreign exchange and provides self-employment to the rural and urban areas. The contribution of the animal farming sector to GDP at constant price is 3.54 percent (BBS, 2020). Though the share of the animal farming sub-sector in GDP is tiny, it makes an immense contribution towards meeting the requirements of daily essential animal protein. The number of livestock and poultry rose to 555.2 lakh and 3,470.35 lakh respectively in FY2018-19 (BBS, 2020). Table 1.3 shows the livestock and poultry population of the country over the past few years.

Table 1. 3: Number of Livestock and Poultry Population in Bangladesh.

(Number in Lakh)

Livestock / Poultry	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Cattle	231.95	233.41	234.88	236.36	237.85	239.35	240.86	242.38
Buffalo	14.43	14.50	14.57	14.64	14.71	14.78	14.85	14.86
Goat	251.16	252.76	254.39	256.02	257.66	259.31	261.00	262.67
Sheep	30.82	31.43	32.06	32.70	33.35	34.01	34.68	35.37

Total livestock	528.36	532.11	535.90	539.72	543.57	647.45	551.39	555.28
Chicken	2428.66	2490.10	2553.11	2617.70	2683.93	2751.83	2821.45	2892.83
Duck	457.00	472.53	488.61	505.22	522.40	540.16	558.53	577.52
Total Poultry	2885.66	2962.64	3041.72	3122.93	3206.33	3292.00	3379.98	3470.35

Source: BBS, 2020.

Poultry is the leading livestock group that generally includes chicken, duck, and turkey (FAO, 2009). Poultry products (eggs and meat) constitute 30 percent of all animal protein consumed worldwide (Permin, Pedersen and Riise, 2005), that is, poultry meat accounts for 30 percent of total global meat consumption, ranking second place after pork (FAO Corporate Document Repository, 2007).

The poultry sector has good potential in promoting agricultural growth. Seventy-three percent of people in rural areas are engaged in poultry production (Reneta, 2005). By 2020, per capita poultry meat consumption in the country is expected to reach 8.42kg from 4kg, compared to 5.5kg in Pakistan and over 50kg in the United States. In the 1990s, total investment in the poultry sector was only Tk 1,500 crore, which now stands at more than Tk 15,000 crore.

The poultry industry has the potential to support Bangladesh to attain the UN Sustainable Development Goals (SDGs) by reducing malnutrition and promoting better health of the people. Among 17 SDGs, ending hunger, achieving food security and improving nutritional status are the ones that the poultry industry can impact upon. The annual growth rate of poultry is 15-18 percent, and it contributes 2.4 percent to GDP. About 38 percent of animal protein originates from poultry meat and eggs (Layer Rearing Manual, 2010, BLRI).

Table 1. 4: Production of Milk, Meat and Eggs

Product	Unit	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Milk	Lakh metric tonnes	34.60	50.70	60.92	69.70	72.75	92.83	94.06	99.21
Meat	Lakh metric tonnes	23.30	36.20	45.21	58.60	61.52	71.54	72.60	75.14
Eggs	Crore in number	730.38	761.74	1016.80	1099.52	1191.24	1493.31	1552.00	1710.97

Source: BBS, 2020.

The production of animal protein like milk, meat (beef, mutton, chicken) and eggs have been increasing over the past several years. The production statistics of milk, meat, and eggs during the period from FY2011-12 to FY2018-19 are summarized in Table 1.4.

1.2 History of Broiler Birds in Bangladesh

History of broiler enterprise in Bangladesh is incredibly recent. Commercial broiler chicks weren't 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 took an interest in raising the chickens in their own houses after knowing about their better production capacity. In 1947, six poultry farms were first established in several 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 provide 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 began 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 enormous 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 overall number of educated but unemployed people in the country is about 2.7 million (BBS, 2020). The worst victims of malnutrition in the society are usually the children and mothers. In Bangladesh, about 32 percent children are born underweight and 36 percent children have stunted growth. About 68 percent of the children below the age of six suffer from anemia (BBS, 2020). 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 additionally remarkable, which successively encourages the new public or private sector to investments in the poultry industry and therefore, poultry has become one of the most dominant emerging agro-industry in the country.

1.3.1 Socio-Economic Importance

Broiler farming is a vital component of the poultry industry and it plays a significant role in agro-based economy. For meeting the uprising demand for meat, a good number of NGOs have already come to the fore to initiate small broiler development programs. Broiler encompasses a shorter life cycle and its production requires relatively less capital and land than that of crop, dairy and fish production. The broiler farming provides additional 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 employed 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 a magnificent 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. 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 unbiased 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

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. The food of animal origins are richer than the foods of plant origin. Food of animal origins provides higher proteins, vitamins and minerals than that of food of plant origin. Meat is the most important food of animal 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 1.5. 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: Akter, 2013

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. Comparative food value of broiler meat with other chicken and poultry meat is shown in Table 1.6.

Table 1.6: 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
Koel	168	25.0	6.8	4.7	-	-
Pigeon	279	18.6	22.1	3.8	240	-
Turky	268	20.1	20.2	3.9	140	-

Source: Akter, 2013

1.4 Justification of the Study

Bangladesh is a densely populated country. Malnutrition and hunger are serious problems in this country. Fifty percent of the new born are low birth weight and more than 90 percent of the children (aged<5 years) suffers from mild to severe forms of malnutrition. Egg, meat and milk the three important protein foods from the poultry and livestock sector. On an average every person should consume at least 100 eggs, 43.5kg of meat and 90 liter of milk per annum to prevent malnutrition. (Hossain *et al.*, 2010)

Table 1. 7: Demand, production and availability of milk, meat and eggs (2018-19)

Products	Demand	Production	Availability
Milk	152.02 Lakh Metric Ton (250 ml/day/head)	99.23 Lakh Metric Ton	165.07 (ml/day/head)
Meat	72.97 Lakh Metric Ton (120 gm/day/head)	75.14 Lakh Metric Ton	124.99 (gm/day/head)
Egg	1732.64 Crore number (104 numbers/year/head)	1711 Crore numbers	103.89 (numbers/year/head)
*Estimated population of the country: 16 crore 66 lakhs (30 June, 2019)			

Source: BBS, 2020

The demand, production and availability statistics of milk, meat and eggs during the period FY2018-19 for estimated population of 16.66 Crore are summarized in Table 1.7. It shows that there is deficiency between production and demand of these product which indicates the production of milk, meat and eggs should be increased to meet up the demand of entire population of the country.

Broiler farming has a great potential for providing additional income to both male and female of rural and urban areas through creation of employment opportunities. Broiler, however, has a shorter life cycle and its production requires less capital compared to other meat producing animals. Since the majority of the people irrespective of caste or religion prefer chicken, its demand is very high. As a result, the price of those products have gone high. Having received the signal of higher price and demand in home market, recently a tendency to establish small-scale commercial farm is observed among some people both in rural and urban areas. It is difficult to set up commercial dairy, sheep and goat farm for want of capital, inadequate lands for producing fodder, technological problems and so on. Raising of poultry can solve these problems to a significant extent. Poultry is no more a backyard farming now. It is shaping up as an industry. So an efficient production system is required for supporting commercial broiler farming in the country.

Poultry is a part of subsistence agriculture farming system in Bangladesh and broilers is an important component of commercial poultry farming system and plays a significant role in rural economy. Broiler enterprise creates various job opportunities for unemployed people through the establishment of hatchery, feed industry, equipment manufacturing and marketing of poultry birds. With this backdrop, the present study is an attempt to find out the existing picture of broiler production in Bangladesh. This study would cover the profit and loss, significant impact on variable cost and resource use efficiency. Further, it would attempt for identify some major problems that are faced by the broiler farm owners and would also find out probable solutions. So the researcher strongly believes that the government, policy makers, planners and other concerned agencies might formulate development policies regarding more effective broiler farming in the country by using the information obtained from this study. The present study would also be helpful to the broiler farm owners in making right decisions.

1.5 Objectives of the Study

The overall objective of this research is to explore various socioeconomic aspects of broiler farming in some selected areas of Gazipur district. The specific objectives of the study are as follows:

1. To examine the socioeconomic characteristics of broiler farmers in the study area.
2. To determine the profitability of broiler production.
3. To estimate efficiency of resources used in broiler production.
4. To ascertain the constraints related to broiler farming.
5. To recommend policy guidelines for the improvement of broiler production

1.6 Outline of the Study

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. In Chapter 4 socio-economic characteristics of broiler farmers are described. Chapter 5 discusses the profitability of broiler farming. Chapter 6 presents production function analysis. Chapter 7 includes problems related to broiler farming. Finally, Chapter 8 contains summary of the study, conclusions and recommendations based on the empirical results of the study.



CHAPTER 2
REVIEW OF LITERATURE

Chapter 2

REVIEW OF LITERATURE

2.1 Introduction

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

2.2 Review of literature

Unang (2003), studied a research program “Focused on both partnerships and autonomous firms, using profitability and efficiency to measure competitiveness”. The study found that broiler production in Indonesia is an efficient industry and can exist without any protection. The partnerships and the larger farmers enjoy more profit relative to the autonomous firms and the smaller ones. Levels of efficiency and profitability are influenced by the prices of feed and chicks as well as broiler output.

Bhuiyan (2003) conducted a study “Comparative economic analysis of poultry production under supervision of ABFL and farmer own management in some selected areas of Kishorganj district”. The study revealed that in case of broiler farm total cost per year was Tk. 833860 and Tk. 653952 under ABFL supervision and farmers own management. The cash expenses of broiler farm per year were Tk. 77.413 and Tk. 607177 for ABFL supervised farm and farmers own management farm, respectively, which accounted for 92.51 and 92.84 percent of their total costs. The gross returns of broiler farm per year were Tk. 1101786 and 884482 under ABFL supervision and farmers own management, respectively. Cobb-Douglas production function was used to determine the effect of feed, DOC and human labor on poultry production. The finding suggested that the selected variables have significant effect on both ABFL supervised farm and farmers own management farm.

Akram (2006), studied “To determine the cost, return and profitability of broiler production in a selected area of Mymensingh district”. After analysis, final findings revealed that broiler production was a profitable enterprise. Cobb-Douglas production function was also applied to explore the specific effect of the factors on broiler production. The study also found some problems associated with economic, technical, marketing and social aspects faced by

farmers. It was suggested to solve the problem for higher profit earnings than the existing level by the farmers.

Siddiki (2009) conducted a study on “Credit use and profit efficiency of broiler farming under PDBF in Mymensingh region”. The present study was undertaken to determine the profitability and profit efficiency of broiler farming with special reference to the users of MELA loan of PDBF. On an average, total cost of broiler farming was Tk. 91680.88 per farm per batch and the share of credit was Tk. 41897.43 in a batch, which covered only 45.7 per cent of the total cost. So the provision of credit did not served the purpose sufficiently. Average amount of gross return per farm per year stood at Tk. 922423.29 and the gross margin per farm per year was Tk. 157758 86. The net return per farm per year was Tk. 95461.73. Return per Taka invested on total cost was Tk. 1.12. The mean profit efficiency was about 73 per cent. If yield, sterilization and culture period would have been increased, then profit would be increase. On the other hand, if the cost of day-old-chicks, feed, veterinary services, labour, litter and electricity would have been increased, then profit would be decrease.

Akther and Rashid (2009) conducted a “Comparative profitability analysis on broiler farming under Aftab bahamuhkhi farm limited supervision and farmers’ own management”. Descriptive statistical techniques were used to estimate cost and returns of broiler farming. From the statistical evidence it was found that profit earned by ABFL supervised broiler farms and own managed broiler farms were not significantly different. It was also found from the farm survey that numbers of ABFL contract farmers were reduced. The study also aimed to formulate some policy implications. Thus the contracts needs to be reviewed and updated with respect to changing market conditions in a participatory manner involving both the parties for retaining the confidence of the contract growers.

Begum (2010) conducted a study on “Technical, allocative and economic efficiency of commercial poultry farms in Bangladesh”. The technical, allocative and economic efficiency of poultry meat production based on farm-level survey data was estimated using the Data Envelopment Analysis (DEA) approach. The study used 100 commercial poultry farms in Bangladesh and the results demonstrated that there was substantial technical, allocative and economic inefficiency in poultry production in Bangladesh. Under the constant return to scale (CRS) specification, technical, allocative and economic efficiencies were 88, 70 and 72% respectively, whereas under the variable returns to scale (VRS) specification those efficiencies were 89, 73, 66% respectively. Thus, the results indicate that efficiencies varied substantially

across the sample farms. To attempt to explain some of these variations, the efficiency scores were regressed based on farm specific variables such as the farmer's age, education, experience, total landholdings, poultry farm size and level of training using a Tobit regression framework. The estimated DEA model identified that there was great potential for increasing poultry farm efficiency using the existing level of inputs and resources more efficiently. Specifically, it showed that the level of education and training the farmer receives were two of the most important factors contributing to the variations in efficiency seen during this study.

Ali and Hossain (2010) studied a research on “Factors influencing the performance of farmers in broiler production of Faridpur district in Bangladesh. The study was conducted to determine the selected commercial practises of broiler-producing farmers in Bangladesh, broiler production performance, the relationship between management practices and broiler performance and the problems faced by farmers involved with broiler production. 120 broiler farmers were randomly selected from 250 population as the sample in Modhukhali upazilla. The majority (78%) of farmers reported low to medium performance in broiler production, and only 22% reported high performance. Education, land possession, annual family income, training exposure, broiler farming experience, broiler farm size, capital in broiler farming and extension contact for farmers had a significant bearing on performance, while credit needs, problem faced in broiler farming and feed conversion ratio had significant negative relationship with productive performance.

Halcyan (2011) conducted a “Socioeconomic study on household poultry rearing in some selected areas of Mymensingh district”. In the study, the researcher selected sixty household farmers in Sadar Upazila 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, the net return, and the 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) conducted a study on “Profitability of small scale broiler production in some selected areas of Mymensingh”. 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. This study also identified some problems in the production of broiler in the study area. Finally, based on the findings of the study, some recommendations were made for the development of broiler production in Bangladesh.

Sultana et al. (2012) experimented with a study on “Small scale broiler farming at Santhia Upazila in Pabna District”. There were 3 types of farms such as small size farms (100-500 birds), medium size (501-1000 birds) and large size (1001-2000 birds). Most of the respondents reared Cobb-500 strain, those were purchased from Kazi Farms Ltd. Most of the farmers regularly vaccinated their broilers and took short training on broiler farming. In this study, farmers reported some problems e.g. more marketing age of birds, higher cost of production, lack of training facilities etc. In conclusion, the result of this study could be considered useful to farmers and researchers to identify the overall problems and their remedies on management and marketing related to broiler production.

Kawsar et al. (2013) took a study on “The impact of management intervention on productive performance and profitability of small-scale broiler farming in Bangladesh”. For obtaining information from farmers who reared broilers with no scientific intervention, field-level primary data were collected by the survey from a total of 52 broiler farmers by direct interviewing. Among 52 farms 19 small-scale (100-300 birds capacity) farms were considered of which 3 were flocks of 100 birds, 12 were 200 birds and 4 were 300 birds each. Based on the results of the survey and availability of farming inputs of the farmers like housing facilities and farm equipment (eg: feeder, waterer, chick guard), nine interested farmers were randomly selected for experimentation in rural households with scientific intervention. Analysis of cost and returns showed that the cost of farming per bird decreases and return increases as the flock size increases. It was concluded that satisfactory productive performance is achievable and profitability may be improved from small scale broiler farming in rural households of the farmers if management intervention is made. It is therefore concluded that training to the small-scale broiler farmers, the introduction of improved management practices, regular monitoring with adequate poultry extension services are the key elements to get a satisfactory result from

broiler farming. These might enhance better productive performance as well as maximize profitability.

Islam et al. (2014) performed a research on “Prospect and Challenges in Broiler Farming of Barguna District in Bangladesh”. A total of 21 farms and 10542 broiler birds from 12 villages of 3 upazila under Barguna district in Bangladesh were studied. It was recommended that bank loan with easy access and lower rate of interest might be helpful for the broiler farmers to run their enterprise without dependency on dealers. Field survey primary data and farmers opinion regarding day old chicks price and live broiler marketing suggested that selling live broiler at high price and buying day old chick at low price make the farm operation profitable and vice versa. Again farmer’s opinion suggested that higher feed price is reducing the profitability of broiler farms. Hence, it might be concluded that higher feed price and day old chicks and live broiler market instability are the major challenges in broiler farming in Barguna district of Bangladesh.

Mendes et al. (2014) conducted a research on “Factors that impact the financial performance of broiler production in Southern States of Paraná in Brazil”. Data were obtained from a questionnaire applied to broiler chicken farmers which included 39 questions relative to farmer’s age, family size, land possession, capital invested in broiler farming, gross income per flock, training and broiler farming experience, production size, credit needs, technical service, labor, production problems, and bird weight at slaughter. Data were submitted to descriptive statistical analysis. The relationship between production data and financial performance was determined using Pearson correlation coefficient, at 95% confidence level. Approximately 64.84% of the interviewed broiler farmers in Paraná state presented medium to low financial performance. Factors such as education level, facility size, labor, gross income per flock, and average bird weight at slaughter had a positive impact on financial performance. The production problems that most affected the broiler production were environmental challenges, poor feed conversion, as well as management problems and low-quality chicks.

Islam et al. (2014) made an investigation on “Performances of commercial hybrid broiler in the villages of Bangladesh”. They took a total of 20 broiler farms to evaluate the production performance of broiler birds and farm management status in rural villages of Mymensingh Sadar. Data were collected on day-old chick weight (DOCW), live broiler weight at market age (MW), feed conversion ratio (FCR), average daily body weight gain (ADG), mortality up to the age of marketing (MTRT) during June and July 2014 using a pre-tested questionnaire by door-to-door visit. Seventeen out of 20 farms had broiler houses with gable type roof of corrugated iron sheet (CIS), all farmers were using rice husk as litter materials and

electric brooder for brooding birds for 7 days. To minimize heat stress, 65% of farmers used an electric fan and drinking water, and to minimize cold stress quantities of litter materials were increased and vitamin C was supplied with lukewarm drinking water. Newcastle Disease (ND) and Infectious Bursal Disease (IBD) vaccines were used by all farmers. It was concluded that the feed from two different companies had no significant effect on FCR and MTRT but feed company affected the ADG significantly. DOCW, farm size, and farmer's education did not affect ADG, FCR, and MTRT significantly.

Ali et al. (2015) studied on “Seasonal Influence on Productivity and Profitability of Small and Medium Scale Broiler Farming in Bangladesh”. The study was undertaken to compare the seasonal effect of bio-security management intervention on the productive and economic value of broiler farming reared in Pabna, Rajshahi and Kishoregonj district of Bangladesh having 30 farms in each. Data were collected from a total of 90 broiler farms by using a semi-structured questionnaire in two different seasons (winter & summer). FCR of the individual group maintained under bio-secured conditions was tended to be improved compared with the non-bio-secure farm. Growth performances were higher in winter compared to summer. Profitability also was found to be higher in winter compared to the summer season. The return was increased with the farm sizes increased ($P < 0.01$). Therefore, productive performance and profitability may be improved for broiler farming if bio-security intervention is made.

Pawariya and Jheeba (2015) conducted a research on “Economics of resource use efficiency in the poultry enterprise of Jaipur district of Rajasthan state”. The Cob-Douglas production function was used to determine the factors affecting poultry production as well as resource use efficiency. The major factors involved in poultry production like the cost of chicks feed, medicine, transportation and human labor were chosen for the computation of resource use efficiency. The efficiency indicator i.e. RUE= 0.27 for feed cost showed feeds were over-utilized and other factors RUE indicated that the cost of chicks, medicine cost, transportation cost, and human labor cost were found underutilized.

Oluwatayo et al. (2016) undertook a study on “Profitability and efficiency analysis of smallholder broiler production in Mopani District of Limpopo Province in South Africa”. The study was conducted to determine the factors affecting productivity of broiler production in that area. Data were collected from 86 sampled smallholder broiler farmers using a well-structured questionnaire. The results of the study indicated that feed and stock size and vaccines are significant, with a positive relationship with broiler output. The study recommended that government should find ways of linking the smallholder farmers in the study area with other

stakeholders, governmental and private, to allow smallholder farmers have the opportunities to network and get to know how the commercial successful farms operate and see where they can improve on their production systems and marketing of products.

Islam et al. (2016) conducted a study on “Profitable broiler farming at the villages of Khulna district in Bangladesh” where data from a total of 49 broiler farmers were collected to seek suggestions from the farmers to explore the knowledge how to make broiler farming a profitable and sustainable enterprise. From the study explored the opinion of farmers, which suggested that providing the broiler farmers with bank loan in a lower rate of interest, making loan easy and available, supplying feed from factory to the farmers directly in credit and stabilizing market price of day-old chicks, feed, and live broiler at marketing age could make the broiler farming a profitable and sustainable enterprise and which could contribute lot more in rural economy of Bangladesh.

Onuk et al (2017) conducted a study on “Broiler production in the Southern Agricultural Zone of Nasarawa State, Nigeria”. The study was concluded that broiler production was profitable and showed that broiler production depends to a large extent on proper care and efficiency of the necessary resources to maximize profit. It was recommended that poultry farming should be encouraged among young and educated people, broiler farmers should be granted access to loan facilities, research institutions should provide lasting solutions to the menace of pest and disease outbreak and government should provide extension service agents to assist the farmers in the areas of management and technical competency.

Poojitha (2018) studied on “Problems faced by contract broiler poultry farmers in India”. Contract farming is an agreement between the farmer and integrator where the integrator provides inputs to the farmer and takes back the final produce. Through this process, the risk element is reduced for farmers. Even though the risk is reduced farmer faces certain difficulties in this system. Shift from one integrator to another is frequently observed. Integrators have to understand the problems of farmers and provide inputs on time along with increasing growing charges. In conclusion of the study it was recommended that integrators should provide veterinary services on time to the farmers to reduce the mortality rate of the flock, training should be given to the farmers such that they can be aware of modern poultry production techniques. This all makes the farmers to get motivated to do contract farming and they also become loyal to the integrator.

Khan et al. (2018) researched on “Profitability analysis of different farm size of broiler poultry in district Dir (Lower)”. From four tehsils, 92 poultry farms were selected proportionately from total 460 poultry farms and data were collected on structured questionnaire. The sample farms were categorized into three groups i.e. small, medium and large. For analyzing the data, profit function and multiple regression model, analysis of variance (ANOVA) and independent t test were used. The highest net benefits were reported from the large scale poultry farms followed by medium and small firms. The results of the multiple regression model for profit shows that profit of a poultry farm is positively affected by education, experience, age of the respondent and farm size while negatively affected by mortality of chicks. It was concluded that proper vaccination and medication is required to decrease the high mortality rate so that the losses due to mortality can be minimized.

Bhimraj et al. (2018) conducted a research on “Economics Evaluation and Constraints of Contract and Backyard Broiler Farming”. A total of 15 contract and 15 non-contract broiler farmers were selected from the sample block of the three districts i.e Pune, Satara and Ahmednagar (Maharashtra) using a well-structured pre-tested interview schedule. The results of the study revealed that efficiency and body weight at marketing of broilers were non-significant compared between contract and non-contract farming except livability of birds which was significantly higher in non-contract broiler farming. Factors influencing profitability revealed that the age in years negatively influencing the profitability whereas partnership venture and average body weight at marketing had positive impact on the profitability. Total investment and number of batches per year had negative influence on the profitability of contract broiler farming. Foremost constraints faced by the contract broiler farmers were untimely supply of quality inputs, non-remunerative price, poor quality inputs, exploitation by partnership organization, and difficulty in availing credit and low productivity whereas the major constraints of non-contract broiler farmers were lack of finance, high rate of interest, repayment problems and difficulty in availing credit.

Afrin et al. (2019) studied on “Commercial broiler management patterns in Sylhet region of Bangladesh”. It was observed that from 25 randomly selected respondents who were involved in broiler farming, most of the farmers were young and started venture by their self-money, 56% of the farmers were only employed to broiler farming than the others who were found to be involved with other services also. All the broiler houses in the study area were open-sided, tin shed roof and the broiler growth rate was found almost satisfactory in the kacha and concrete floor. The highest number of farmers used Cobb 500 as broiler strain and rice

husk was mostly used as the litter material. It was found that farmers who received training from the Youth Training Center had experienced the lowest mortality rate of birds than those who didn't receive any training in broiler farming. It is concluded that the information gathered from the present data analysis may be useful in designing improved poultry management in the study area.

2.3 Concluding Remarks

The above mentioned discussions and reviews clearly indicate that only a few studies have been conducted specifically on profitability and resource use efficiency of broiler farming. The present study is therefore, exploring a new dimension which is very important at present situation to know the productivity and resource use efficiency of broiler production. The review of literature was supportive to re-design methodologies to overcome the limitations of previous studies. Moreover, this study was conducted using latest data to get recent information regarding production and will help both the researchers and the farmers concerned with broiler farming.



CHAPTER 3

METHODOLOGY

Chapter 3

METHODOLOGY

3.1 Introduction

This study was based on field survey of farmers who practiced broiler farming. Though there are various methods of collecting field level data, the survey method was chosen in the present study, because it was thought to be more advantageous. The reliability of a scientific research depends to a great extent on the appropriate methodology used in the research. Improper methodology very often leads to erroneous results. So methodology in any systematic study deserves careful consideration. The researcher gave a careful consideration to follow a scientific and logical methodology for carrying out this research.

3.2 Selection of the Study Area

Research on profitability for broiler farms where collection of primary data is involved, requires selection of an area which would offer a scope to fulfill the objectives of the study. Yang (1965), observes, “The area in which a farm business to be conducted relies on the particular purpose of the survey and possible co-operation from the farmers and other respondents.” For the present study, areas of Kaliakhair upazila of Gazipur district were selected randomly. Primary data was collected from Noyanagar, Sutrapur, Latifpur, Janescala and Gualbathan villages. The main criteria behind the selection the study area were as follows:

1. Availability of different categories of broiler farms in the study area
2. The study area is not far away from the researcher’s resident Palash.
3. The study area was accessible to the researcher who was familiar with the local farmers, and socio-economic characteristics of the farmers.
4. No specific study of this type was done in the study area

3. 3 Method of Investigation

The method of data collection indeed depends upon the 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, the survey method has been adopted for collecting data. Necessary data have been collected by the researcher herself by using structured questionnaires through face to face interviews. The respondents were broiler farm owners, from the study areas.

3.4 Sampling Procedure

The collection of necessary information for a research study from each and every elements of population becomes costly and time consuming. A sample of representative farms is therefore chosen which represent a reasonably true picture of the population. It provides basic advantages over complete enumeration with respect to costs and time. There are 272 villages in Kaliakhair Upazila (BBS, 2020). From there the researcher randomly selected 5 villages for the study. There are almost 2315 poultry farms are available in Kaliakhair Upzila (BBS, 2020). Among them, 60 broiler farms were randomly selected from five villages for the present study. Generally, there are two types of broiler such as white features and brown features. The researcher has collected data from white feather broiler farmers.

3.5 Period of Data Collection

For the present study, data were collected during October and November 2019 through face to face interview with the respondents. Data collection were done by severable field visits by the researcher herself during the period.

3.6 Preparation of the Survey Schedule

In order to collect relevant information, a survey schedule or questionnaire was prepared to collect data. The schedule was carefully designed keeping the objectives of the study in view. Before finalizing the schedule it was pre-tested for judging the suitability of schedule to respondents. Necessary correction, modification and alternations were done accordingly. The final survey schedule was developed in logical sequences including items of information as noted below:

1. The 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. Constraints faced by broiler farmers and
12. Recommendation for broiler farm owners to solve those problems.

3.7 Collection of Data

After preparing the survey schedule, the primary data were collected from the farm owners in a face-to-face interview by the researcher herself. While interviewing, the aims and objectives of the study were explained in brief to the owners of broiler farms. They were convinced that the study was purely an academic one and was not likely to have an adverse effect on their business. The questions were asked systemically in a very simple manner and the information were recorded on the survey schedule. In order to minimize errors, data were collected in local units. These were subsequently converted into appropriate standard units. After each visit, the collected information were checked carefully and verified for accuracy. 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.

3.8 Problems Faced in Collecting Data

The collection of data were not free from limitations. Some of the specific limitations were as follows:

- 1) The main defect of collection of data were that the researcher had to rely upon the memory of the farmers. Since majority of broiler farm owners did not keep any written records, they had to furnish information mainly from their memory.
- 2) Most of the farmers of the study area hesitated to answer the question about income and expenses having fear of imposition of tax. Sometimes they provided misleading information that caused wide variation between the collected information and actual view.
- 3) The farmers were not available at home because they remained busy with other outside activities. For this reason, sometimes more than two visits were required to get information.
- 4) There was a time limitation for which data and other necessary information had to be collected within the shortest possible time.
- 5) At the time of interview, the respondents asked the researcher on many occasions that what benefits they would get from the researcher.

3. 9 Processing and Tabulation of Data

The processing of data is necessary based on the 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, the required numbers of tables were prepared and results were obtained by using various statistical techniques.

3.10 Analysis of Data

3.10.1 Analytical Techniques

Data were analyzed to achieve the objectives of the study. For this study, the following techniques were used.

- a) Tabular Technique and
- b) Functional Technique

3.10.1.1 Tabular Technique

Tabular technique is a technique that is generally used to find the crude association or variations between variables. In the present study, tabular technique was used because it was simple in calculation, widely used and easy to understand. Some statistical measures like sum, average, percentage etc. were employed in the study. Profitability analysis was done based on both variable cost and total cost.

The following profit equation was developed 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. /thousand broilers/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. /thousand broilers /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,.....60) and

TFC = Total fixed cost

3.10.1.2 Statistical Technique

In the present study, statistical technique was used as a supplement to the tabular technique. To determine the effects of the most important variables to the returns of a broiler farms, Cobb-Douglas production function was used since it fits well. In fact, it is widely used by many researchers in their economic studies. The advantages of the model are that it is simple to calculate and the elasticity of production can directly be obtained from the co-efficient.

The following model was used in this study:

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

The function 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;

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

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

X₃ = Cost of hired labor for ith farm (Tk./year);

X₄ = Veterinary expanses for ith farm (Tk./year);

X₅ = Cost of litter for ith farm (Tk./year)

X₆ = Cost of transportation for ith farm (Tk./year)

U_i = Error term;

i = 2,3,60;

b₁, b₂, b₃, b₄, b₅, b₆ = Regression co-efficient of respective variables, and

ln = Natural log.

3.11 Procedure for Evaluation of Costs and Benefits

For calculating profit or loss, it is necessary to compute all the cost items. The market price at which a product or services is actually exchanged for has been taken into consideration with a view to evaluating costs and benefits. 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 thousand broilers for a year. The cost items were divided under the following heads.

3. 11.1 Feed Cost

Feed was the largest and the major cost item of broiler farms. The efficient utilization of this cost possibly helps a farm to achieve the maximum level of profit. The cost of feed included ready feed, such as rice bran, wheat bran, bone meal, fish meal, oil cake, salt, mineral, vitamin, oyster shell, etc. The purchased feeds were valued according to the prices actually paid by the farmers.

3.11.2 Day Old Chick Cost

Day-old chicks cost is one of the main cost items for 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.

3.11.3 Human Labor Cost

There are broadly two different kinds of labor, (1) hired labor and (2) family labor. Again, hired or family laborers 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

3.11.4 Veterinary Expenses

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

3.11.5 Housing Cost

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

$$\text{Depreciation} = \frac{\text{Original Value} - \text{Salvage Value}}{\text{Life of the house}}$$

3.11.6 Cost of Tools and Equipment

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

3.11.7 Interest on Operating Capital

Interest on operating capital was charged on considering all variables costs incurred for various operations in broiler farming such as day-old-chick cost, feed cost, hired labor cost, veterinary services, 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 6 percent per annum. It was assumed that if the owners of broiler fanners had put money in the 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:

$$\text{IOC} = (\text{OC} * \text{IR} * \text{Time Consideration}) / 2$$

Where,

OC = Operating capital;

IR=Interest rate.

3.11.8 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.

3.11.9 Transportation Cost

In the study area, 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. There was no cost incurred for selling the broilers because the farmers sell their broiler in their farmyards.

3.11.10 Electricity Cost

Electricity is also important for maintaining the temperature inside the broiler house or for protecting the birds for hot and cold climate. Actual money spent for electricity and fuel was taken as the cost of electricity.

3.12 Calculation of Returns

3.12.1 Gross Return

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

3.12.2 Gross Margin

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

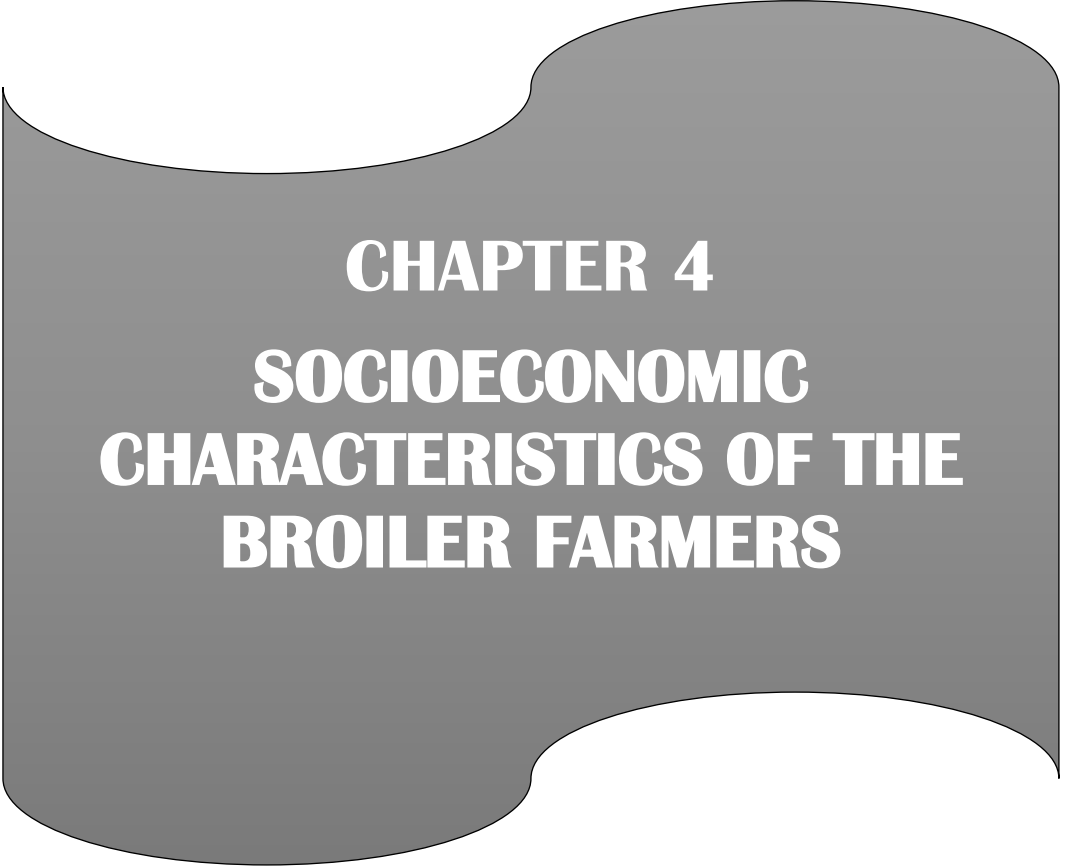
3.12.3 Net Return

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

3.12.4 Benefit-Cost Ratio

Benefit cost ratio implies return per taka invested. It represents the financial feasibility of any farm. The benefit-cost ratio was calculated by the following formula:

$$\text{BCR} = \frac{\text{Gross Return}}{\text{Total Cost}}$$



CHAPTER 4
SOCIOECONOMIC
CHARACTERISTICS OF THE
BROILER FARMERS

Chapter 4

SOCIOECONOMIC CHARACTERISTICS OF THE BROILER FARMERS

4.1 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 gender, age, education, occupation, family size, land ownership, sources of credit facilities, sources of family income, etc.

4.2 Gender Distribution of Broiler Farmers

Calculating the participation of man and woman in production of broiler is important element as it can show the actual involvement of population of our country in livestock production. Table 4.1 showed the number of men or women ownership on broiler farms in the study area.

Table 4. 1: Gender distribution of broiler farmers

Gender	Number	Percent
Male	40	66.67
Female	20	33.33
Total	60	100.00

Source: Field Survey, 2019

Table 4.1 showed that in the study area about 66.67 percent broiler farmers were male and rest of 33.33 percent broiler farmers were female. It can be said that participation of female in broiler farming is increasing day by day.

4.3 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 four categories according to their ages. The different age groups of the broiler farm owners in the study area

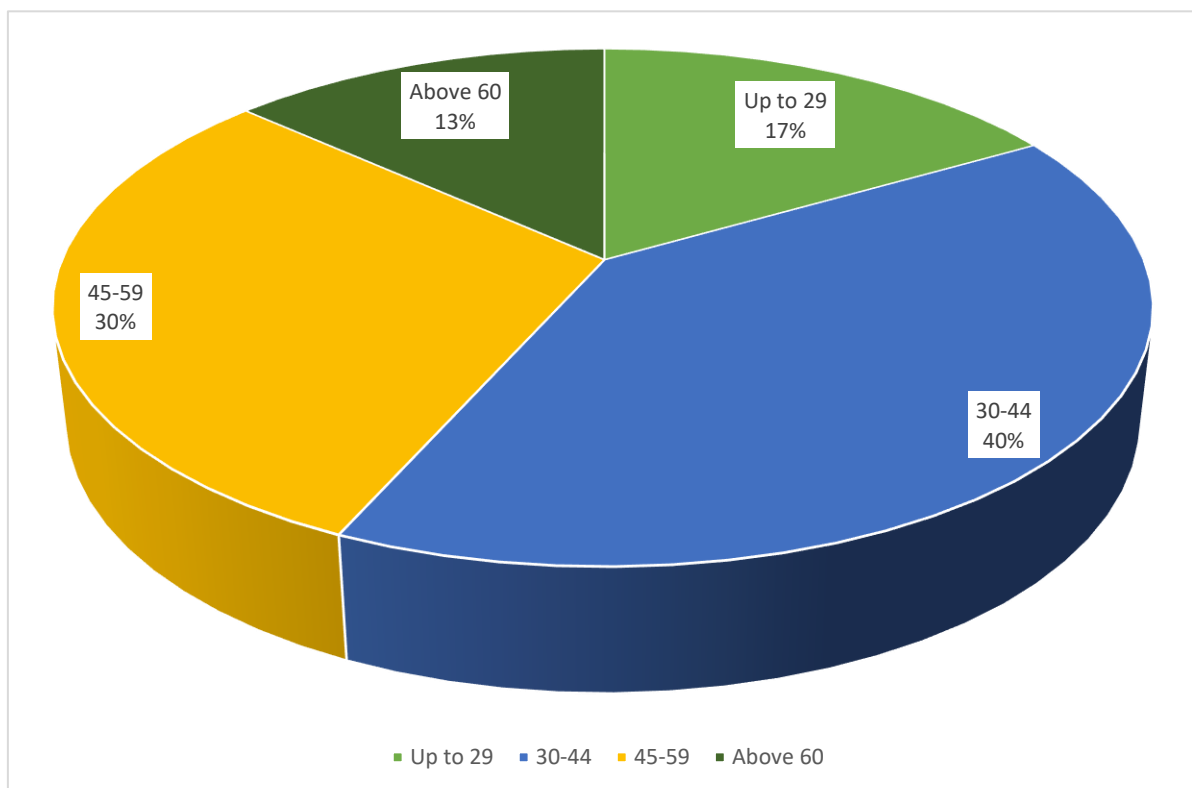
are presented in Table 4.2. The age of the selected broiler farmers was observed to be ranging from a minimum of 23 to a maximum of 65 years.

Table 4. 2: Age distribution of broiler farmers

Age Group	Number	Percent
Up to 29	10	16.67
30-44	24	40
45-59	18	30
Above 60	8	13.33
Total	60	100.00

Source: Field Survey, 2019

For a clear vision also a figure of age distribution of broiler farmers in the study area is drawn from the above table.



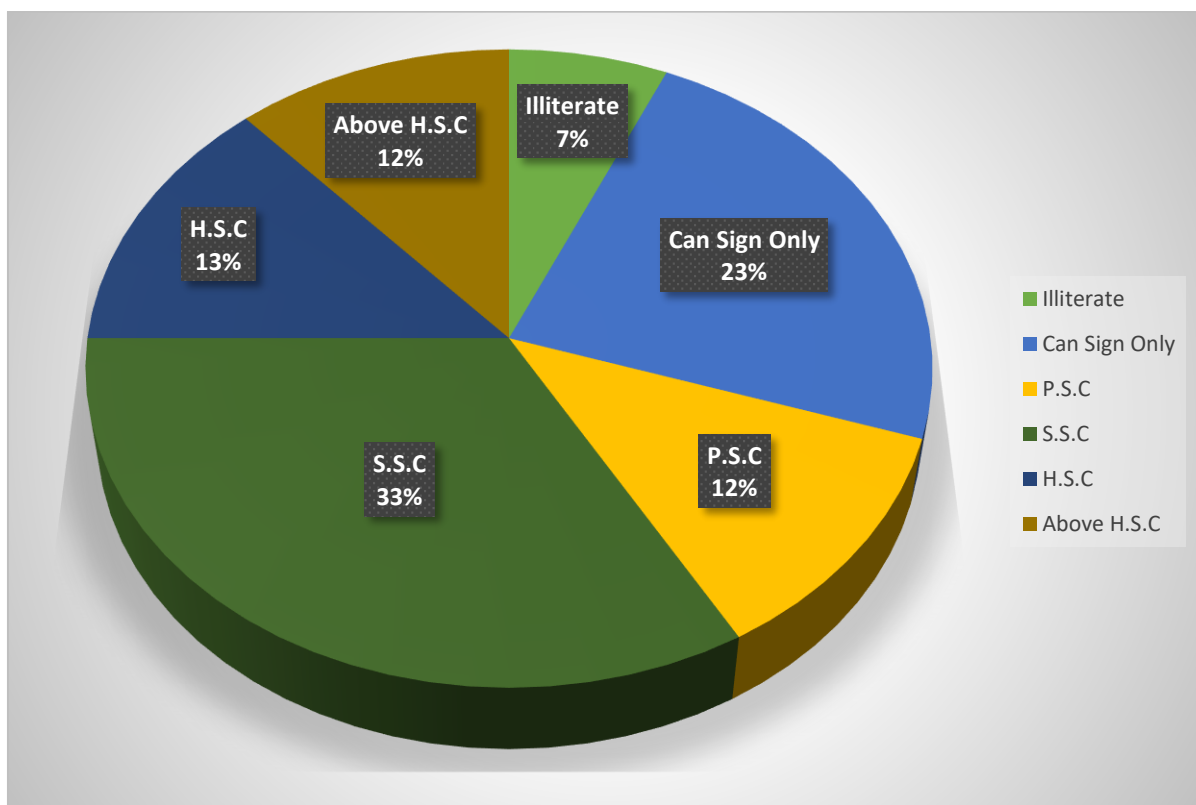
Source: Field Survey, 2019

Figure 4. 1: Age distribution of broiler farmers

It is clear from the figure that farmers between 30-44 years of age accounted for 40 percent of the total sampled broiler farmers while farmers aged less than 29 years constituted 17 percent. There are 30 percent sample farmers whose age were 45 years and above.

4.4 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 selected broiler farmers, education were classified into six categories such as Illiterate, can sign only, P.S.C, S.S.C, H.S.C, and above H.S.C.



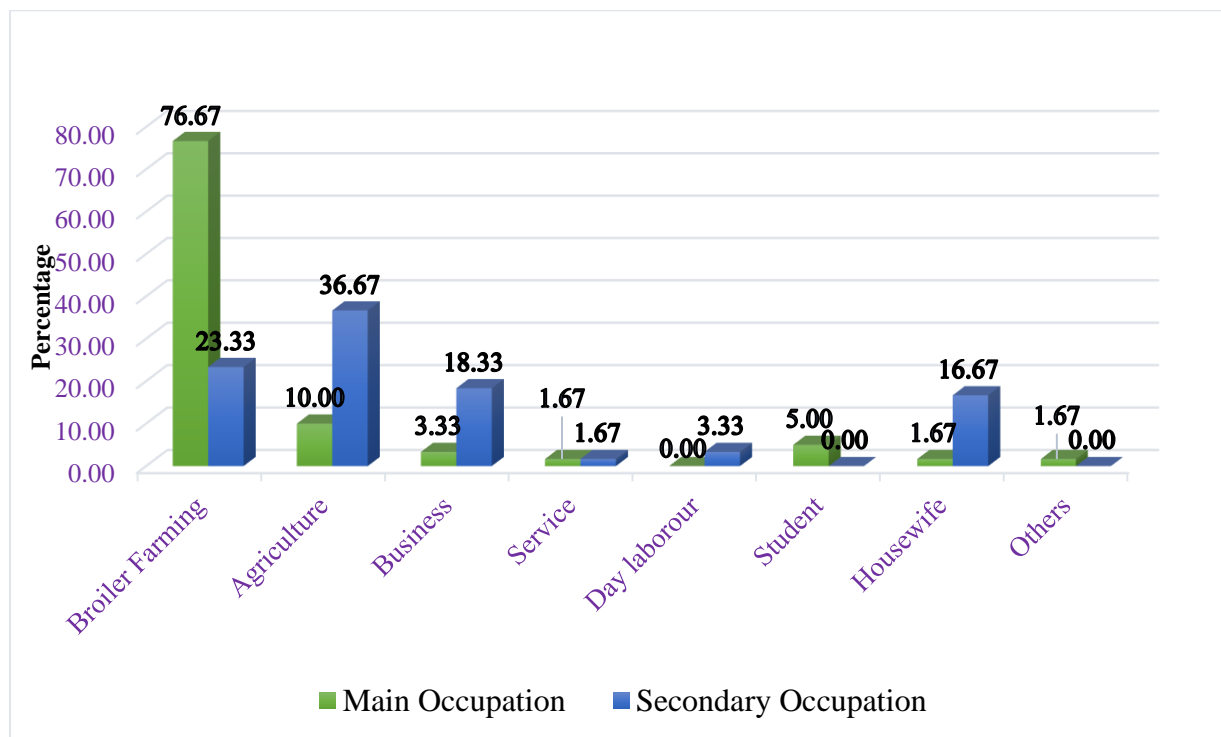
Source: Field Survey, 2019

Figure 4. 2: Educational level of the owners of broiler farms

Figure 4.2 displays the educational level of the respondents in the study area. The Figure reveals that 33 percent of the total respondents attained secondary educational level. Farmers who were illiterate, can sign only, P.S.C, H.S.C and above H.S.C constituted 7 percent, 23 percent, 12 percent, 13 percent, and 12 percent, respectively.

4.5 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 income earning opportunities.



Source: Field Survey, 2019

Figure 4. 3: Occupational status of the broiler farmers

The comparison between main occupation and subsidiary occupation of sample farmers in the study area is shown in figure 4.3. In the case of main occupation, broiler farming accounted for 77 percent and in case of subsidiary occupation, agriculture accounted for 37 percent which were the maximum percentage among other occupation. So it can be said that in the selected area, the broiler farmers were engaged in different occupations along with broiler farming.

4.6 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 4.3.

Table 4. 3: Family size of broiler farmers

No. of family members group	No. of farm Family	Percent (%)	Average family Size
1-3	8	13.33	6.28
4-5	13	21.67	
6-7	20	33.33	
Above 7	19	31.67	
Total	60	100.00	

Source: Field Survey, 2019

Table 4.3 indicates that in the study area about 13.33 percent families of broiler farmers consisted of 1-3 members, 21.67 percent families consisted of 4-5 members, 33.33 percent families consisted of 6-7 members, and 31.67 percent families consisted of above 7 members. The average family size of our country is 4.70 (BBS, 2020). But in the study area it was found 6.28 for broiler farmer, which is larger than average family size of the country.

4.7 Marital Status of the Broiler Farmers

Table 4.4 shows that in the study area about 88.33 percent of the broiler farmers were married and rest 11.67 percent were unmarried. It can be concludes that most of the broiler farmers belonged to high age group and they were married.

Table 4. 4: Marital Status of the Broiler Farmers

Category	Number	Percent
Married	53	88.33
Unmarried	7	11.67
Total	60	100.00

Source: Field Survey, 2019

4.8 Sources of Credit Facilities of broiler farmers

Available amount of funding is an important factor for any kind of farming. The sources of credit facilities for the broiler farmers include Banks, NGOs, lending from others and also their own funding. In the study area different NGOs such as BRAC, ASA, CARE, Nobolok etc are operating their services for providing loan to the farmers so that they can use this fund in broiler farming. In the study area about 28.33 percent farmers took loan from Banks, 38.33 percent farmers took credit from NGOs and 31.67 percent farmers took loan from their relatives and 91.67 percent farmers used their own funding (Table 4.5).

Table 4. 5: Sources of Credit Facilities of Broiler Farmers

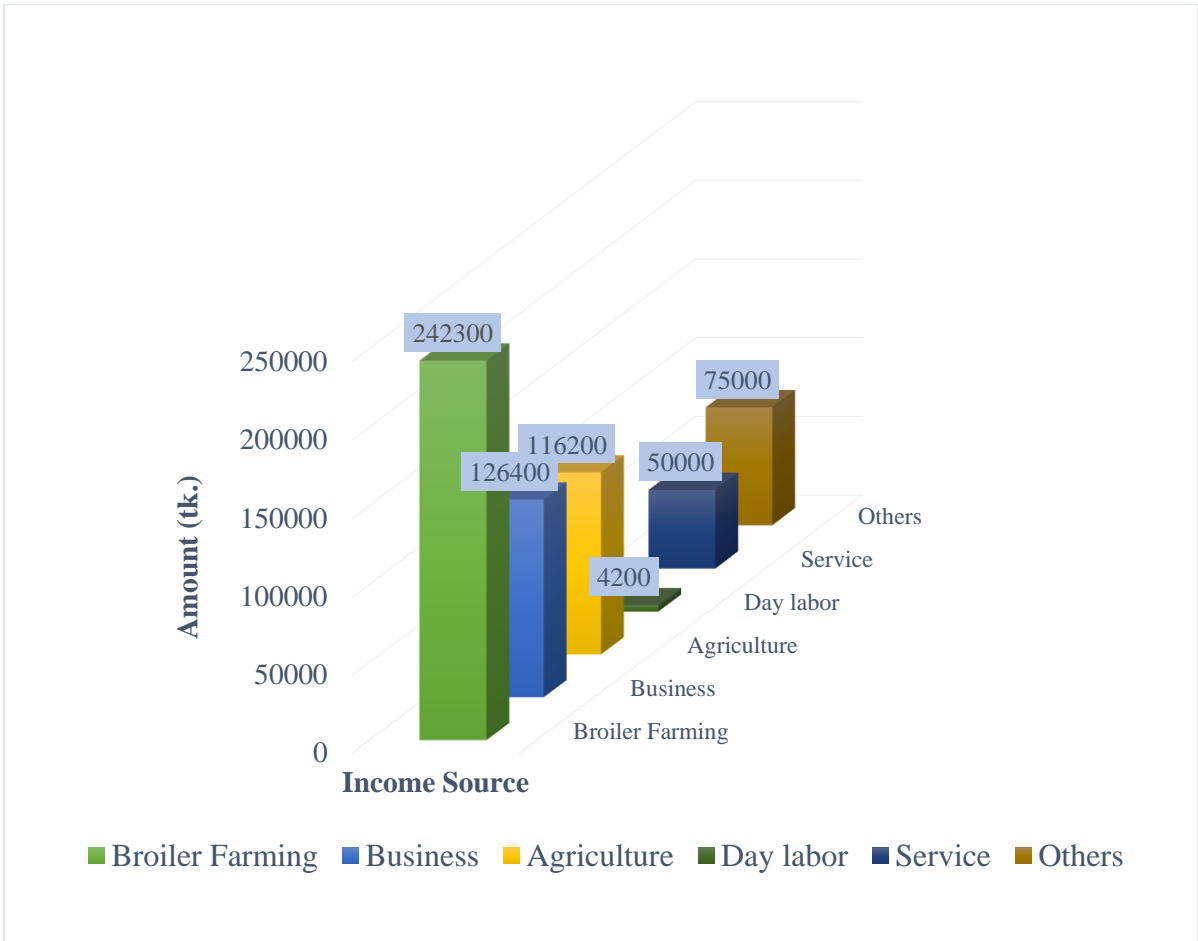
Items	Number	Percent
Banks	17	28.33
NGOs	23	38.33
Lending from others	19	31.67
Own funding	55	91.67

Source: Field Survey, 2019

*Note: One broiler farmer reported more than one source, so addition of percentage will not necessarily equal to 100.

4.9 Income Level and Other Sources of Income

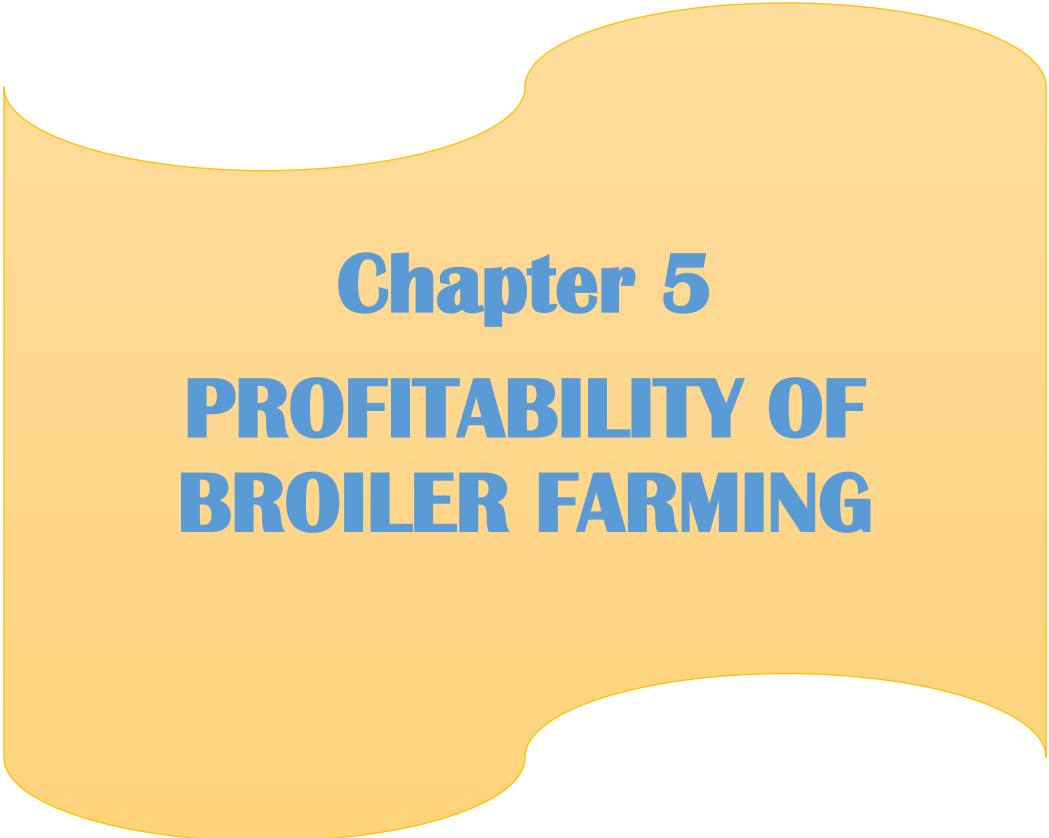
Family income of the farmers comprises different sources. Annual family incomes of broiler farmers come from broiler farming, business, agriculture, day labor, service, and others.



Source: Field Survey, 2019

Figure 4. 4: Annual family income of broiler farmers

Annual family incomes of broiler farm owners in the study area are shown in Figure 4.4. The figure indicates that in the study area, the family income derived from broiler farming was greater than other sources. On average, annual family income from broiler farming was Tk. 242300, which covers 39.46 percent of the total income. On the other hand, average annual income from business of broiler farmers were estimated at Tk. 126400, which was 20.58 percent of the total income. The least annual income came from day labor which was only Tk. 4200 and covered 0.68 percent of the total income.



Chapter 5
PROFITABILITY OF
BROILER FARMING

Chapter 5

PROFITABILITY OF BROILER FARMING

5.1 Introduction

The aim of this chapter is to estimate the costs, returns and profitability of raising broiler birds. In estimating cost of rearing broiler birds, total costs per thousand broilers per year were calculated. 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.

5.2 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. 977439 per thousand broilers per year. Table 5.1 represents the total costs of broiler production for per thousand broilers per year. Total variable cost and total fixed cost were Tk. 885348 and Tk. 92091 which constituted 90.58 and 9.42 percent of total cost, respectively.

5.2.1 Variable Cost

5.2.1.1 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 thousand broilers 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. On average, price of per kg feed was Tk. 45. Table 5.1 shows that the average feed cost per thousand broilers was Tk. 667980 constitutes 68.34 percent of the total cost.

5.2.1.2 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. It appears from Table 5.1 that the cost of day-old-chick was calculated at Tk. 150000 which covered 15.35 percent of total cost.

Table 5. 1: Total cost of broiler production per thousand broilers per year

<i>Cost items</i>	<i>Unit</i>	<i>Unit Price</i>	<i>Per thousand broilers per year</i>		<i>Percentage of total Cost</i>
			<i>Quantity</i>	<i>Total Cost</i>	
A. Variable cost	Tk.			885348	90.58
a) Feed cost	Tk.	45	14844 kg	667980	68.34
b)Day-old-chick cost	No.	25	6000	150000	15.35
c) Hired labour	Man-day	400	16	6400	0.65
d) Veterinary service and medicine cost	Tk.			20517	2.10
e) Electricity cost	Tk.			16049	1.64
f) Litter cost	Tk.			13460	1.38
g)Transportation cost	Tk.			10942	1.12
B. Fixed cost	Tk.			92091	9.42
a) Housing cost	Tk.			26787	2.74
b) Family labor cost	Man-day	400	25	10000	1.02
c)Tools & equipments cost	Tk.			2183	0.22
d)Interest on operating capital	Tk.			53121	5.43
Total cost (A+B)	Tk			977439	100

Source: Field Survey, 2019

5.2.1.3 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 5.1 that the cost of hired labor per thousand broilers per year was Tk. 6400 which covered 0.65 percent of the total

cost. On the other hand, family labor cost was calculated at Tk. 10000 which covered 1.02 percent of the total cost.

5.2.1.4 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 5.1 shows that the average veterinary cost per year was Tk. 20517 which covered 2.10 percent of the total cost.

5.2.1.5 Electricity Cost

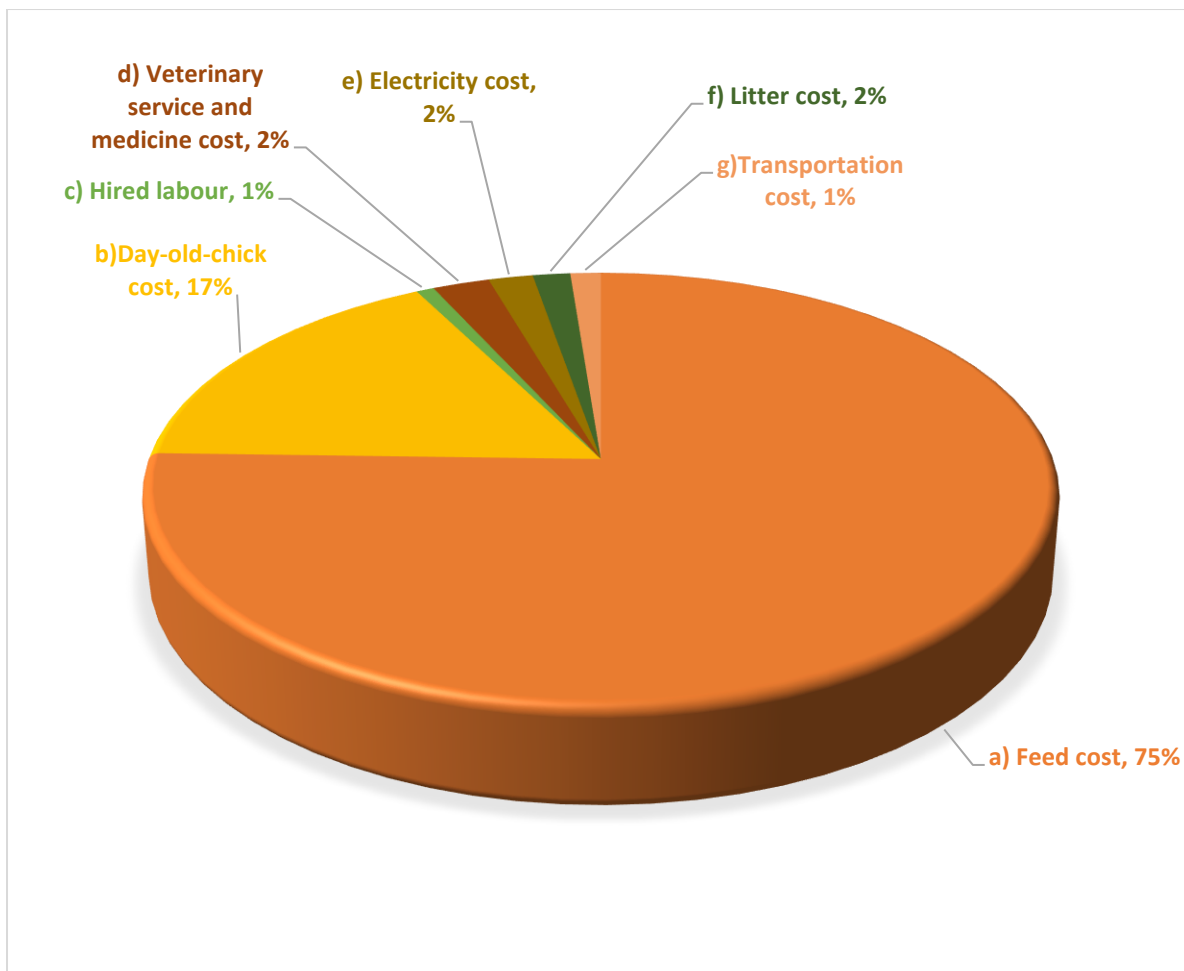
It is another important cost item for broiler enterprise. Electricity is needed for maintaining temperature inside the broiler house or for protecting the birds from hot and cold climate. It is evident from table 5.1 that the annual electricity cost was Tk. 16049 which covered 1.64 percent of the total cost.

5.2.1.6 Litter Cost

It is another important cost for broiler enterprise. In the selected areas rice husk was used as litter. The average litter cost per thousand broilers per year accounted to Tk. 13460 which was 1.38 percent of the total cost.

5.2.1.7 Transportation Cost

It is evident from Table 5.1 that transportation cost per thousand broilers per year was Tk. 10942 which covered 1.12 percent of the total cost.



Source: Field Survey, 2019

Figure 5. 1: Approximate distribution of Major cost of broiler farming

5.2.2 Fixed Cost

5.2.2.1 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 15 years. Table 5.1 shows that total housing cost per thousand broilers per year was Tk. 26787 representing 2.74 percent of the total cost.

5.2.2.2 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 thousand broilers per year was Tk. 2183 which covered 0.22 percent of the total cost.

5.2.2.3 Interest on Operating Capital

It is evident from table 5.1 that interest on operating capital per thousand broilers per year was Tk. 53121 which covered 5.43 percent of the total cost.

5.3 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 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.

5.3.1 Gross Return

Table 5.2 shows the average gross return received by each broiler farmers from his farm business. The study revealed that, on average, price of live broiler received by broiler farmers was Tk. 130. A farmer produced 10180 kg broiler per year on an average. The gross return per thousand broilers per year was Tk. 1338400 (Table 5.2).

Table 5. 2: Gross return from broiler production per thousand broilers per year

Items	Unit	Unit Price	Per thousand broilers/year	
			Quantity (Kg)	Value(Tk.)
1.Live broiler	Kg	130	10180	1323400
2.Used litter & excreta	Sack			15000
Total (1+2)				1338400

Source: Field Survey, 2019

5.3.2 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 that gross margin per thousand broilers per year was Tk. 453052 (Table 5.3).

Table 5. 3: Gross margin, net return, and benefit cost ratio per thousand broilers per year

SL No.	Margins & Returns	Per thousand broilers /Year
A.	Gross return	1338400
B.	Total variable cost	885348
C.	Total cost	977439
D.	Gross margin (A-B)	453052
E.	Net return (A-C)	360961
F.	Benefit Cost Ratio:	
	1) Return per taka invested (Variable cost basis) A/B	1.51
	2) Return per taka invested (Total cost basis) A/C	1.37

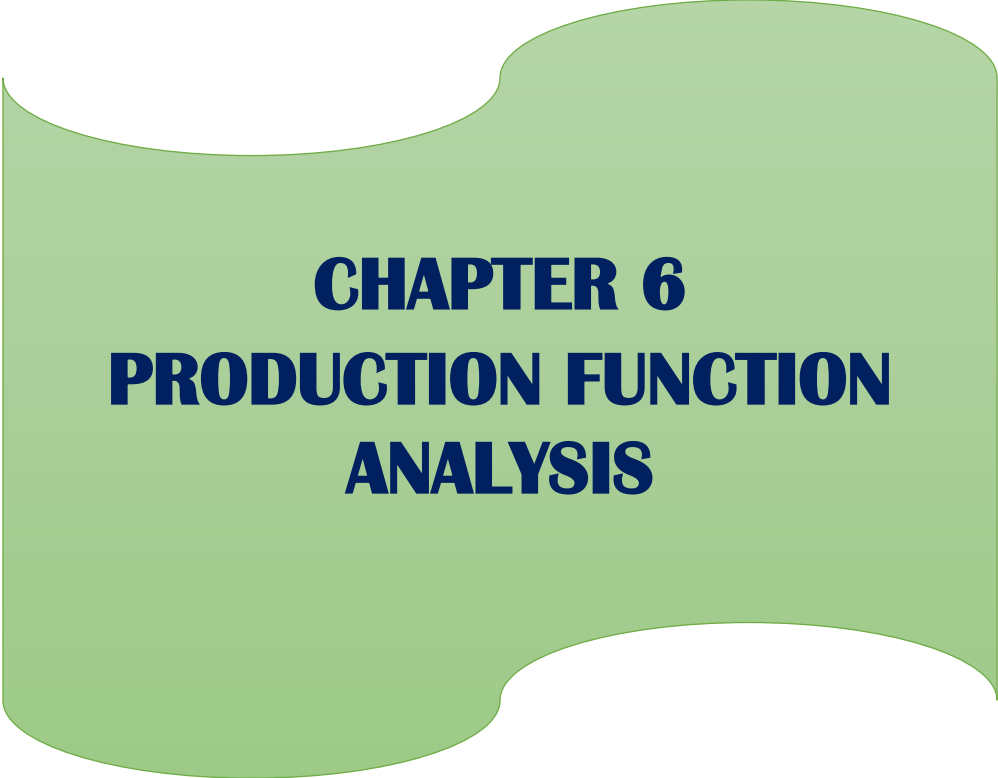
Source: Field Survey, 2019

5.3.3 Net Return

Net return on total cost was arrived at by deducting all the costs from the gross return. Table 5.3 shows that net return per thousand broilers per year stood at Tk. 360961.

5.3.4 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 1.51 and 1.37 on the basis of variable and total cost basis respectively. Thus it indicates that broiler farming is a profitable enterprise.



CHAPTER 6
PRODUCTION FUNCTION
ANALYSIS

Chapter 6

PRODUCTION FUNCTION ANALYSIS

6.1 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.

6.2 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, litter and transportation cost. On the other hand, unexplained variables were considered to be electricity, land use cost and family labor.

6.2.1 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 60 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);

X₃ = Cost of hired labor for ith farm (Tk./year);

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

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

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

U_i = Error term;

$i = 1, 2, 3, \dots, 60$;

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

and

\ln = Natural log.

6.3 Interpretation of Results

The estimated Co-efficient and related statistics of the Cobb-Douglas production function for broiler production is presented in Table 6.1. Major characteristics of the model are noted below:

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

Table 6.1: Estimated values of co-efficient and related statistics of Cobb-Douglas production function for broiler farms (n=60)

Explanatory Variables	Estimated values of coefficient		
	Co-efficient	Standard error	T-Values
Intercept	9.171	1.150	7.976
Feed (X_1)	0.454 ^{***}	0.080	4.411
Day-old chicks(X_2)	0.315 ^{**}	0.022	2.483
Hired labor (X_3)	-0.078 ^{NS}	0.064	-1.209
Veterinary expenses (X_4)	-0.10 ^{***}	0.027	-3.763
Litter (X_5)	-0.041 ^{NS}	0.061	-0.669
Transportation Cost (X_6)	0.275 ^{***}	0.059	2.952
R^2	0.732		
Adjusted R^2	0.709		

F-value	10.060 ^{***}		
Returns to scale	0.825		

Source: Field Survey, 2019

Note: *** Significant at 1% level

** Significant at 5% level

NS - Non-Significant

The estimated Cob-Douglas function of broiler production was-

$$\text{Log Y} = 9.171 + 0.454 \log X_1 + 0.315 \log X_2 - 0.078 \log X_3 - 0.10 \log X_4 - 0.041 \log X_5 + 0.275 \log X_6$$

6.3.1 Feed (X₁)

The regression co-efficient of feed cost was 0.454 and significant at 1% level. It implies that 1 percent increase in feed cost, other factors remaining constant, will increase of return by 0.454 percent (Table 6.1).

6.3.2 Day-Old Chick (X₂)

The regression co-efficient of expenditure on day-old-chicks cost was 0.315 which was significant at 5% level. The results of the analysis indicated that 1 percent increase in day-old-chicks cost, keeping other factors constant, will increase of the gross return by 0.315 percent for broiler farms (Table 6.1).

6.3.3 Hired Labor (X₃)

The regression co-efficient of hired labor cost was -0.078 and insignificant. It implies that 1 percent increase in hired labor cost, keeping other factors constant, will decrease of return by 0.078 percent (Table 6.1).

6.3.4 Veterinary Expenses (X₄)

The regression co-efficient of veterinary expenses was -0.10, which was significant at 1% level. It implies that an increase in 1 percent of veterinary cost, remaining other factors constant, will decrease of the gross return by 0.10 percent (Table 6.1).

6.3.5 Litter (X_5)

For litter cost, the regression co-efficient was -0.041 and insignificant. It implies that 1 percent increase in litter cost, keeping other factors constant, will decrease of return by 0.041 percent (Table 6.1).

6.3.6 Transportation Cost (X_6)

The regression co-efficient of feed cost was 0.275 and significant at 1% level. It implies that 1 percent increase in transportation cost, other factors remaining constant, will increase of return by 0.275 percent (Table 6.1).

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

The co-efficient of multiple determinations was 0.732. It indicates that 73 percent of the variation in the gross returns was explained by the independent variables included in the model.

6.3.8 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 10.060 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.

6.3.9 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 0.825. This indicates that the production function exhibits decreasing returns to scale.

6.4 Resource Use Efficiency (RUE)

To accomplish the aim of profit maximization i.e., for efficient allocation of resources, one should use more of the resources, as 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 MVP 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:

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

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,
$$\text{MVP (X}_i\text{)} = b_i \frac{Y (G.M)}{X_i(G.M)} P_{yi}$$

Where,

b_i = Co-efficient

P_{yi} = Per unit price of output

G.M. = Geometric mean

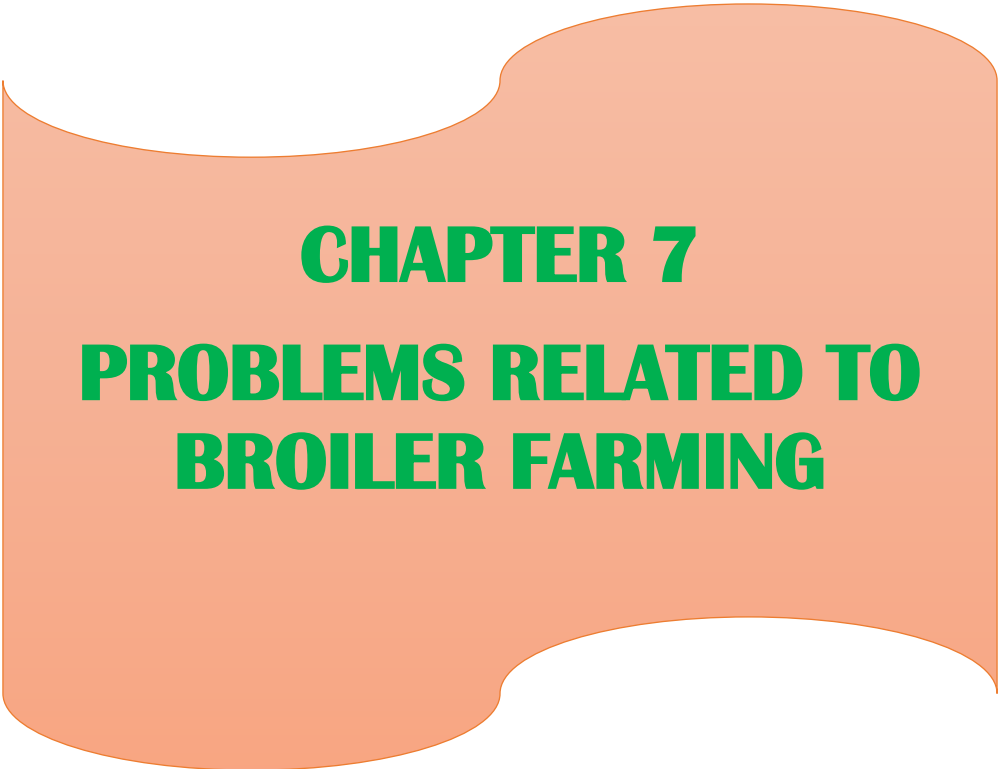
Hence, these MVPs indicate the value product per input can be used to express the ratio of MVP and MFC. The criteria of resource use efficiency is that a ratio equal to one indicates the optimum factor use, a ratio more than one indicates that the gross return could be increased by using more of the resource and the value of less than one indicates excess use of resource which should be decreased to minimize the loss. The estimated MVP of different inputs are presented in Table 6.2.

Table 6. 2: Marginal value products (MVP) and marginal factor cost (MFC) of different inputs included in production function

Variables (Quantity)	Geometric mean	Co- efficient	MVP	MFC	Ratio of MVP to MFC	Comment
Output (Y)	1323967.97					
Feed (X1)	704006.91	0.454	110.99	45	2.47	Underutilized
Day-Old Chick (X2)	145528.24	0.315	372.55	25	14.90	Underutilized
Hired labor(X3)	6326.24	-0.078	-2122.12	400	-5.31	Overutilized
Veterinary and medicine(X4)	20043.65	-0.1	-858.71	800	-1.07	Overutilized

Source: Field Survey, 2019

From Table 6.2 showed that the ratio of MVP and MFC of broiler feed (2.47) and day-old chick (14.90) was positive and greater than one. It indicates that the use of feed and day-old chick 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 hired labor (-5.31) and veterinary and medicine (-1.07) was negative and less than one showed that the use of human labor and veterinary and medicine for broiler production was being used to an extent that any increase in these input's use reduces broiler output. So, the broiler farmer needed to reduce the use of these inputs to attain the efficient level respectively.



CHAPTER 7
PROBLEMS RELATED TO
BROILER FARMING

CHAPTER 7

PROBLEMS RELATED TO BROILER FARMING

7.1 Introduction

Broiler industry of Bangladesh is rapidly amplifying but the current scenario of broiler farming is that almost every day there are new farms arising and some of the old ones are shut down. It appears that the business environment is quite nebulous and full of risk and uncertainty. Broiler industry of Bangladesh is going 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 encountered by broiler farmers and its solutions are given below:

7.2 Economic Problems

7.2.1 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 7.1 shows that 95 percent of farmers reported this problem. Farmers collected feed from local agents. Local agents sell feed at a high price.

7.2.2 High Price of Day-Old-Chick

High price of day-old-chick was another problem of broiler farming. Table 7.1 shows that 80 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.

7.2.3 Lack of Capital

Availability of cash capital is necessary for establishing and operating broiler farms. Table 7.1 revealed that 73.33 percent of broiler farmers mentioned this problem. Institutional credit was hardly available and it required complicated procedure, so farmers borrowed money from other people or village money lender against high rate of interest. For this reason farmers faced the problem of loan repayment.

7.2.4 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 7.1 shows that 60 percent farm owners could not expand their poultry business due to financial constraints.

Table 7. 1: Problems faced by the broiler farmers. (No. of total Respondent = 60)

Problems	No. of Respondent	Type of Problems	Percent (%)	Rank
Higher price of feed	57	Economic	95	1 st
Outbreak of diseases	53	Social	88.33	2 nd
Lower Price of broiler	51	Marketing	85	3 rd
Higher price of DOC	48	Economic	80	4 th
Lack of training facilities	46	Technical	76.67	5 th
Lack of Capital	44	Economic	73.33	6 th
Lack of extension services	42	Technical	70	7 th
Non-availability of credit	36	Economic	60	8 th
Late payment	32	Marketing	53.33	9 th
Electricity problem	31	Technical	51.67	10 th
Rumor	30	Marketing	50	11 th
Political unrest	27	Social	45	12 th
Non-availability of day-old chicks	21	Technical	35	13 th
Social restriction	20	Social	33.33	14 th
Unavailability of veterinary doctor	18	Technical	30	15 th

Source: Field Survey, 2019

7.3 Marketing Problems

7.3.1 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 7.1 shows that 85 percent farmers reported this problem.

7.3.2 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 7.1 shows that 53.33 percent farm owners faced this problem.

7.3.3 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 7.1 shows that 50 percent farmers faced this problem.

7.4 Technical Problems

7.4.1 Lack of Training Facilities

The broiler farmers reported that they lacked modern knowledge on broiler farming. Table 7.1 shows that 76.67 percent farmers reported this problem.

7.4.2 Lack of Extension Services

Table 7.1 shows that about 70 percent of farmers complained that they did not get extension services regarding the improved method of broiler production. Farmers used traditional method of broiler cultivation.

7.4.3 Electricity Problem

Inadequate supply of electricity in the study area hampered broiler production. Farmers had to use oil lamp in case of load shading. Table 7.1 shows that 51.67 percent farmers faced this problem in broiler raising. Load shading is an important problem that hampered production.

7.4.4 Non Availability of DOC

Non - availability of adequate number of DOC is another important problem. Table 7.1 shows that 35 percent of farmers reported this problem. Recent political unrest restricted the movement of DOCs hampered their supply at the farm level.

7.4.5 Unavailability of veterinary doctor

Table 7.1 shows that about 30 percent farmers indicated this problem. Because of unavailability of veterinary doctors, farmers couldn't take veterinary services and faced losses in broiler production.

7.5. Social and Natural Problems

7.5.1 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 7.1 shows that 88.33 percent of farmers reported this problem.

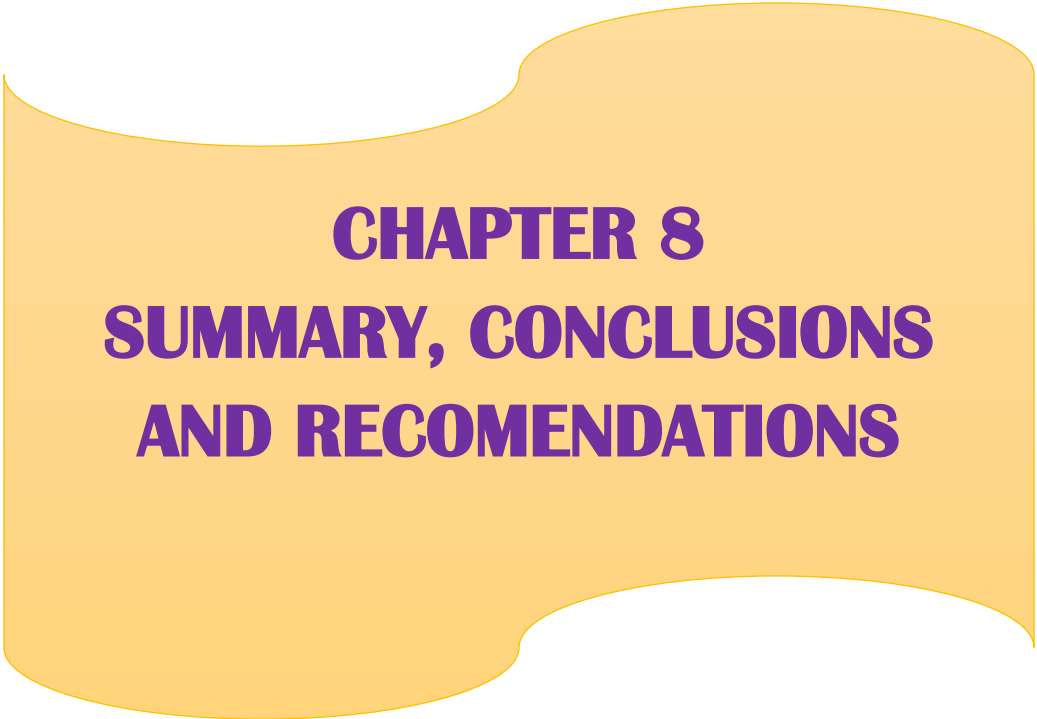
7.5.2 Political Unrest

Political unrest reduces profit margin of the farm business by increasing the cost of inputs and decreasing the price of broiler. Table 7.1 indicates that 45 percent farm owners identified this as an important problem.

7.5.3 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. Another social restriction is the women's ownership of farms. Women faced many problems in the study area regarding rearing broilers compared to men. Table 7.1 shows that 33.33 percent of broiler farmers faced this problem.

The above mentioned problems are interrelated with one another and hence, need to be removed comprehensively through an integrated program for the overall development of broiler farming. Problems faced by the farmers were ranked on the basis of corresponding percentages. Most of the farmers were reported that high price of feed was the main constraint for their broiler production. And this problem occupies first position according to its ranking.



CHAPTER 8
SUMMARY, CONCLUSIONS
AND RECOMENDATIONS

CHAPTER 8

SUMMARY, CONCLUSIONS AND RECOMENDATIONS

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

8.1 Summary

Bangladesh is an agro-based country in the South-East Asian region. The economy of Bangladesh depends on Agriculture to a great extent. Agriculture sector composed of four sub-sector. Livestock is an important sub-sector of agriculture. Poultry is one of the most important segment of livestock. Bangladesh is extremely affected by the problems of poverty, unemployment and malnutrition. Poultry production can solve these problems within a very short span of time. The importance of broiler farming can be realized from two points such as economic and nutritional. It gives maximum return with minimum cost and time compared to other meat producing animals. In terms of nutrition, broiler meat is an excellent source of protein as it contains 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 present study was designated to estimate the performance of

broiler farming in some areas of Kaliakhair Upzilla of Gazipur District with the following specific objectives:

1. To examine the socioeconomic characteristics of broiler farmers in the study area.
2. To determine the profitability of broiler production.
3. To estimate efficiency of resources used in broiler production.
4. To ascertain the constraints related to broiler farming.
5. To recommend policy guidelines for the improvement of broiler production

Keeping these objectives in mind, random sampling technique was followed to collect data from Kaliakhair Upzilla under Gazipur District. For present study, a total of 60 broiler farmers were selected. 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 2019. Primary data were collected from broiler farm owners and secondary data were collected from various journals, reports, theses, bulletins, publications of BBS, newspapers, magazines and government official records.

The study showed in about 66.67 percent broiler farmers were male and rest of 33.33 percent broiler farmers were female in the study area. It is appeared that majority (40%) of farm owners in the study area belonged to the age group between 30-44 years. The broiler farmers in the study area had a very impressive literacy profile. It was observed that about 30 percent of broiler farmers were educated upto S.S.C and only 7 percent were illiterate. The study revealed that 77 percent respondents were engaged in broiler farming as their main occupation, while 23 percent respondents took it as subsidiary occupation. The study depict that around 33.33 percent of the broiler farmer had a family size of 6-7 people and the average family size of broiler farmers was 6.28. Broiler farmers took loan from NGOs which was about 38.33 percent. The overall annual average income of the broiler farmers was Tk. 242300 in the study area.

The total cost per thousand broilers per year was Tk. 942025 where variable cost was 93.98 percent and fixed cost was 6.02 percent of the total cost.

Feed cost was the major single cost item of raising broiler birds. It was found that broiler farmers did not use any home supplied food and the average cost of ready feed was Tk. 40 per kg. It was the major cost item that amounted to Tk. 667980 covering 70.91 percent of the total cost. Cost of day-old-chicks per thousand broilers per year was estimated at Tk. 150000 which covered 15.92 percent of the total cost. Price per bird was Tk. 25. Hired labor cost per thousand broilers per year was Tk. 6400 which represents 0.68 percent of total cost. Average veterinary

service and medicine cost per thousand broilers per year was Tk.20517 which represents 2.18 percent of total cost. Average electricity cost per thousand broilers per year was Tk. 16049 which accounted for 1.70 percent. Average litter cost was Tk. 13460 which represents 1.43 percent of the total cost. Average transportation cost was Tk. 10942 which represents 1.16 percent of the total cost. Average housing cost per thousand broilers was Tk. 26787 which accounted for 2.84 percent of the total cost. The cost of tools and equipment per farm stood at Tk.2183 which represents 0.23 percent of the total cost. Interest on operating capital per thousand broilers stood at Tk. 17707 which accounted for 1.88 percent of the total cost. (Table 5.1)

Average annual gross return per thousand broilers per year stood at Tk. 1338400. Average gross margin amounted to Tk. 453052. Average net return per thousand broilers per year was Tk. 396375. The benefit-cost ratio per thousand broilers per year was 1.51 and 1.42 on the basis of variable cost and total cost basis respectively. The BCR was higher than one. So the study indicates 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, litter cost and transportation cost of broiler farms. The findings suggested that most of the selected variables had significant impacts on production of broiler farming. The study also calculated the resource use efficiency of some selected variables such as feed, day-old chick, human labor and veterinary services on output.

The study identified some problems associated with broiler production which were categorized into economic, marketing, technical and social problems.

8.2 Conclusions

It can be concluded that raising of broiler is a profitable business in the study area. There is a wider opportunity for further development of broiler farming in this country. The findings suggest that the enterprise is beneficial to 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 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.

8.3 Recommendation

After studying the mentioned area assertion problems were found and the followings recommendation could be made according to farmer's opinion:

- 1) The government intervention such as to give subsidies on feed cost is needed here to unexploited market for feed in the study area.
- 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 broiler production smoothly.
- 3) Government should set a floor price for broiler farmer to overcome the problem of price fluctuation of broiler.
- 4) Most of the respondents suggested that government should increase its facilities by supplying necessary DOC at lower price. For the availability of DOC, it is recommended to establish more hatcheries to the study area. It will also decrease the transportation cost.
- 5) To get rid of the problem of insufficient fund, short term loan on lower interest rate that is not more than 4% and without any mortgage for broiler farming should be made by Government that should strictly be followed by Banks and NGOs to save the farmers from the exploitation of money lenders.
- 6) The poultry market in Bangladesh faced a considerable amount of trouble due to recent bird flu. It is suggested to create consciousness and take precautions against avian influenza to keep consumers safe and avoid a human outbreak. Extreme caution such as hygiene and avoiding congested area needs to be maintained by broiler farmers as well as consumers so that the disease does not spread to humans.
- 7) Government should increase veterinary services by providing vaccine and medicine at reasonable price and also establishment of new veterinary care centers.
- 8) Finally, 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.

8.4 Limitations of the Study

No study is beyond limitation. The present study contains few limitations which are as follows:

1. There was a limitation of time. To get an acceptable and reliable data, adequate time was needed. But data for this study were collected and analyzed by the researcher within a very short time.
2. The profitability analysis of broiler farms was done using constant input-output price relationship. It may change over time. This may also change the result of present study.
3. The researcher had depended on the memory of the respondents because they did not keep written records. Thus, the analysis on profitability may carry little bias.
4. Exact family labor quantification is a difficult task. The farmers often cannot distinctly calculate the use of family labor for different purposes properly.
5. The study covered only 60 samples from some small areas. 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 significant and more useful.
6. Data collection was the most challenging task for the researcher. Most of the broiler farmers were initially reluctant to answer questions for the fear that this investigation may bring adverse effect on them. So they were not ready to disclose actual figures or landed property and other assets.



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