Management, Bio-security and Production of Broiler Farming System at Chakaria Upazila Under Cox's Bazar District

A production report submitted by

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Abstract

A study was conducted on management, bio-security, and production of broiler farming system in Chakaria Upazila. The necessary information of the study was gathered from small scale commercial broiler farms in Chakaria Upazila of Cox's Bazar during the period of 17th February to 28th April, 2022. Data were collected thorough pre-scheduled face to face interviews with the farm owners and workers through questionnaire basis. The analysis of the data reveals that broiler farm owners of Chakaria upazila are generally interested in rearing broiler under farming system. The estimated net benefit per shed having average flock size of 1350 birds during the working period was found to be Tk.42475. However, the present study also found that the broiler farming in Chakaria is threatened by various problems like high feed cost, lake of electricity, low quality feed, low quality chicks, high mortality rate of chicks, transportation problem & not conscious about biosecurity. Also seen that better stocking density & restricted entry of the visitor lower the FCR ,better growth rate. So even though the possibility of profitable broiler farming in Chakaria was found to be high, the required facilities were found to be inadequate which sometimes discourage the farmers. The study concludes saying that if the problems are mitigated, farmers would be more encouraged to establish more broiler farms on a large scale basis throughout the year as a profitable business enterprise.

Key words: Broiler farming, management, Bio-security, Net farm Profitability, Marketing channels and Problems.

CHAPTER-I

INTRODUCTION

Boiler chickens (*Gallus gallusdomesticus*) 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 Vitamin-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 managemental 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 user, 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).

From an economic standpoint, poultry is very important as a source of income. In order to popularize poultry forming on a commercial basis and meet the growing demand for eggs and meat, a large number of educated unemployed youth have already come forward to start poultry production and marketing (Islam, 2003). As a result, this industry employs a large number of people as a source of food.Poultry meat, particularly chicken meat, is the most popular and widely accepted animal protein in Bangladesh. Chicken meat contains 23.4 gm of protein, 117.00 kcal of calories, and 1.90 gm of fat, respectively.

Objectives

The study's particular aims are as follows:

- To know about management & biosecurity of broiler farming.
- To determine broiler marketing system of broiler in Chakaria upazila.
- To indentify possible prospects and constrains of broiler farming in Chakaria upazila.

CHAPTER-II

MATERIALS AND METHODS

2.1 Study area and period:

The present study was conducted to investigate the prospects and challenges of broiler farming at Chakaria Upazila, Coxsbazar in Bangladesh. This study was conducted in Chakaria Upazilla, Cox's Bazar over a period from 17th February to 28th April 2022 during my internship placement.

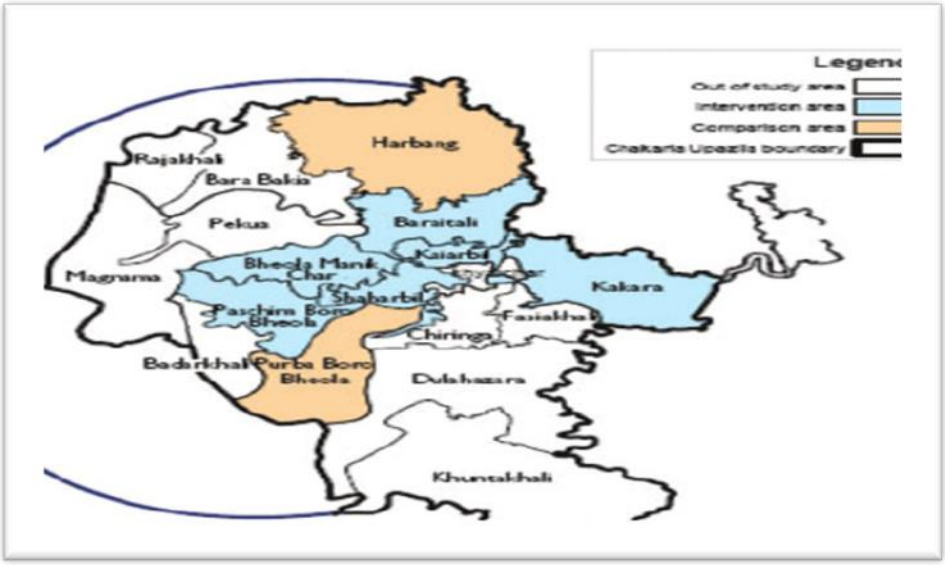


Figure 1: Maps of Chakaria Upazila.

2.2 Analytical techniques:

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 data collected through questionnaire basis & collected data analyzed simple statistical methods such as mean, percentage, standard deviations etc. to meet up the study goals and objectives.

CHAPTER -III

RESULTS AND DISCUSSIONS

3: Educational status of farmers:

There were five categories used to determine the level of education. Out of 15 farmers, 13% had primary level, 33% had secondary level, 26% had S.S.C. level, 20% had H.S.C.,7% had graduation level of education.

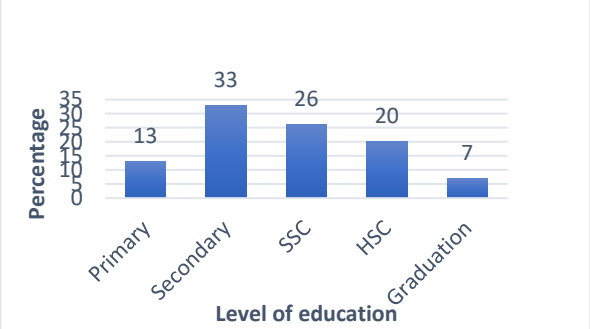


Figure 2: Education status of poultry farmers in Chakaria upazilla.

3.0: MANAGEMENTAL 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 40-45Tk. 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	2000
3	1500
4	1000
5	1000
6	1000
7	1500
8	1200
9	2000
10	2000
11	1500
12	1000
13	900
14	1000
15	1500

3.1.3: Housing:

A suitable house is the prime need for the rearing of poultry birds in the intensive method. In Chakaria 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	0.5 sq. ft.
2nd week	0.5 sq. ft.
3rd week	1 sq. ft.
4th week	1 sq. ft.
5th week to finishing	1 sq. ft.

Source: Field Survey, 2022

b. Feeder space

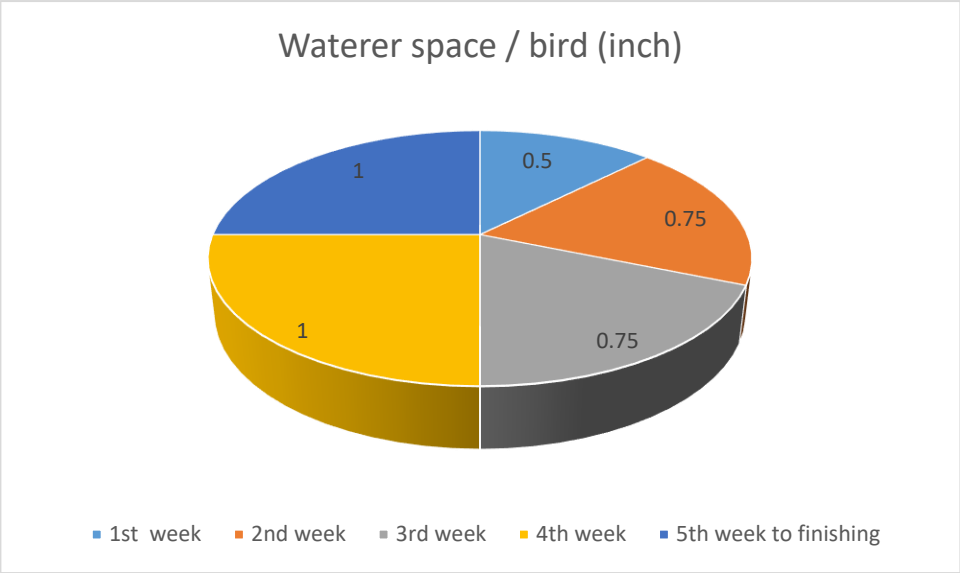
Table no.3 Average Feeder space of broiler farming

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

Source: Field Survey, 2022

c. Water space

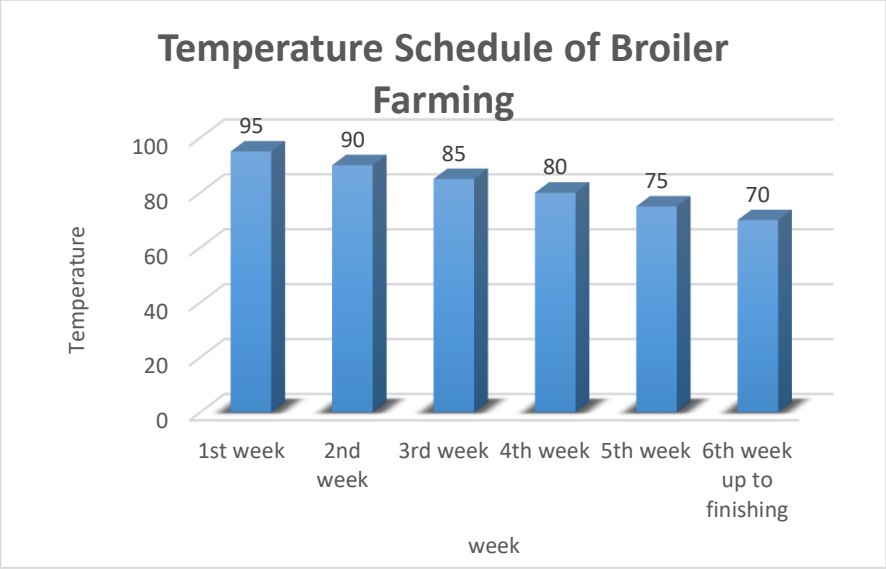
Figure 3:Graphical Representation of Average Waterer space in broiler farming



Source: Field Survey, 2022

3.1.5: Temperature Schedule:

Figure 4: Graphical Representation of Temperature Schedule



Source: Field Survey, 2022

3.1.6: Litter management:

Table no.4 Litter management of Broiler farming

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

Source: Field Survey, 2022

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. 5 Feeding Practices of Broiler Farming

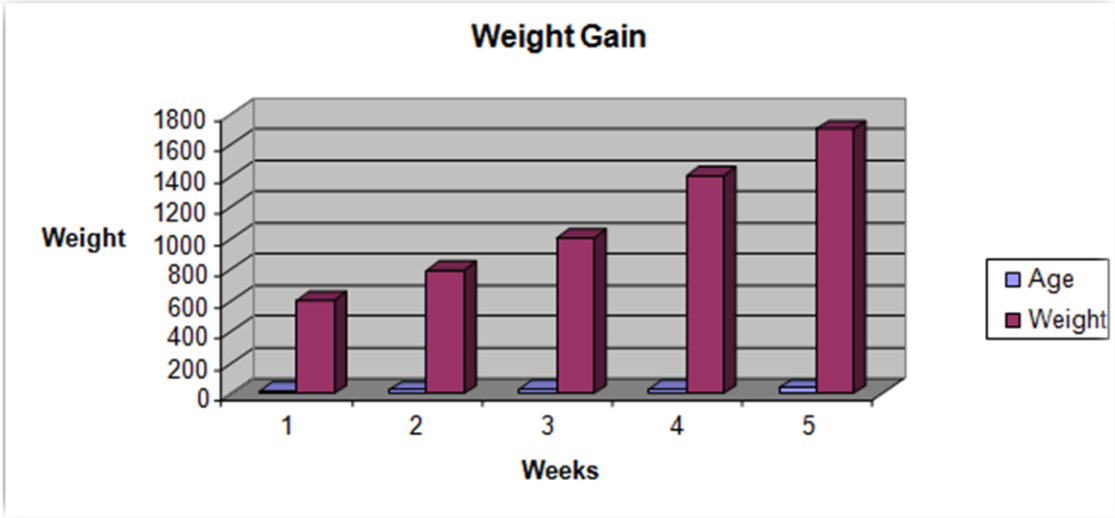
Age (week)	**Nature of feed**
1th	Crumble
2th	Crumble
3th	Pellet
4th	Pellet
5th week up to finishing	Pellet
6th week up to finishing	Pellet

Source: Field Survey, 2022

3.1.8: Weight gain

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

Figure 5: Graphical Representation of Weight Gain



Source: Field Survey, 2022

3.1.9: Vaccination schedule

Table no. 6: Vaccination Schedule of Broiler Farming System.

Age	**Vaccine**	**Disease**	**Dose & route**
Days 3-5	BCRDV	Newcastle Disease	1 drop in 1 eye
Days 12-14	Gumboro	Infectious Bursal Disease	1 drop in 1 eye
Days 21-22	BCRDV	Newcastle Disease	1 drop in 1 eye
Day23-24	Gumboro	Infectious Bursal Disease	1 drop in 1 eye

Source: Field Survey, 2022

3.2. Feeding practices of Broiler farming:

More feed is required for the broilers, so the farm owner purchases it from several companies. For their feeding management, the owner mostly refers to the literature of Quality, Provita, Krishibid, CP, Nourish, and other companies. The three feed kinds offered by the companies are broiler starter, broiler grower, and broiler finisher.

Nutritional level of Quality feed is as follows:

Table no. 7: Feeding Practices of Broiler Farming.

	Provita feed		
Nutrients	**Broiler starter**	**Broiler grower**	**Broiler finisher**
Me kcal/ kg	3050	3100	3150
CP%	23	22	21
CF%	3.5	4	4
Fat%	5	5.5	5.5
P%	.45	.5	.5
Ca%	1.1	1.1	1.2
Lysine%	1.25	1.2	1.15
Methionine%	.55	.5	.5
Humidity%			

Source: www.provitagroupinfo.com

Table no. 8: Standard Level of Broiler Feed

Nutrients	Broiler starter	Broiler grower	Broiler finisher
ME kcal/ kg	3010	3175	3225
CP%	23	22	20
CF%	5	5	5
Fat%	3	3	3
P%	.5	.5	.5
Ca%	1	1	1
Moisture %	11	11	11

Source: www.poultryhub.org

3.3: Bio-security Management

The following measures that poultry producers may use on their farms to increase the biosecurity of their flocks:

- The poultry production area must have well developed fence or boundary, defining biosecurity zone.
- Provision for separate clothes and boots for visitors.Hand sanitizer should be used prior to house entry and upon exit.
- Footbath area should exist in farm entrance for individuals, vehicles and all other entries.
- Well-developed drainage system.
- Poultry house must be designed or maintained in such a way that minimal entry of wild birds and access to vermin is observed.
- Visitors on farms should be discouraged, especially contract persons like veterinarians and service providers. Visitor guidelines should be properly mentioned outside and inside the farm.

- Spraying disinfectants inside the farm should be done thrice a week; in diseased condition once or twice a day depending on the nature of disease.
- Routine biosecurity procedures.
- Drinking water and cooling water supplied in poultry shed must meet poultry water standard.
- Better storage facility for feed.
- Separate weighing machine for the production areas.
- During rearing period, minimum 15-30 days gap for broiler flock.

Table 9:Relationship between farm biosecurity with FCR

Trait	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Number of Broiler	1200	2000	1500	1000	1000	1000	1500	1200	2000	2000	1500	1000	900	1000	1500
Stocking density(sq. ft/bird)	.95	.80	1	.85	.80	.80	.90	1	1	1	.95	.90	1	.90	.80
Distance from locality (meter)	500	500	400	500	500	100	100	150	200	100	200	200	300	150	200
Visitor allowed	No	Yes	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	No	No	No
Litter material used	New	New	New	New	New	New	New	New	Partial	New	New	New	New	New	New
Litter changing period (Days)	10	10	7	5	7	7	35	35	35	35	35	7	7	4	7
Water source	Deep well	Deep well	Deep well	Deep well	Deep well	Deep well	Supply water	Supply water	Supply Water	Supply water	Supply water	Supply water	Tube well	Supply water	Supply water
Antibiotic use in feed & water	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	No	Yes	No	No
Maintain farm record	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Yes	No	No	No	Yes
Disposal of bird after death	Burried	Burried	Burried	Burried	Burried	Throw away	Throw away	Throw away	Burr Ied	Throw away	Burried	Throw away	Throw away	Throw away	Throw away
FCR	1.5	1.65	1.55	1.60	1.7	1.55	1.68	1.5	1.45	1.5	1.65	1.60	1.58	1.6	1.65

In table 9 shown that stocking density & restricted entry of the visitor effect the FCR of the farm.Here the farm which have restricted entry of the visitor the FCR of the farm lower (average FCR=1.54) & better growth rate.The farm which allowed visitor the FCR of the farm higher (average FCR=1.64) & poor growth rate. On the other side,the farm which have higher stocking density (less than 1 sq. ft/bird) the FCR of the farm higher (average FCR=1.62) & poor growth rate where as normal value of stocking density 1 sq. ft/bird. Average FCR in normal stocking density was 1.52 & better growth rate. The antibiotic can't affect FCR of the farm it may be due good management and good biosecurity.There was no significant between antibiotic use & no use of antibiotic.

3.4: Farm Profitability:

3.4.1:. Profitability of Broiler Farming practices: A broiler farm where reared 1350 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: π**= TR- TC**

Where, TR= Total meat produced (Qty. kg) x Multiplied by per Kg broiler TC = Cost for all factors.

The cost benefit analysis of a farm is given below (Average Flock size-1350).

3.4.2: Farm Operating Cost:

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

  Total chick 1350 at the rate of Tk. 60 per chicks: 1350 X 60tk

  = Tk.81000

- **Feed cost:** 2kg /bird = 1350 X 2= 2700 kg @ Tk. 56 per kg = (2700×56)

=Tk.151000

- **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 1350 birds = (Tk. 81000 + Tk. 151000 + Tk. 23200) = Tk.255200

3.4.3: Returns of Farming/Evaluated Batch:

- Average live weight **:** 1.5kg / bird
- Mortality rate **:** 1350 X 2%=27
- Total live weight **:** 1323X 1.5 = 1984.5 Kg (@2% mortality)
- Total Returns(TR) from selling live birds: 1984.5@ Tk.150 per Kg

  = Tk. 297675
- Net farm profitability = TR-TC = Tk.297675–Tk. 255200

  = Tk.42475

So the study findings revealed that, the broiler farming is profitable but this was only one batch results and 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). Alternative paths for product flow from producers to consumers are referred to as marketing channels (Kohls & Ukl, 1980). It entails a variety of crucial operations carried out at various stages by a network of intermediaries that connect producers and customers. Other poultry farmers sell their birds to a wholesaler, retailer, or retailer. They have direct contact with hotel and restaurant owners, as well as fast food vendors.

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

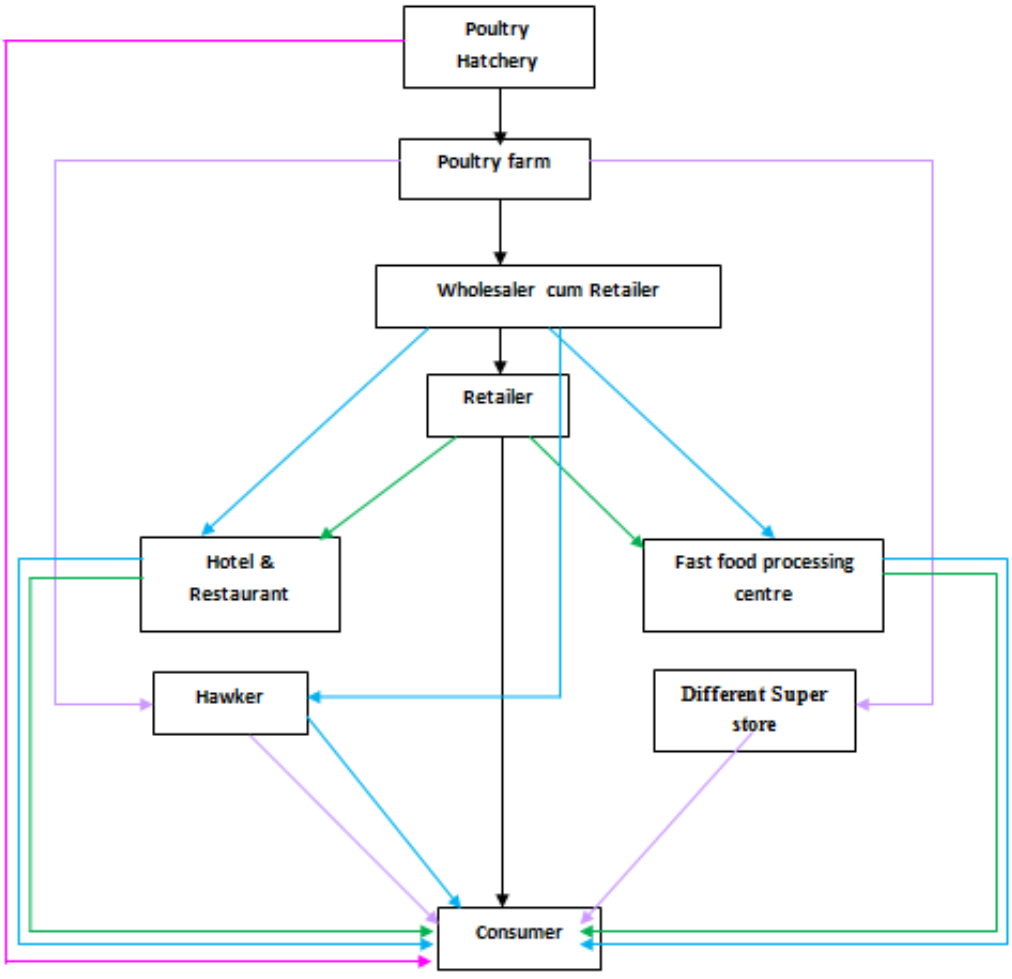


Figure 6 : The marketing channels of poultry & poultry meat product

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 selled 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: Artificial incubation is used in the production and supply of day old chicks in a poultry hatchery. They sell their day old chicks to their own sales center or demand that

their DOC be collected from the farm. The cost of poultry transportation is borne primarily by hatchery owners.

Poultry farm owner: The marketing of poultry begins with the collection of day old chicks from a hatchery by a commercial farm owner. The majority of poultry farm owners sell to wholesalers and merchants, with a tiny number of local consumers.Wholesaler cum retailer: They are experienced poultry traders with a permanent location in the city. They buy a huge quantity of poultry from a poultry farm and sell it to retailers, hotel and restaurant owners, and fast food operators. They sell to merchants in large quantities at lower pricing.

Retailers: They are the final link in the poultry distribution chain. They buy poultry from wholesalers and merchants and sell it to consumers, hotel and restaurant owners, and fast food vendors in their retail stores.

Hotel & restaurant owners: This is a location where bird meat is prepared and sold with other things. For cooking at the hotel, the hotel owners/managers obtain chicken (live or dressed) from farm dealers and wholesalers

Fast food traders: Fast food goods are kept and exhibited for sale here. The fast food dealer brings the poultry or poultry meat to the processing plant after purchasing it from poultry traders (retailer and wholesaler cum retailer). Fast food is made from poultry meat in a processing plant.

Hawker: Part-time traders make up the hawkers. They buy poultry from a store and sell it to city residents.

Super store traders: They buy the chickens from the farm owner. Then they offer their wares to the general public.

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 Chittagong 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 center 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 Chakaria Upazila:

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

3.7. Limitation

1. The study population was small size.
2. The study time was only for 2 month, it was needed for different months of the through out the year of every season.

Chapter-IV

Conclusions and Recommendations

With the availability of training and necessary extension services by DLS and NGO's at desired level, broiler farming has bright prospects in generating self-employment at Chakaria Upazila in Cox's Bazar district. In conclusion, floor space requirement must not be less than standard that is 1sq. ft/bird & visitors must not allowed in the farm which affect FCR as well as growth rate.As several poultry hatcheries and feed companies are ready to supply chicks and feeds, farmers might have the opportunity to collect feeds and chicks with a competitive market price and thereby make more profit out of their farms; but as the farmers are collecting chicks and feed from the dealers, the dealers are making more profit than the farmers as procuring of feed and chicks is made on credit from dealers due to the financial constraints of the farmers and this fact is making them dependable on dealers. Credit facilities through bank and NGO's with lower rate of interest will be helpful for the broiler farmers to run their enterprise without dependency on dealers. Maintaining good biosecurity, good management, reduced day old chicks (DOCs) price, reduce feed cost and better live broiler marketing system are recommended for making broiler farming business as profitable enterprise in Chakaria.

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Appendix

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..... Name of the interviewer.....

Date..... Date: ……

Signature..... Signature ……

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The Author

Biography

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