

**A Report on**  
**COMPARATIVE PROFITABILITY ANALYSIS BETWEEN SONALI**  
**AND BACKYARD POULTRY FARMING IN JAMALPUR DISTRICT**



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**Chattogram Veterinary and Animal Sciences University**  
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# List of Abbreviations

<b>Abbreviation and symbol</b>	<b>Elaboration</b>
BCR	Benefit Cost Ratio
BDT	Bangladeshi Taka
CVASU	Chattogram Veterinary and Animal Sciences
CVH	Central Veterinary Hospital
DLS	Department of Livestock Service
Dr	Doctor
DVM	Doctor of veterinary Medicine
Etc.	Et cetera
et al.	et alia (and others)
GDP	Gross Domestic Product
Govt.	Government
SAQTVH	Shahidul Alam Qudery teaching Veterinary
SSC	Secondary School Certificate
Tk	Taka
ULO	Upazila Livestock Officer
USD	The United States Doller
UVH	Upazila_Veterinary_Hospital
VS	Veterinary Surgeon
WHO	World Health Organization
%	Percentage

## ABSTRACT

This study was conducted to understand the comparative profitability of sonali and backyard poultry. On the basis of available information, a total number of 40 farm where 20 sonali and 20 backyard poultry farm were selected following random sampling technique from Islampur Sadar upazila under Jamalpur district of Bangladesh through a pre designed questionnaire. Descriptive, statistical and economic method were used to achieve the objectives. The result shows that maximum (45%) sonali farmer were adult aged (31-40) where backyard poultry farmer comprises 60% of total farmer. 50% sonali farmer are well educated (HSC & above) where majority(55% of backyard poultry farmer are less educated (Primary and below). Majority of sonali farmer had training where backyard poultry farmer hardly have any training. Around 40% sonali farmer earned 35000-40000 Tk per month where 35% backyard poultry farmer earned 10000-15000. This study identified a remarkable change in net return, gross margins and BCR of the selected sonali an backyard poultry farm. Net return is Tk 18.355 in case of sonali and Tk 70.21 in case of backyard poultry. Where gross margins is Tk19.417 in sonali and Tk 73.13 in backyard poultry. And finally BCR is Tk 1.13 in case of sonali and Tk 1.42 in case of backyard poultry. The study also identifying 5 major problems faced by both sonali and backyard poultry farmers. Among all problems , high cost of feed and DOC is common in sonali . Chick mortality is one of the major problem in backyard poultry. Besides low price of sonali is one of the major problems for the farmers.In order to sustain sonai and backyard poultry farmers , the price of poultry feed and DOC should be controlled.To develop these sector veterinary service should be ensured. Day by day the demand of sonali and backyard poultry are rising d in this situation government and other agencies should take sufficient attempt to improve this sector and try to minimize the feed cost by taking necessary steps.

**Key Word:** Sonali farming,Backyard poultry,Socio economic condition,net return,BCR

## **CHAPTER 1 INTRODUCTION**

### **1.1 Background of the study**

Bangladesh is an agricultural country. Livestock is an important sub-sector of agriculture. Poultry meat is one of the major components of livestock sub-sectors that determine to supply cheap sources of good quality animal protein to the nation to fulfil the vast demand of protein. Poultry farming has turned into the poultry industry in last decade. It helps in poverty reduction in Bangladesh. Poultry farming provides a sustainable economic contribution and generates self-employment opportunities for the unemployed young generation. A noticeable development has been taken place in poultry farming when sonali and backyard poultry are producing in large scale in Bangladesh. The growing demand of sonali and backyard poultry inspire the farmer to rearing sonali and backyard poultry in large scale. Statistics shows the increasing growth trend of the sonali and backyard population of Bangladesh over the past few years. It is observed from the statistical data that the increasing rate is satisfactory throughout the period with little exception.

In agriculture sector, contribution of crops, livestock and forestry were 11.24%, 2.57% and 1.71%, respectively. Beside commercial broiler, sonali and backyard poultry creates a huge demand among the consumers. Sonali and backyard poultry farming has now turned into a profitable business in Bangladesh. Sonali industry in Bangladesh has made significant progress during the last two decades where commercial broilers demand decreasing day by day. Sonali chicken, the crossbred of Fayoumi female and RIR (Rhode Island Red) male developed in 1986, has been reported to perform better with respect to egg and meat production, rapid growth and low mortality under scavenging, semi-scavenging and intensive farming system. Bangladesh's Department of Livestock Services (DLS) introduced sonali crossbred chicken in the Islampur Upazilla and throughout the country through various projects, seminar and workshop.

Backyard poultry reared naturally in our household. The meat is more popular among the people for its taste and flavour. Besides it has high immunity and it can be easily cope up with our weather so the rearing cost of backyard poultry is always less than sonali and other commercial broiler. On the other hand it has less feed cost, less labour cost and less housing cost than sonali chicken.

Sonali rearing is rapidly becoming popular because of its better production records (average weight; adult male 2- 2.5 kg and adult female 1.5-2 kg with feed conversion ratio of 4.33), higher disease resistance,

lowest mortality and highest profit rate per hen (Rahman et al., 1997; Haque et al., 1999). Sonali is also very much suited to the semi-intensive rearing system in rural areas. Along with sonali backyard poultry is also very popular in our country. It has good disease resistant and it can be reared in semi intensive and free ranging also. The price of sonali and backyard poultry is higher than broiler so trades are really interested in marketing sonali and backyard poultry. Sonali and backyard poultry consumption climbed by 45 percent in July 2019 compared to 20 percent in July 2018. Commercial sonali and backyard poultry farming provides employment opportunities for unemployed family members, improve socio economic conditions (of about 76% of sonali and backyard poultry beneficiary has been improved) and increases women employment among rural people of Bangladesh. If we can boost sonali and backyard poultry production, it will be able to contribute more to the country's total meat production.

Meat is an essential component of our daily diet, and chickens' meat is now the cheapest form of animal protein in Bangladesh, despite religious, economic, social, and demographic differences (Al-Nasser et al., 2007; Simon, 2009). According to Begum et al. (2011), poultry meat accounts for 37% of overall meat output and roughly 22-27% of total animal protein supply in Bangladesh (Prabakaran, 2003). Based on the preceding discussion, it can be said It has been taking its place besides the indigenous hens due to its adaptability and acceptability in the climatic conditions of Bangladesh. Sonali, with a phenotypic appearance similar to local chicken has higher market demand than exotic breed. The poultry producers of Islampur Upazila have recently noticed a trend of Sonali chicken farming. Among the consumer the demand of sonali and backyard poultry is rising day by day. There is no study was under taken yet to assess the profitability of sonali and backyard poultry farmers in Islampur Upazila.

So the purpose of this study was to identify the socio-economic status and compared profitability of sonali and backyard poultry farmers at Islampur upazila in Jamalpur District.

## **1.2 Objective of the study**

1. To find out the socio economic status of sonali and backyard poultry farmers in study area.
2. To compare the profitability of sonali and backyard poultry farmers.
3. To identify the problems faced by sonali and backyard poultry farming in the study area.

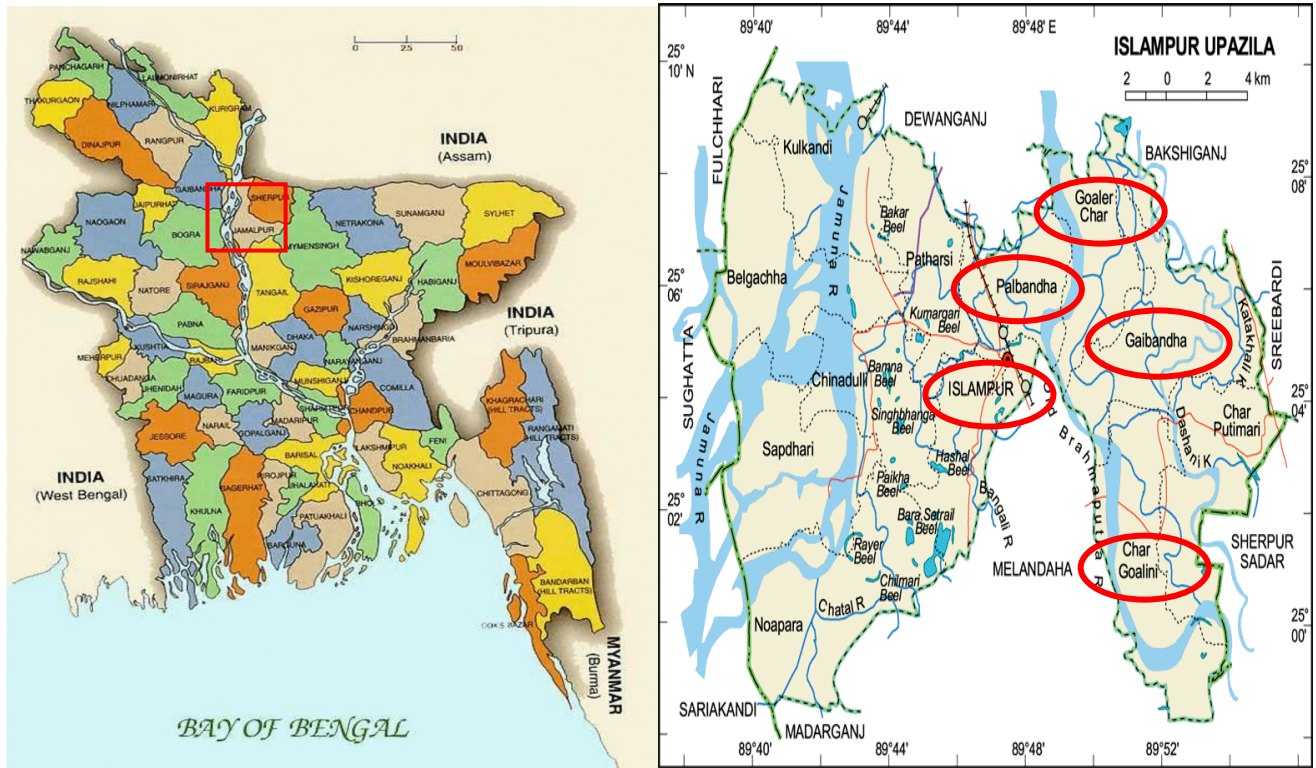


## CHAPTER 2

### Materials and Method

#### 2.1 Study Area Selection

Study areas were selected from union Goaler chor, Polobandha, Gaibandha, Choe goalini, Islampur sadar at Islampur Sadar Upazila and surrounding union under Jamalpur district for the availability of sonali and backyard poultry farmers .



**Figure:1** Map of the study area

#### 2.2 Selection of Sample Size

A total of 40 farmers were interviewed using random sampling method for collection the necessary data. Where 20 sonali chicken and 20 backyard poultry farmer.

#### 2.3 Preparation of questionnaire

Before collecting the samples, a structured questionnaire was designed regarding to the object of the study. The questionnaire was pre tested added necessary information and omit unnecessary questions on the basis of practical experience.

## 2.4 Collection of data

A structured questionnaire was prepared for that purpose. Primary data were collected from the sonali and backyard poultry farm owners by applying field survey method. On the basis of questionnaire all related data were collected by visiting the sonali and backyard poultry farm separately in the study area between February 22 to April 22. Before data collection a brief idea was given to the farmers about the purpose and impact of the study. Then finally farmers were interviewed face to face. Livestock extension officer plays an important role to get the information easily by providing the database information of sonali and backyard poultry farmers at Islampur Upazila. Secondary data and information were collected from various journals, bulletins, government publications as well as from different organizations.



**Figure 2.**Collection of data from different sonali and backyard poultry farm

## 2.5 Data Coding ,entry and cleaning

The questionnaire were checked for completeness ,cleaned organized and coded after data collection ,then the data entered in Ms-Excel spread sheet before being converted to STATA programme (Stata , 14 , statistical software ) for analysis.

## 2.6 Analytical Process

Socioeconomic characteristics and problems related to production were identified using descriptive method and farm profitability were analyzed by the following equation.

### 2.6.1 Estimation of costing

- i. Total Cost (TC) = (Total variable cost + Total fixed cost).
- ii. Total variable cost (TVC) = (Feed cost + Veterinary cost + Labor cost + Transportation cost + Miscellaneous cost).
- iii. Total fixed cost = (Depreciation of housing cost + Depreciation of equipment cost).

Here,

**1. Variable cost:** Variable cost includes the cost that are related to production such as feed cost, DOC cost veterinary cost, labor cost, transportation cost and miscellaneous cost.

**Feed cost:** Feed cost includes the total amount of feed consumed by the bird and multiplied by the market value of the feed.

**Veterinary cost:** It includes the cost related to bird health like vaccination, medication.

**Labor cost:** Both hired labor and family labor was considered for the study. **Whre**

**Transportation cost:** It includes carrying cost of feed and marketing cost of bird for sale.

**Miscellaneous cost:** It includes electricity cost, water cost , cost of rope and bags.

**2. Fixed cost:** Fixed cost includes depreciation of housing cost and depreciation of equipment cost.

Depreciation of housing and equipment: It was calculated on the basis of straight line method (Shiyani et al, 1989). The formula is as follow;

$$\text{Depreciation} = \left[ \frac{\text{Original value} - \text{Salvage value}}{\text{Life of the house or equipment}} \right]$$

Here, life of housing was considered 25 years and life of equipment's was considered 5 years.

### 2.6.2 Profitability analysis:

For Profitability analysis following equations was used:

#### i) For sonali

$$\pi = TR - TC$$
$$= \sum(Q_s P_s + Q_y P_y) - \sum(P_x i X_i - TFC)$$

Where,

$\pi$  = Profit or net return from per dairy cattle per year (Tk).

TR = Total return.

TC = Total cost.

$Q_s$  = Total sonali selling (kg).

$P_s$  = Per unit price of sonali (Tk/ kg).

$Q_y$  = Total unit of litter selling (kg)

$P_y$  = Per unit price of litter.

$X_i$  = Quantity of the concerned  $i$ th inputs.

$P_{xi}$  = Per unit price of the relevant  $i$ th inputs.

TFC = Total fixed cost involved in production.

$i = 1, 2, 3, \dots, n$  (number of inputs).

#### ii) For backyard poultry

$$\pi = TR - TC$$
$$= \sum(Q_b P_b + Q_z P_z) - \sum(P_x i X_i - TFC)$$

Where,

$\pi$  = Profit or net return from per dairy cattle per year (Tk).

TR = Total return.

TC = Total cost.

$Q_b$  = Total backyard poultry selling (kg).

$P_b$  = Per unit price of backyard poultry (Tk/ kg).

$Q_z$ =Total unit of litter selling.(kg)

$P_z$ =Per unit price of litter.

$X_i$ = Quantity of the concerned  $i$ th inputs.

$P_{xi}$ = Per unit price of the relevant  $i$ th inputs.

TFC= Total fixed cost involved in production.

$i= 1,2, 3 \dots n$  (number of inputs).

**iii)  $GM = TR - TVC$**

Where,

GM= Gross margin.

TR= Total return.

TVC= Total variable cost.

**iv) BCR (Full cost basis) =  $\frac{TR}{TC}$**

**v) BCR (Cash cost basis) =  $\frac{TR}{TVC}$**

Where,

BCR= Benefit cost Ratio.

TR= Total return.

TC= Total cost.

TVC= Total variable cost.

## CHAPTER 3

### RESULT AND DISCUSSION

This section represent the current socio economic status of sonali and backyard poultry farmer of Islampur Upazilla under Jamalpur District.

#### 3.1 Socio-economic status of the sonali and backyard poultry farmer

The socioeconomic characteristics of the sonali and backyard poultry farmers like age, marital status, education, family size, occupation, monthly income, experience of farming, training on farming were presented in the Table 1 below.

**Table. 1** Socio economic characteristics of sonali and backyard poultry farm owners.

Parameter	Category	Sonali		Backyard Poultry	
		Frequency	Percentage	Frequency	Percentage
Age (year)	< 25	2	10	2	10
	25-35	7	35	5	25
	36-45	8	40	10	60
	>45	3	15	3	15
Marital tatus	Married	14	70	15	75
	Unmarried	6	30	5	25
Education	Primary	6	30	11	55
	Secondary	4	20	6	30
	HSC & above	10	50	3	15
Occupation	Farmer	7	35	13	65
	Businessmen	9	45	5	25
	Student	4	20	2	10

Training (days)	<14	5	25	-	-
	15-30	10	50	-	-
	>30	5	25	-	-
Experience (year)	0-3	12	60	7	35
	3-6	3	15	2	10
	6-10	5	25	11	55
	>10	5	25	11	55
Income (Tk)	<20000	-	-	7	35
	21000-30000	3	15	11	55
	31000-40000	12	60	2	10
	>40000	5	25	-	-
Farmer Type (Farm size in acre)	Landless(<.49)	-	-	4	20
	Merginal(.5- 1.49)	3	15	8	40
	Small (1.5- 2.49)	12	60	5	25
	Medium (2.5- 7.49)	5	25	3	15
	Large (>7.5)	-	-	-	-

Table 1 shows the socio-economic condition of the sonali and backyard poultry farmers at Islampur Upazila under Jamalpur district. Table 1 also represent that most of number of sonali farmers was within the middle age (36 to 45 years) group (40%) where young old group (25-35years) comprises of 35% of the total farmer and there are 15% farmer 46 years and above. On the other hand in case of backyard poultry majority of the farmer (60%) in middle aged group (36-40). 25% are from young aged (25-35years) and 25% of them are from (25-35years) aged group.

The Table also shows that sonali farmers are comparatively more educated than backyard poultry farmer they are more skilled and intelligent about farming than backyard poultry farmer. In the field of training

most of the sonali farmer (50%) at least had taken training for (15 days -1 month) from different government and non-government organizations. But very few number of backyard poultry farmer had taken training about poultry rearing. Though some take training their training is not sufficient enough. From the table it is also clear that the socioeconomic condition of sonali farmer is comparatively better than backyard poultry farmer. Majority of the sonali farmers (60%) income range between Tk 31000 to 40000, where most of the backyard poultry farmers (55%) income range between Tk 21000 to 30000. The table also shows that most of the sonali farmers (45%) are generally do business and most of the backyard poultry farmers (65%) generally involve with agriculture and farming.

Table 1 also shows that according to the farm size sonali and backyard poultry farmers are categorized into 5 groups. 15% of sonali farmer are marginal farmer (.5 to 1.49 acre) and 60% of them are small farmers (1.5 to 2.49 acre) and 25% of them are medium farmer (2.5 to 7.49 acre). On the other hand in case of backyard poultry farmer 20% of them are landless farmer (<0.5 acre), 40% of them are marginal farmer (.5 to 1.49 acre) and 25% of them are small farmers (1.5 to 2.49 acre) and 15% of them are medium farmer (2.5 to 7.49 acre).

### **3.2 Cost and return measurement per bird per batch in the study area:**

In poultry farms production cost consists of the variable cost and fixed cost of the farm. The variable cost refers to the cost such as feed cost, labor cost, medicine cost, electricity bill, vaccination cost etc.

In this segment return of the farms at per bird per batch was measured. In Table 2 comparison between sonali and backyard poultry are shown.

Table 2 shows the clear comparison between sonali and backyard poultry in case of cost and return. Here in case of feed cost it can be observed that backyard poultry feed cost were 60.96% of total variable cost where sonali feed cost were 75.52% of total variable cost. Here DOC cost in sonali is 11.89% of total variable cost. On the other hand backyard DOC cost is 19.56% of total variable cost. Labor cost is 0.69% and 0.62% of total variable cost respectively in sonali and backyard poultry farmer whether backyard poultry is 9.55%. Vaccination cost in backyard poultry is 2.51% of total variable cost whereas in sonali it is 1.39% of total variable cost. and Table 2 also shows that total cost in case of sonali Tk 145.64 and in case of backyard poultry Tk 90.13.



**Table 2 Cost and return of per bird in per batch in study area**

Cost & Return	Sonali Chicken		Backyard Poultry	
	Amount (Tk)	Percentage (%)	Amount (Tk)	Percentage (%)
<b>Cost Items</b>				
Feed Cost	108.67	75.52	60.86	60.96
DOC Cost	17.35	11.88	14.20	19.56
Labor Cost	1.27	0.69	0.58	0.62
Medicine & Treatment	11.07	7.69	10.71	13.22
Vaccination Cost	2.63	1.39	1.80	2.51
Electricity Bill	2.07	0.69	1.51	1.90
Litter Price	0.899	<b>0.554</b>	0.32	1.23
<b>Total Variable cost</b>	<b>143.96</b>		<b>88.11</b>	
Depreciation Of House	1.61		1.03	1.01
Depreciation of Equipment	0.07		0.041	0.04
Total Fixed Cost (TFC)	1.69		1.334	1.05
<b>Total Cost (TVC+TFC)</b>	<b>145.64</b>	<b>100</b>	<b>90.13</b>	<b>100</b>
<b>Total Return Item</b>				
From Bird Selling	163.10	99.96	180.23	99.99
From litter	0.025	0.025	0.013	0.01
<b>Total Return</b>	<b>163.13</b>	<b>100</b>	<b>180.24</b>	<b>100</b>

Variable cost are those cost that related to production such as feed cost , DOC cost , labor cost, medication and vaccination cost , transport cost and other cost . Table 2 also shows that in case of sonali total variable cost is Tk 143.95 and in case of backyard poultry Tk 88.11

Fixed cost in poultry farming comprise of depreciation of house cost and equipment's cost. From Table 2 depreciation of house and equipment were Tk 1.61 and Tk 0.071 respectively. On the other hand in case of backyard poultry depreciation of house and equipment are Tk 1.027 and Tk 0.041 respectively.

Return in poultry farming is mainly come from bird and litter selling. The bird that gain more body weight and have less FCR result in high return and makes farm more profitable. Table 2 shows that total return

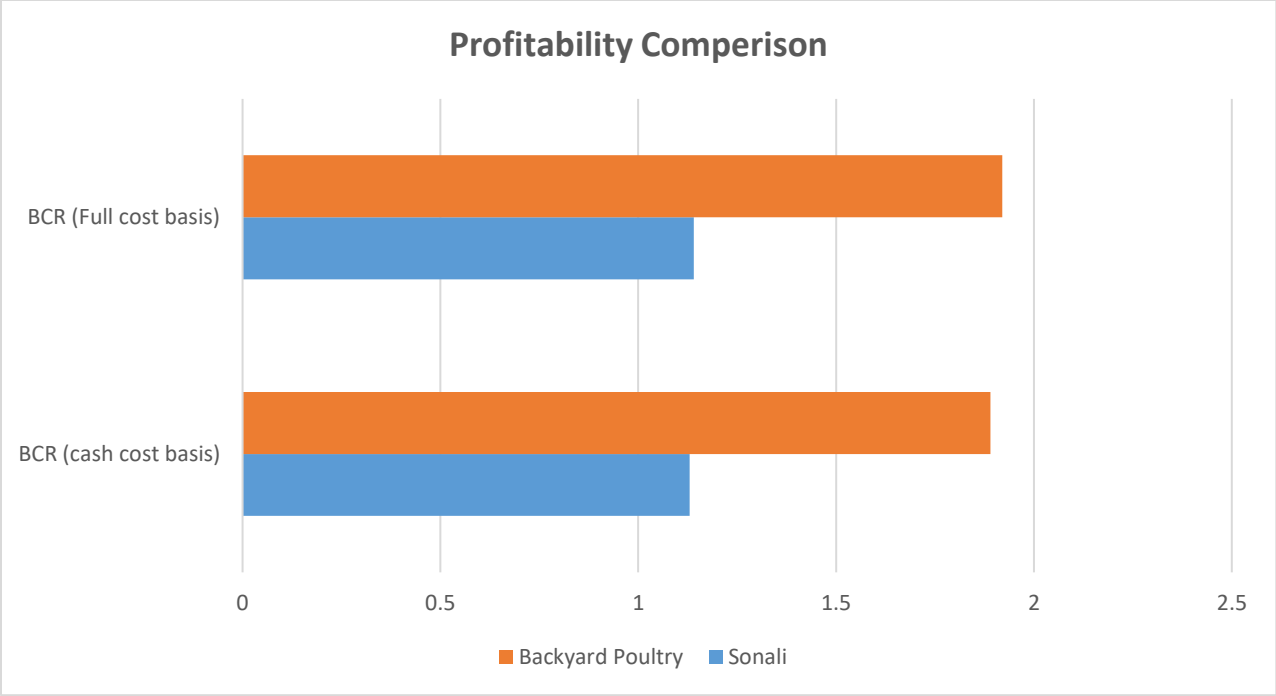
in case of sonali Tk 163.100 from bird selling and Tk 0.025 from litter selling which are respectively 99.96% and 0.025% of total return . And in case of backyard poultry Tk 180.231 come from bird selling and Tk 0.01 come from litter selling .Which are respectively 99.99% and 0.01% of total return

### 3.3 Profitability Analysis

**Table: 3 Profitability of per bird in the study areas**

Part	Sonali	Backyard Poultry
(A) Total Return (Tk)	163.125	180.244
(B) Total cost (Tk)	145.63	90.126
(C) Cash Cost (Tk)	143.708	89.14
(D) Net Return (Tk)(A-B)	18.355	90.214
(E) Gross Margin (Tk) (A-C)	19.417	92.132
(F) BCR (Cash cost basis, A/C)	1.132	1.89
(G) BCR (Full cost basis. A/B)	1.139	1.99

Table 3 shows that total return of sonali chicken is Tk 163.125 and in case of backyard poultry it is Tk 180.244 .Total cost in case of sonali is Tk 145.63 where cash cost is Tk .On the otherhand in case of backyard poultry total cost is Tk 90.13and cash cost is Tk 89.14. The table also shows that net return is Tk 18.36 and Tk 90.214 in case of sonali and backyard poultry respectively.It also shows that gross margin is Tk 19.417 in sonali and Tk 92.132 in case of backyard poultry. In case of sonali investment is high and in a short period of time return will be got. But return is not that great as backyard poultry. Whether in case of backyard poultry invest is low and return is high than sonali but it will take little bit of more time than sonali.



**Figure 3.** Profitability comparison of sonali and backyard poultry farm.

Figure 3 shows the comparison between sonali and backyard poultry in case of BCR. BCR are Tk 1.14 and Tk1.99 in case of sonali and backyard poultry .Here Tk 1.14 refers that by investing Tk 1 the sonali farm owner get back Tk 1.132 . In case of backyard poultry BCR is Tk 1.99 this refers by investing Tk 1 backyard poultry farmer will get Tk 1.99 back.

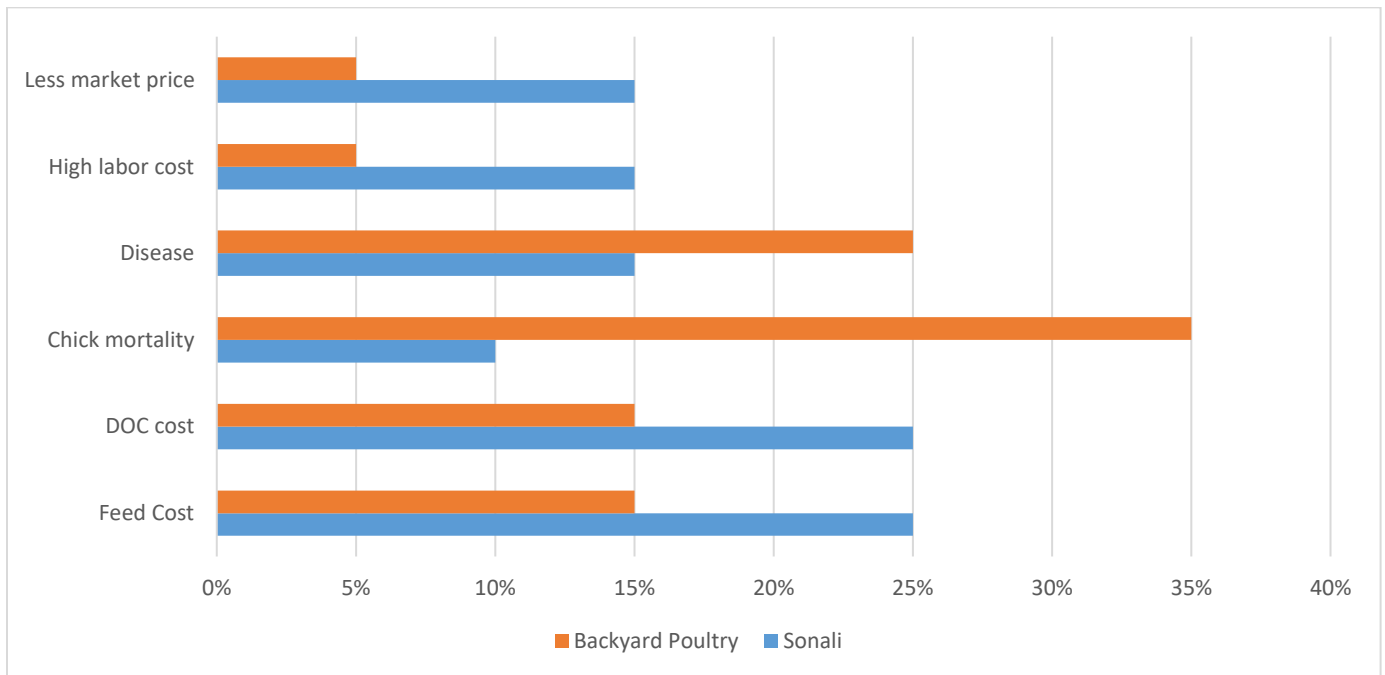
## CHAPTER 4

### Problems and Limitations

#### Problems

In case of both sonali and backyard poultry farming both farmers face a lot of problems the major problems are high feed cost , low market price, chick mortality ,high labor cost , high DOC cost etc .Figure 4 shows that in case of sonali high feed cost is 25% high labor cost is 15 % high DOC cost is 25% chick mortality is 10% Disease is 15% less market price is 15% among all the problems.

And in case of backyard poultry farming majority portion (35%) claim chick mortality as a problem following by disease (25%),feed cost (15%), DOC cost (15%) and high labor cost (5%).



**Figure 4.** Problems comparison of sonali and backyard poultry farming.

It is clearly said that the high feed, labor and DOC price effect more in sonali farming rather than backyard poultry farming. The three major problem now a days in case of poultry farming are high feed cost high DOC Cost and less market price .In case of sonali among all problem high feed cost comprises 20% and in backyard poultry it is 18%.So it is clear that high feed cost effect more in case of sonali farming .In case of backyard poultry farming chick mortality is one of the major problems it comprises

the 32% of all problem .Beside high DOC cost comprise 25% in case of sonali and 23% in case of backyard poultry. Another problem is disease which comprise 15% in sonali and 23% in case of backyard poultry.

## **Limitations**

Though the study was done carefully, there were some limitations. The limitations are given below:

1. The study conduction time was short.
2. There was very little amount of fund which created limitation in this study.
3. The study was limited to particular district whose result can't reflect the situation of whole country.
4. As most of the farms didn't maintain recoding system which made difficulties to collect valid data.

## CHAPTER 5

### CONCLUSION

The study found that the profitability of sonali chicken farming and backyard poultry farming is very much significant in both cases. In sonali chicken farming due to high cost of bird management and feeding its profitability is less than backyard poultry farming. Profitability is more in case of backyard poultry farming, mainly due to the high feed cost directly affecting the profitability of the sonali chicken. Though high feed price had an effect on backyard poultry farming but it is not that significant like sonali. Due to high demand of backyard chicken in the market they are sold at a higher rate which is beneficial for the backyard poultry farmer. Though expense per chicken is higher in case of sonali but return in case of sonali is less. Backyard poultry farming is mostly done by rural families who are not professional farmers and also by poorer farmers to meet the family demand and sell the extra in the market. On the other hand, sonali chicken farming is done mostly by professional farmers who spend money on building the farm and buying DOC and commercial feed. As the expenses in sonali chicken farming is very high so the profitability is low compared to backyard poultry farming where there is not much expenses for feed and building farm shed etc. To improve the sonali and backyard poultry farming in the rural area, government and nongovernment organization must work together to improve this sector and will play an important role towards sustainable development in this sector by providing practical training on poultry farming, high quality feed at lower price and farm planning to estimate the profit loss ratio. Government should subsidize sonali and backyard poultry farmer, and control and fix the feed price at field level so that they can get inspiration for extension of their farming in future.

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Md Monjurul Haque , son of Md Wares Ali and Monika Pervin, was born on 10<sup>th</sup> September, 1999. He passed her Secondary School Certificate Examination from BN School & College, Chattogram in 2014 (GPA 5.00). Then he passed his Higher Secondary School certificate examination from BN College, Chattogram in 2016 (GPA 5.00). Now he is completing his one-year long internship program for fulfilling the requirement of Doctor of Veterinary Medicine (DVM) degree in Chattogram Veterinary and Animal Sciences University, Chattogram, Bangladesh. During his internship period he received his clinical training on Veterinary Medicine from UVH Islampur, SAQTVH, CVASU, Teaching & training Pet Hospital and research Center (TTPHRC), CVASU, CVH, FV & FC, Dhaka, Chattogram and Dhaka Zoo and manage mental training from Chattogram based farm and Chattogram based Pharmacy etc.

His primary research interest is in domestic animal parasites specially parasites of cattle. But he feels much interest to work on coccidiosis of different animals. He also feels immense interest to explore new techniques to contribute in development of veterinary field in Bangladesh.