

**STUDY ON ECONOMIC PROFITABILITY WITH FARM
MANAGEMENT AND BIOSECURITY PRACTICES OF
BROILER FARMS AT RURAL AREAS AT BELABO
UPAZILA OF NARSINGDI IN BANGLADESH**



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**CHITTAGONG VETERINARY AND ANIMAL
SCIENCES UNIVERSITY**

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A Production report Submitted as per approved style and contents

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**CHITTAGONG VETERINARY AND ANIMAL
SCIENCES UNIVERSITY**

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ABSTRACT

A report was conducted on Management, Bio-security, and marketing system of Broiler farming system in Belabo Upazila. The necessary information of the study was carried out when I was staying at Belabo Upazila from 01 February to 29 March 2018. During this period I worked actively in the farm & collected data form Broiler farm of the Belabo Upazila by using an interview schedule through face to face interviewing. There were many broiler farms in Belabo Upazila and the owners of the farm are interested in rearing broiler under farming system. The estimated net benefit per shed having average flock size 1160 birds during the working period was found Tk.48024. But they always threaten to rear broiler due to they faced various problems like lake of electricity, low quality feed, low quality chicks, high mortality of chicks, Transportation problem etc. So the possibility was found high but facility was found very low. If the problems can be removed, they would be more encouraged to establish more broiler farms on a large scale basis throughout the year as a business enterprise.

Keywords: Broiler farming, management, Bio-security, Net farm Profitability, Marketing channels and Broiler farming problems.

Chapter 1: Introduction

Boiler chickens (*Gallus gallus domesticus*) are a gallinaceous domesticated fowl, bred and raised specifically for meat production. They are a hybrid of the egg-laying chicken, both being a subspecies of the red jungle fowl (*Gallus gallus*). Typical broilers have white feathers and yellowish skin. Most commercial broilers reach slaughter-weight at between five to seven weeks of age, although slower growing breeds reach slaughter-weight at approximately 14 weeks of age.

At present, Broiler farming has become popular both in urban and rural area. It has encouraged the people of different sections such as small farmers, landless laborers and educated unemployed as well as for industrialists to establish broiler farms on small & large scale. The growth performance of broiler bird might simply be a function of higher feed intake. Feed consumption followed similar trend to that of weight gain. These non-significant differences in growth performances support the findings of (Oliveira et al, 1974), (Shanmugasundaran et al, 1976), (Haque & Chowdhury, 1994), (Anisuzzaman & Chowdhury, 1996), (Hussain et al, 1996) & (Sarica et al, 1998) the study clearly indicate that all broiler farms made good profit.

According to FAO, 1997 appropriate size of the operation, maintaining highly productive stock, efficient utilization of resources, better housing, adoption of standard hygienic practices, reducing cost of production and adequate planning for marketing of the products play a major role in making commercial egg production more profitable. Lower costs of production and higher returns for larger than smaller flocks. (Kumar and Mahalati , 1998) .Isa brown strain at Mymensingh and stated the effect of management in production of egg of the layer. He found lower production than the expected level due to poor management and environmental effect. (Kabir et al., 2010).The intensive farm rearing system has got more production and high profit by rearing the hybrid and exotic breed (Alam et al. 1998). Sudden excessive heat or cold lowered the egg production. Due to quick temperature change in the reproductive tract egg formed very slowly. Normally it takes about 23 hours to form an egg in the reproductive tract. Remedy of the problem is temperature controlled by thermometer and application of Vit-C in hot season. (Ahmed, 2008). The efficient utilization of feed and avoiding unnecessary feed wastage would minimize total cost of production. Thus, management of egg laying birds in an appropriate rearing environment would ensure better profitability (Elwardany et. al., 1998).

Farm bio-security is a set of measures designed to protect a property from the entry and spread of pests, diseases and weeds. Farm bio-security is your responsibility, and that of every person visiting or working on your property. The disease outbreak and low bio-security and manage

mental practice decrease the average production performance in both commercial and smallholding poultry farm in Bangladesh. (FAO, 2008 and Talukdar et. al., 2010) .The disease in any stage of production effect the productivity of the farm. By avoiding overcrowding, effective use of brood-grow house under better hygiene, appropriate light schedule and use of cages instead of floor houses for egg type layers will reduce mortality(Farooq et al., 2002).

A marketing channel is a set of practices or activities necessary to transfer the ownership of goods from the point of production to the point of consumption. It is the way products and services get to the end users (the consumer) and is also known as a distribution channel. A marketing channel is a useful tool for management, and is crucial to creating an effective and well-planned marketing strategy (Das, 2005). Thus a research study had undertaken for submission of an internship report on **“Economic profitability with farm management and bio-security practices of broiler farms at rural areas in Belabo Upazila in Bangladesh”** with a view to obtain the following specific objectives:

- i. To know and describe the management skills of broiler farming enterprises.
- ii. To know the overall husbandry practices of broiler farming practices.
- iii. To estimate and assess the average farm profitability and marketing channels of broiler farming practices.
- iv. To know the problems faced by the farm owner both in production and marketing.

Chapter-II: Materials and Methods

The present study was conducted to investigate the prospects and challenges of broiler farming at Belabo Upazila, Narsingdi in Bangladesh. The area was selected due to my internship placement was at Belabo Upazila. The necessary information of the study was carried out when I was staying at Belabo upazila from 01 February to 29 March 2018. During this period I worked actively & collected data by directly observing farm activities and recording the farm data from 15 broiler farms for estimating farm profitability with a view to accomplish my internship report paper.

It included farmer's characters like education level, training, experiences and work forces on broiler farming, farm management parameters like farm size, housing system, commercial hybrid broiler strains, and litter materials, drinkers during loading day old chicks in house, brooding system, vaccination, de-worming, growth promoter use, day old chick purchase, feed purchase, bio-security and live broiler marketing.

The collected data were analyzed after coding, decoding, summarized when stay in CVASU campus with the correspondence of supervisor. Simple statistical methods such as mean, percentage, standard deviations etc. were applied for analyzed the collected data to meet up the study goals and objectives.

Chapter 3: Results and Discussions

3.0: MANAGERIAL PRACTICES IN BROILER FARMS:

3.1. Husbandry practices:

3.1.1: Collection of Day Old Chicks:

Collection of broiler chicks is important for broiler farming. The farm owner collects the chicks from different hatcheries. The price of day old broiler chick was paid 30-35Tk. per chick.

3.1.2: Flock size: During my internship period I worked in different size of broiler farms .the average flock sizes were found which is given bellow:

Table no 1: Flock Size of broiler at the study area:

Farm no	Flock Size
1	1200
2	1000
3	900
4	1000
5	1500
6	1400
7	1100
8	700
9	800
10	1000
11	1400
12	1500
13	1300
14	1100
15	1500

3.1.3: Housing:

A suitable house is the prime need for the rearing of poultry birds in the intensive method. In Belabo Upazila there are two types of house are observed brooder house and grower cum finisher house.

3.1.4: **Floor, feeder and waterer space followed by the farmers are given below:**

a. Floor space

Table no 2: Average available floor space of broiler farming

Age of the bird	Floor space / bird
1st week	. 5 sq. ft.
2 nd week	. 5 sq .ft.
3 rd week	1 sq. ft.
4 th week	1 sq. ft.
5 th week to finishing	1 sq. ft.

Source: Field Survey, 2018

b. Feeder space

Table no 3: Average Feeder space of broiler farming

Age of the bird	Floor space/bird
1 st Week	1 inch
2 nd week	1 ½ inch
3 rd week	1 ½ inch
4 th week	2 inch
5 th week to finishing	2 inch

Source: Field Survey, 2018

c. Water space

Table no 4: Average Water space of broiler farming

Age of the bird (week)	Waterer space / bird
1 st	.5 inch
2 nd	.75 inch
3 rd	.75 inch
4 th	1 inch
5 th week to finishing	1 inch

Source: Field Survey, 2018

3.1.5: Temperature Schedule:

Table no 5: Temperature Schedule of Broiler Farming

Age of bird (week)	Temperature
1 st	95° F
2 nd	90° F
3 rd	85° F
4 th	80° F
5 th	75° F
6 th up to restore finishing	70° F

Source: Field Survey, 2018

3.1.6: Litter management:

Table no 6: Litter management of Broiler farming

Litter material	Depth	
	Rice husk	Winter
	1.5-2 inch	1 inch

Source: Field Survey, 2018

3.1.7: Feeding

Feeding is the main function to rear broiler chicks. The chicks should be given small quantity of feed frequently for the first week. The owner was used the following way for feeding of the broiler.

Table no 7: Feeding Practices of Broiler Farming

Age (week)	Nature of feed
1 th	Crumble
2 th	Crumble
3 th	Pellet
4 th	Pellet
5 th up to finishing	Pellet
6 th up to finishing	Pellet

Source: Field Survey, 2018

3.1.8: Weight gain

After proper feeding weight gain which is recorded by the farm owner are given bellow.

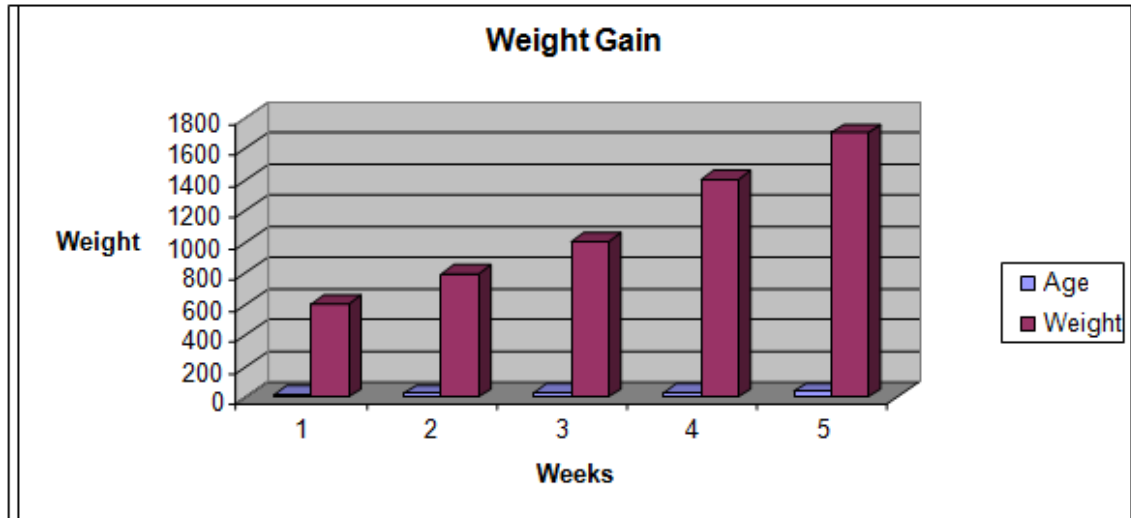


Fig: Graphical Representation of weight gain.

3.1.9: Vaccination schedule

Table no 8: Vaccination schedule of Broiler farming system.

Age	Vaccine	Disease	Dose & route
Days 1-3	BCRDV	Ranikhat	1 drop in 1 eye
Days 12-14	Gumboro (D-78/228E)	Gumboro	1 drop in 1 eye
Days 21-22	BCRDV	Ranikhat	1 drop in 1 eye
Day23-24	Gumboro (D-78/228E)	Gumboro	1 drop in 1 eye

Source: Field Survey, 2018

3.2. Feeding practices of Broiler farming:

The broilers need more feed and the farm owner collects the feed from different companies. The owner mainly follow the literature of the Quality Pro vita feed, CP, Nourish and some other companies for their feeding management. The companies supply three types feed that is broiler starter, broiler grower and broiler finisher. The **nutritional level of Quality feed is as follows:**

Table no 9: Feeding Practices of Broiler Farming.

Nutrients	Quality feed		
	Broiler starter	Broiler grower	Broiler finisher
Moisture %	11	11	11
CP%	21	21	21
CF%	3.5	3.5	3.5
Fat%	5.6	5.5	5.5
P%	.5	.5	.5
Ca%	1	1	1
Me kcal/ kg	3000	3100	3200

Source: Field Survey, 2018

Table no 10: Standard Level of Broiler Feed

Nutrients	Broiler starter	Broiler grower	Broiler finisher
Moisture %	11	11	11

CP%	22	21	20
CF%	3.5	3.5	4
Fat%	3	3	3
P%	.5	.5	.5
Ca%	1	1	1
ME kcal/ kg	2900	3000	3000

Source: Jadhav M. F. Siddiquei-1999, Hand book of Poultry Production & Management.

3.3: Bio-security Management Practices of Broiler farms:

3.3.1: Entry of the farm:

Entry of the farm is one of the most elements of maintaining farm bio-security as this is the pathway of transferring diseases by people to the farm. Some important bio-security measures were undertaken were found as follows:

3.3.2: Foot bath:

Most of the farm did not practice well foot bathing facilities. Some practice traditional foot bathing facilities. Few farms adopted well system and strictly practiced foot bath before entering the farm. Foot bath is used for disinfection.

3.3.3: Spray room:

Only found few farms adopted extra spray room on entering the farm to prevent infection into farm that carry from outside of the farm. Most of the farm had no spray room.

3.3.4: Transport Vehicles:

None found any permanent transport vehicles. Most of the farm owners hired transport for collection of feed stuffs and marketed their products by respective trader's hired or own vehicles. All transport was parked far from farms (30 meters). Very few farms used disinfectant sprayer to treat wheels and the vehicles' cabin mats.

3.3.5: Entry of the farm shed:

Entry of the farm shed was also found another important key element to maintain bio-security of the farm. Some important bio-security measures were undertaken were found as follows:

3.3.6.1: Use of separate sandals and dress:

Infection can be transfer by sandals and dress. So all personnel must use different sandals and dress before entering the shed.

3.3.6.2: Foot bath

Foot bath is used to prevent infectious disease in the farm shed. All personnel must use foot bath on entering the shed.

3.3.6.3: Use of mask

Most of the farm workers and owners used low cost mask to protect the bird gaining any infection from personnel and also to protect the personnel from bird's infection or disease like avian influenza.

3.3.7: Location of the farm:

Most of the farms were found located at near farm owner's house. Someone made as scientifically and planed wise free from crowed and well aeration facilities location on own land and rented land. Moreover all the farms located nearby roadsides.

3.3.8: Source of water:

The supply of water must be from safe source. As water be kept clean, cool and free from pathogens. Chlorination may be used to sanitize a water supply. It helps to control bacteria and also helps to prevent slime and algae build-up in water lines. A chlorine level of 3-5 ppm is recommended at the drinker level. Water analysis, at three month intervals, is good practice to determine the need for treatment. But most of the farm did not test used water when gave for drinking to birds.

3.3.9: Hand washing:

Dirty or unwashed hands transfer infection. Most of farm workers did not practiced well hand washing system but some took care such actively before starting work, after breaks and when changing work activities.

3.3.10: Water Sanitizing:

Most of the farm owners used tube well and pond water directly. Drinking water can be a potent source and spread of infection. Someone used header tanks and pipe lines which need to be regularly cleaned and disinfected with a non-tainting disinfectant.

3.3.11: Aerial Disinfection:

Spraying a fine disinfectant mist or fog over birds can help reduce cross infection and secondary infection during outbreaks of respiratory and other diseases. It is particularly of value in preventing secondary bacterial infection (e.g. *E. coli* septicemia) following a virus challenge such as Infectious Bronchitis Virus. Very few farms adopted such type of disinfectant.

3.3.12: Cleaning and disinfecting procedure:

Disinfect flock environments on a regular basis. Disinfection reduces the pathogens in the flock environment, which thereby reduces the risk of disease. Disinfecting involves two steps: cleaning and applying a disinfectant (Chone). Always clean first. If the area is not cleaned thoroughly, the disinfectant will not work. Most of the farm adopted such type practices between gaps of 2 batches of broiler birds.

3.3.13: Rodent and wild bird control:

Rats and mice can be responsible for the spread of a number of serious diseases on broiler farm as max farms are located far away from locality including Salmonella infections. Ensure that feed spillages are removed as quickly as possible and that houses are secure from vermin. Use an effective Rodenticide and baiting program for control of rats and mice. Birds can carry infection to farm from other places. So step should be taken to prevent the entry of both foreign and local bird into farm. Sometimes **jackal/fox** also be treated as a local problems.

3.4: Farm Profitability:

3.4.1: Profitability of Broiler Farming practices: A broiler farm where reared 1160 DOCs for a certain batch were observed during Upazila placement at internship period. Profitability of that farm was examined by adopting as the following ways

Net Profitability: $\pi = TR - TC$

Where, TR= Total meat produced (Qty. kg) x Multiplied by per Kg broiler TC = Cost for all production factors. The cost benefit analysis of a farm is given below (Average estimated flock size-1160 birds).

3.4.2: Farm Operating Cost:

- **Land:** Family
- **Labor:** Family supplied
- **Housing Rent** - Own
- **Day old chick cost:**

Total chick 1160 at the rate of Tk. 35 per chicks : 1160×35

= Tk.40600

- **Feed cost:** 2kg /bird = $1160 \times 2 = 2320$ kg @ Tk. 40 per kg = (2320×40)
=Tk.92800

- **Other cost:** Electricity, medicine and part time day labor accounted for amount in Tk. 23200

So estimated Total Cost (TC) for a batch of broiler farming flock sizes 1160 birds =

$(\text{Tk. } 40600 + \text{Tk. } 92800 + \text{Tk. } 23200) = \text{Tk. } 156600$

3.4.3: Returns of Farming/Evaluated Batch:

- Average live weight : 1.5kg / bird
- Mortality rate : $1160 \times 2\% = 23.2$
- Total live weight : $1136.8 \times 1.5 = 1705.2$ Kg (@2% mortality)
- Total Returns(TR) from selling live birds: $1705.20 @ \text{Tk. } 120 \text{ per Kg}$
= Tk. 204624
- Net farm profitability = $\text{TR} - \text{TC} = \text{Tk. } 204624.00 - \text{Tk. } 156600.00$
= Tk.48024.

So the study findings revealed that, the broiler farming is profitable but this only one batch results. Farm owners reported most of the batch incurred lower return even some batches were also resulted losses few times in a year.

3.5: Marketing System of Broiler:

Marketing channel are the alternative routes of product flow from producers to consumers (Kohls & Ukl, 1980). It involves a number of important activities at different stages by a series of intermediaries linking the producers with the consumers. Other farm owners sell their poultry to the wholesaler cum retailer or retailer. They have direct contact to the hotel & restaurant and fast food traders. Sometimes the poultry are also sold by hawker in the city.

3.5.1: Marketing Channels: The available live poultry and poultry products marketing channels of the study areas are mentioned as under:

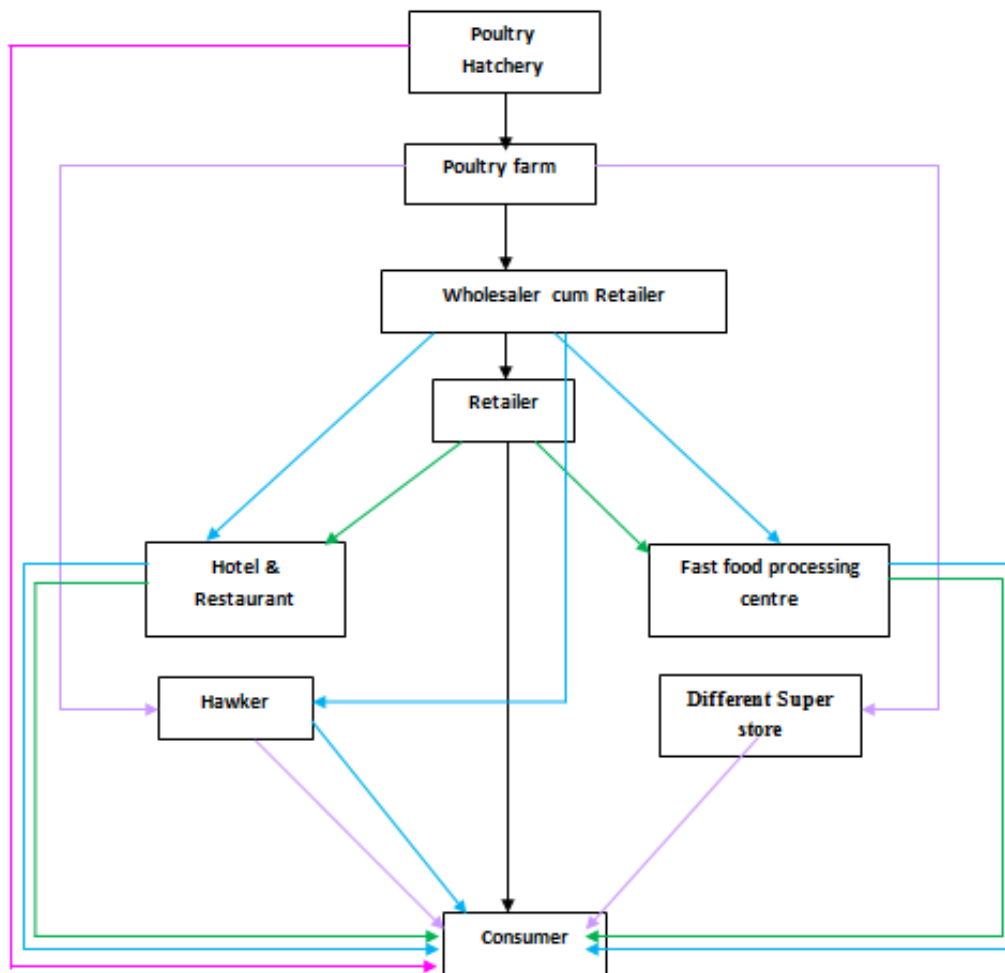


Figure.1: The marketing channels of poultry & poultry meat product

3.5. A: Direct marketing channel: Farm/ Poultry Farm →Consumer.

3.5. B: Indirect marketing channel:

Other farm owners sell their poultry to the wholesaler cum retailer or retailer. They have direct contact to the hotel & restaurant and fast food traders. Sometimes the poultry are also sold by hawker in the city.

Channel 1: Poultry hatchery →Poultry farm →Wholesaler Cum Retailer →Retailer
→ Consumer.

Channel 2: Poultry farm→ Wholesaler cum retailer→ Hotel & Restaurant →
Farm→ Consumer.

Channel 3: Poultry farm→ Wholesaler cum retailer→ Fast food processing Centre
→ Consumer.

Channel 4: Poultry farm →Retailer→ Hotel & Restaurant → Consumer.

Channel 5: Poultry farm →Retailer →Fast food processing Centre →Consumer

Channel 6: Poultry farm →Wholesaler cum retailer →Hawker →Consumer

Channel 7: Poultry farm →Hawker →Consumer.

Channel 8: Poultry farm→ Different Super store→ consumer

3.5.2: Market Participants:

In case of poultry & poultry meat products market participants involved are-

- **Poultry hatchery:** Poultry hatchery is engaged in production and supply of day old chicks by artificial incubation. They sell their day old chicks to their own sales Centre or poultry farm owner collect their DOC from farm by their own demand. The transportation cost of poultry mainly carried by hatchery owners
- **Poultry farm owner:** The marketing channels of poultry start from collection of day old chicks by commercial broiler farm owner from hatchery. Most of the farm owners sell their poultry to the wholesaler cum retailers and small portion of local consumer.
- **Wholesaler cum retailer:** They are professional poultry traders who have fixed establishment in the city. They purchase poultry from poultry farm in a large number and

sell to the retailer, hotel & restaurants owner, fast food traders. They sell in large quantity to the retailers at cheaper prices.

- **Retailers:** They are the last link in the poultry marketing. They purchase poultry from wholesalers cum retailers & sell at their retail shops to the consumers, hotel & restaurants owner & fast food traders.
- **Hotel & restaurant owners:** This is a place where poultry meat is cooked with other products for selling. The hotel owners/managers purchase poultry (live or dressed) farm retailers and wholesaler cum retailers for cooking in hotel.
- **Fast food traders:** Here fast food items are stored and displayed for selling. After buying poultry or poultry meat from poultry traders (retailer and wholesaler cum retailer), the fast food trader brings those at the processing plant. In processing plant fast food is prepared from poultry meat.
- **Hawker:** The hawkers are part time traders. They purchase poultry from retailer and sell to the consumer in city.
- **Super store traders:** They purchase the poultry from farm owner. Then they sell their products to consumers.

3.5.3: Marketing functions:

A. Exchange functions:

- **Buying and Selling after settling price:** In case of poultry marketing, farm owners fix price on the basis of production. All poultry traders follow the open bargaining method for fixing the price at the time of buying & selling.

B. Physical functions:

- **Storage & packaging:** Poultry are marketed alive in Narsingdi like other parts of the country. Now a day's dressed broiler are sold. A kind of iron & bamboo made case is used for temporary storage. The traders can store live bird maximum for three days. Refrigerator is used in hotel & restaurants for storage poultry meat.
- **Transportation:** Mainly bus, truck & pick-up vans are used for transporting poultry from farm to city area. Hotel owners and fast food traders transport poultry from the poultry traders by rickshaw and van.

- **Processing:** Every poultry trader has a dressing centre where the poultry are dressed. It hotel business, after bringing live or dressed poultry from the poultry traders it is cut into some pieces of optimum size. In fast food trade various fast food items are prepared from poultry meat.

C. Facilitating functions:

- **Grading & standardization:** In poultry marketing, poultry traders normally grade poultry on size & weights.
- **Financing:** Small portions of the farm owner in the study area are self-financed. Most farm owner and traders are run their business with institutional credit.
- **Risk bearing:** In case of poultry & poultry meat marketing physical and market risk are occurred. Physical risks occur from theft, death, loss of weight. Market risks occurred through the changes in market price.
- **Market information:** In the present study poultry traders collected information from fellow traders by observing present marketing trend, from leaflet & newspaper.

3.6: Problems of broiler farm in Belabo Upazila:

- Shortage of quality feeds with proper nutrition
- Insufficient electricity and disruption
- High prices of Feeds
- Low quality Day Old Chicks
- High mortality rate of chicks
- Insufficient farming and bio-security knowledge.
- Lack of well-established diagnostic lab and professionals
- Lack of post mortem facilities

3.7: Limitations:

The required information of the study were collected by stating only from 01 February to 29 March 2018 ending of one batch of broiler marketing due to shortage of time and fund during the internship placement period at Belabo Upazila.

Chapter 4

Conclusions and Recommendations

Broiler farming has bright prospects in generating self-employment at Belabo Upazila in Narsingdi District with providing training skills and necessary extension services by DLS and NGO's at desired level. As several poultry hatcheries and feed companies are supplying chicks and feeds, farmers have opportunity to collect feeds and chicks with competitive market price but as the farmers are collecting chicks and feed from dealer, dealers might be taking opportunity from farmers as procuring of feed are made on credit from dealers might be indicating the financial weakness of farmers and this might be making them dependable on dealer. Credit facilities through bank and NGO's with lower rate of interest might be helpful for the broiler farmers to run their enterprise without dependency on dealers. Day old chicks (DOCs) price and live broiler marketing system will be suggested that selling live broiler at high price and buying day old chick at low price for making farm business as a profitable enterprise.

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Questionnaire for data collection

- 1. a. Name of the farm.....
- b. Name of the owner.....
- c. Father’s name.....
- d. Address:

2. Husbandry practice:

- A. Housing: a. Brooder house b. Grower cum finisher house
- B. Feeding:
 - Collection of feed.....
 - Storage of feed
 - Types of feed.....
 - How many times feed supplied daily.....
- C. Watering:
 - Source of water: a. Deep tube well b. Pond
 - System of water storage: a. Water tank b. Water house
 - Frequency of water supply: a. Adlibitum b. Insufficient
- D. Litter materials.....
- E. Litter change.....
- F. Ventilation: a. sufficient .b. Insufficient
- G. Natural light.....
- H. Artificial light.....
- I. Bio-security.....
- J. Foot bath: a. Yes b. No
- K. System: a. all in all out b. Not
- 3. Number of sheds:
- 4. Drainage facility: a. sufficient b. insufficient.
- 5. Have electric fan? : a. Yes b .No
- 6. Most common diseases prevalence in the farm.....
- 7. Management of disease condition:
 - a. Self-management, b. Quack c. Veterinary doctor
- 8. Feature of Veterinary doctor calling:
 - a. Actively b. occasional c. In critical situation d. Not at all.
- 9. The farm is profitable or not.....

Name of the interviewee.....
Date.....
Signature.....

Name of the interviewer.....
Date:
Signature

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All praises are due to “**Almighty Allah**” who enabled me to complete this work successfully.

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BIOGRAPHY

I am Shadkuzzaman Rakib, from Narsingdi. I have completed my Secondary School Certificate (SSC) examination in 2009 with GPA-5 from Chitain dakhil madrasha, Belabo, Narsingdi and Higher Secondary Certificate (HSC) examination in 2011 with GPA 4.80 from Chittagong Abdul kadir mullah city college, Narsingdi. Currently I have been doing my internship programme which is the compulsory of DVM programme under the Faculty of Veterinary Medicine, Chittagong Veterinary and Animal Sciences University. My favorite hobby is reading books. I feel much interest in exploring new techniques for contributing in development of veterinary field in Bangladesh.