

CHAPTER-I

INTRODUCTION

1.1 Background of the study

Bangladesh is a little country with a huge population around 170 million. Over the most recent couple of years, the acknowledgment of limited scope business poultry creation assists with speeding up the speed of destitution decrease riding in new stature in Bangladesh. The creation of meat and eggs from poultry birds, for example, turkey has kept on developing than that of some other significant wellsprings of creature items in agricultural nations. This outcomes from the expanding interest for poultry items because of expansion in populace, urbanization and westernization of diet (Yassin, Gibril et al., 2013). Turkey (*Meleagris gallopavo*) is a trained bird with dim plumage, uncovered heads and red wattles which started from North America (Hullet et al., 2004). As indicated by Ajetomobi and Adepoju (2010), turkey is raised in Nigeria for their financial and social purposes. The eggs of turkey birds involves an excellent situation for further developing creature for protein utilization of both rustic and metropolitan families. For example, Karki (2005) expressed that utilization of turkeys grills as white meat is rising worldwide as a comparable pattern existed in non-industrial nations. Ogieva (2003) saw turkey as a poultry birds saved with the end goal of meat and egg creation, albeit the compost can similarly be utilized for upkeep of soil fruitfulness to support crop creation under great administration frameworks.

Healthfully, turkeys have gigantic adaptability in neighborhood promoting and can be sold or exchanged little units at whatever stage in life when sufficiently huge to be butchered. Turkey is a phenomenal wellspring of nutrient B3 (niacin) and gives more than 13 mg in 4 oz, or more than 80% of the dietary reference intake (DRI). It is additionally a generally excellent wellspring of nutrient B6, summing 0.92 mg in 4 oz (54% DRI). By giving 22% DRI to choline in 4 oz, turkey additionally positions as a decent wellspring of this B nutrient. As far as minerals, turkey is the most extravagant in containing selenium and gives more than 60% of the DRI in a solitary 4-oz serving. Consequently, zinc, copper, phosphorus, magnesium, potassium, and subsequently, zinc, copper, phosphorus, magnesium, potassium, and iron are additionally furnished by this turkey meat with essential sums. Hence, turkey is more impervious to illness contrasted with other poultry species like chicken, duck and quail. It has additionally

been accounted for that death pace of turkey is exceptionally low contrasted with other poultry bird as it is impervious to Marek's and Infectious bronchitis (IB), and normally experienced with different illnesses like mycoplasmosis, fowl cholera, erysipelas and hemorrhagic enteritis. Turkey meat can be cooked entire or cut or grounded and can be broiled, grilled, seared or bubbled or smoked. Additionally, turkey meat can be made in soup, wieners and different arrangements (Yassin et al., 2013). Aside from the wholesome significance of turkey item, the social importance can't be disparaged as Sonaiza, Branckaert and Gueiye (2007) expressed that turkey assumes a critical part in the socio-social existence of certain networks in numerous nations of the world, as presents to guests and family members; as present to recently wedded ladies and as presents during celebrations like Christmas and thanks giving.

The utilization of turkey items isn't prohibited by any strict confidence. As per Udechukwu (2005), turkey raised under escalated arrangement of the executives for a huge scope for business purposes and broad or semi-serious framework for eggs and meat creation. Yassin et al., (2013) noticed that the expense of turkey is moderately modest as practically half of their feed is green vegetables, field grasses and business takes care of as an enhancement. Exercises in turkey creation are in various stages which incorporate reproducing, bring forth of eggs, raising layers, agonizing, raising turkey ovens to advertise weight and promoting of turkey items. Relevantly, this review is restricted to reproducing and incubating of turkey eggs as a suitable undertaking.

In agricultural nations, ranchers just as researchers are choosing poultry species with adequate possibilities for taming and can enhance the accessibility of fundamental protein at less expensive expense (Ironkwe et al., 2015). Turkey creation assumes a significant part in this angle (Amumueller, 2008). Turkeys are great foragers that flourish better under parched conditions and endure heat when contrasted and ovens (Yakubu et al., 2013). Around the world, native turkey creation is a profoundly beneficial industry with an expanded creation amount from 5.1 million ton in 2003 to 5.6 million ton in 2013 (FAOSTAT, 2013).

Nowadays, the interest for turkey items is rising universally (Yakubu et al., 2013). Turkey meat is perhaps the most ideal choice for elective protein source in the jungles (Asaduzzaman et al., 2017). As per Karki (2005), the utilization of turkeys as white meat has expanded worldwide and a comparative pattern additionally existed in

agricultural nations. Be that as it may, turkey creation has not been completely taken advantage of in non-industrial nations in spite of its potential over other poultry species. The raising of nearby turkey in customary creation frameworks fills in as a quick wellspring of meat and pay for country ranchers (Okoli et al., 2009; Ekue et al., 2002). They are distinctively a vital piece of the cultivating frameworks requiring low-inputs with yields open at family level (Kitalyi, 1998).

Although the performances of local poultry are lower than extraordinary poultry breeds, its solidness and sickness obstruction makes it more versatile to the tropical climate (Padhi, 2016). The significance of nearby poultry species in the public economy of non-industrial nations and its job for working on the wholesome status and pay of numerous smallholder ranchers and landless networks has been exceptionally critical (Creevey, 1991; FAO, 1997). Along these lines, the reception of further developed creation frameworks is fundamental for the essential expansion in the usefulness of neighborhood poultry runs to further develop family food security and mitigation of neediness in country networks (Awuni, 2002; Case et al., 2010).

Neighborhood poultry have been portrayed on various grounds. Teketel (1986) described them based on plumage tone like Kei (red) or Tikur (dark) and so on Tadelle (2003) and Halima et al. (2007) both named based on the geographic district of examining with every neighborhood ecotype really involving chickens with a wide scope of morphologic or hereditary variety. Hereditary variety has been depicted in chickens utilizing monogenic characteristics dependent on various pigmentation and brush types. These various pigmentations can be inferable from melanin which is liable for the creation of assortments of plumage tones in chickens (Dana et al., 2010). The presence and level of melanin shades, for example, trichochrome is identified with feather tone and is viewed as characteristic of hereditary contrasts among certain plumage tones (Smyth, 1990). However the greater part of exploration work on plumage tone is on chicken, shortage of data actually exists on what contrasts in plumage shading means for execution and cadaver parts in nearby poultry. Furthermore, plumage tone is second in significance to live weight in influencing market inclination for chickens by shoppers in agricultural nations (Dana et al., 2010). In specific networks in Africa, plumage tones have social and strict capacities (Gueye, 1998; Leulseged, 1998). There are explicit decisions for plumage colors that influence inclinations of various geographic business sectors all throughout the planet (Jiang,

1999; Smyth, 1990). Maker, venders and middle person dealers of chickens join high market inclination to plumage tone and quill conveyance (Aklilu, 2007).

Local poultry are lower than fascinating poultry breeds, its toughness and sickness obstruction makes it more versatile to the tropical climate (Padhi, 2016). The significance of neighborhood poultry species in the public economy of non-industrial nations and its job for working on the healthful status and pay of numerous smallholder ranchers and landless networks has been exceptionally critical (Creevey, 1991; FAO, 1997). Hence, the reception of further developed creation frameworks is fundamental for the essential expansion in the efficiency of nearby poultry runs to further develop family food security and lightening of neediness in rustic networks (Awuni, 2002; Case et al., 2010). Poultry are lower than exotic poultry breeds, its hardiness and disease resistance makes it more adaptable to the tropical environment (Padhi, 2016). The importance of local poultry species in the national economy of developing countries and its role for improving the nutritional status and income of many smallholder farmers and landless communities has been very significant (Creevey, 1991; FAO, 1997). Thus, the adoption of improved production systems is essential for the strategic increase in the productivity of local poultry flocks to improve household food security and alleviation of poverty in rural communities (Awuni, 2002; Case et al., 2010).

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capacities (Gueye, 1998; Leulseged, 1998). There are explicit decisions for plumage colors that influence inclinations of various geographic business sectors throughout the planet (Jiang, 1999; Smyth, 1990). Maker, dealers and go-between brokers of chickens join high market inclination to plumage tone and quill appropriation (Aklilu, 2007).

Turkey creation has not been completely taken advantage of in the agricultural nations notwithstanding its more prominent potential than the chicken (Shingari and Sapra 1993, Peters et al 1997, Perez-Lara et al 2013). Turkey flourishes better under bone-dry conditions, endures heat better, goes farther and has greater meat (Fisinin and Zlochevskaya 1989, Yakubu et al 2013). Bauchi State has a poultry populace involving 278,208 chickens, 861, 491 ducks and 7,765 turkeys (IAR/BSADP 1996). It is normal to see a few collections of mistresses of native turkeys rummaging broadly in lawns close by chickens and ducks in the state. These birds are dull have multi-hued plumage and now and then showing up as unadulterated dark or white. These native kinds are, be that as it may, the most un-examined of the homegrown fowls and very little exertion has been aimed at expanding their efficiency under free going conditions.

1.2 Justification of the study

Turkey is a one of a kind bird which is appropriate for raising in hot muggy climatic condition like Bangladesh. Be that as it may, because of obscure reasons, it has not been investigated in Bangladesh and other non-industrial nations. Truth be told, turkeys are versatile to wide scope of climatic conditions and can be brought effectively anyplace up on the planet in case they are all around took care of and secured against illnesses and hunters. The meat of turkey is considered by many individuals as an extravagance meat. Besides, it has a stylish worth because of their excellence. In light of the above reasons, turkey is becoming famous bit by bit in agricultural nations like Bangladesh. The mix of fundamental low info low yield, means level cultivators, and all blends up to end including enormous scope business creation, presents an overwhelming and invigorating possibility to the public authority engrossed with neediness and ailing health.

Business turkey cultivating is becoming well known in Bangladesh and ranchers began to show interest in raising turkey birds. The bird is very appropriate for upliftment of little and minimal ranchers as it tends to be effortlessly raised with little speculation for lodging, hardware and the executives. One of the primary goals in turkey reproducer

creation is to expand the quantity of poult delivered. Egg yields in turkeys are lower than that of other poultry species. Notwithstanding low egg yield, inadmissible egg richness and hatchability establish a significant issue for turkey rearing endeavors

Ability addresses commonsense mastery in turkey reproducing and bring forth which can be procured by ladies to earn enough to pay the bills. The poultry business addresses one method of achieving a few public objectives under a solitary pennant. Work, destitution easing and further developed nourishment, for instance, are on the whole potential advantages emerge from proceeded with help and support of poultry advancement.

The poultry sub-area is vitally significant with regards to farming development and improvement of diets especially significant in that it is a huge wellspring of protein and sustenance in the family's nourishing admission in Bangladesh. Turkey cultivating is without a doubt an appealing monetary movement, particularly for the rustic ladies and helpless populace in the country.

Considering the above, the present study was conducted to know the profitability of turkey farming to determine the prospects of different rearing system on the reproductive performance of turkey and poverty alleviation.

1.3 Research Questions

Therefore, this situation raises the following questions,

- i. What are the existing production and management systems of turkey under different rearing system?
- ii. Is turkey production profitable?
- iii. What are the problems and prospects of turkey production in Bangladesh?

1.4 Objectives of the study:

The specific objectives of the present study are as follows:

- (i) To analyze the existing production and management systems of turkey under different rearing system
- (ii) To evaluate the profitability of turkey under different rearing system.
- (iii) To identify the problems and prospects of turkey production in Bangladesh.

CHAPTER II

REVIEW OF LITERATURE

Gueye (1998), Sonaiya et al. (1999) conducted a study on Nigeria's poultry population where indigenous poultry is made up of about 90%. Gueye (2003) also stated that particularly at family level local chickens are present and still represents an appropriate system for supplying the fast-growing human population with high quality protein and providing additional income. Rural and small-scale farmers are rearing additionally 80-90% of this indigenous poultry species (Ebangi and Ibe, 1994).

Okorie (2000) noted that by performing tasks, their occupation and other activities of daily life required the skills which enable people effectively. According to Uzoka and Bayode (2010), through teaching, training, retraining, practical experience and on the job training the acquisition of skills was done. In the context of this study, to make a living life which was acquired by women, they have skill to represents practical expertise in turkey breeding and hatching. Turkey breeding skills required by women such as identify source of birds for breeding, select breeding stock based on proven characteristics or traits, provide laying nest for the turkey hen, care for the birds through laying and collect the eggs, clear and disinfect the incubator among others. Women required hatchery skills in managing turkey farm enterprise include: installation of incubators in the hatchery room, procuring and store fertile eggs in the egg room for incubation, selecting fertile eggs for incubation, arranging the selected eggs in the hatchery tray and candle the eggs to ensure hatchability.

Petritz (2000) identified the steps involved planning for farm business as formulating the objectives for brooding of poults to grower's enterprise; specify the brooding system to adopt and produce the plan. This planning is necessary for profitable turkey production because the business will fail if there is no adequate plan, For managing turkey enterprise various planning skills should require such as formulating the objectives for breeding and hatching, for selling of day old chicks, reviewing the objectives periodically based on changes in market demand for turkey chickens, making plans for the selection of the farm site from the threats and thieves, specifying the production system to adopt and produce the plan, identifying appropriate equipment

for breeding and hatching of turkey, making proper arrangement for vaccines for the turkey birds and identifying sources of credit for breeding and hatching of turkey.

Abu bakar et al. (2002) stated in the early sixties, commercial poultry production in Nigeria has depended on the importation of parent stocks and hatching eggs for its poultry industry. All these farms are multiplication (and not breeding) farms and as such are not able to produce parent stocks on a continuous basis, because the parent stock farms that sustain our national poultry industry have to go back for renewal of their stocks through importation on an annual basis. Such dependence on importation has the negative effects of putting a strain on the country's scarce foreign exchange/reserves, creating an avenue for the introduction of poultry diseases which are foreign to the country and offering a high risk of death of chicks in transit over long distances. Stock developed within the country will make annual importation of parent chicks unnecessary. In addition, they will be more adapted to the environment than imported stock.

Onuka (2003) observed that a person had acquired the habit of performing a task in all acceptable manners within his/her job who worked productively and become skilled. The activities involved in breeding which includes identify stocking capacity ratio of poultry female/male and provided suitable environment for breeding and hatching of turkey eggs among others which was worked by Flanders (2004)

According to Kurt (2004), breeding is the purpose of combining or transferring desirable qualities found to be present in two different animals but in the same species which is often called the mating of animals of. Breeding preceded in case of poultry was hatching of eggs. Hatching was the breaking out of the incubated egg for the poult to emerge (Sadek, 2001).

In the view of Obori (2005), he stated that throughout the breeding stock the success of hatching practices start with quality of eggs. The success of breeding and hatching activities depend on the equipment and availability of skilled labour in commercial turkey farm set up,

A report of Alabi et al. (2006) on the contribution of family poultry to women income in the Niger Delta indicated women contributes 35% of the income of household that family poultry husbandry which was estimated at about 25% and 50% of Nigerian minimum wage and per capital income, respectively. The importance of this small, easily managed household livestock demonstrates the widespread use of poultry in third world countries. Small size, short gestation period, high fecundity, ability to forage for themselves and a natural desire to stay around the house put rural poultry among the most vital resources of rural Africa, Asia, and Latin America (National Research Council 1991).

Another scientists Uwadi (2006) found the skills in marketing poultry products which include advertising products to prospective buyers, keeping of accurate record, keeping of the products, fixing appropriate prices based on products cost, notify customers on arrival of products in the markets, collect market information, count and grade eggs laid. To prevent business failure proper and for success in turkey production, knowledge of marketing information and adequate communication should prerequisite.

Birol and Asare-Marfo (2008) told that poultry production is an important livelihoods activity in the rural areas of many developing countries. Several studies from African and Asian countries have found that poultry production significantly contributes to several livelihoods indicators of rural households, such as income, food and nutrition security, and intra-household gender equality.

Fialal (2008) predicted that the environmental impact of poultry production is a continuing challenge and it is revealed that global consumption of poultry meat will increase between 2000 and 2030 at an average annual rate of 2.51%.

Besbes (2009) reported that the worldwide poultry sector consists of chickens (63%), ducks (11%), geese (9%), turkeys (5%), pigeons (3%) and guinea fowls (3%). From the last decade, demand for poultry products has been increased rapidly in Bangladesh, and propelled by rising levels of income, population and urbanization. Experience showed that the climate of Bangladesh is convenient to rear different poultry species.

Ezedum et al. (2011) reported on the steps involved in planning for an enterprise that include prepare production plan; prepare financial plan and prepare marketing plan among others. Skill involves the mastery of practical expertise and knowledge in any occupation (Umunadi, 2014). In the view of Dole (2009), skills are basic cognitive abilities and personal qualities which a worker needed to possess in order to succeed in career jobs.

According to Supprakit (2014) women contribute significantly to economic life of Nigerian society. On the other hand Central Bank of Nigeria (2010) estimated that women in Nigeria are responsible for at least 70% of food production and processing and are greatly involved in marketing and distributive activities. Women's participation in the labour force had increased greatly since the turn of the 20th century and the percentage of women engaged in the paid labour force to support their family had increased rapidly (Onyeonoru, 2005). Hence, it was imperative to state that women both in rural and urban communities contribute greatly to raising the standard of living of their families.

Research has shown that turkeys can be grown at a maximum rate with early maturity, improved finish, all mash, high energy diets, graduated in the quality and quantity of protein and other nutrients according to age and sex of birds (Marsden, 1971).

Since scanty published literature was available on hatching performance of turkey birds under different rearing systems in Bangladesh. Considering the above, the present study was conducted to know the management of turkey farm, and to determine the effects of rearing system on the reproductive performance of turkeys as well as to identify the suitable rearing system for rearing turkeys.

CHAPTER-III

MATERIALS AND METHODS

3.1 Sample Site and period of study

The research was conducted at a poultry farm, situated at Moricca, Ukhiya in Cox's Bazar. The research presided over a time span of 5 months which started from November '19 to March'20

3.2 Experimental species

Turkey (*Meleagris gallopavo*) is an emerging poultry species to the New World. The economic value of turkey in rural people is very effective. Having good meat value (often called as Lean Meat due to less Fat), highly disease resistance capacity, less cost in feeding as well as production etc. were the main point to choose turkey for this experiment.

3.3 Taxonomic classification of Turkey

Kingdom: Animalia

Phylum: Chordata

Class: Aves

Order: Galliformes

Family: Phasianidae

Sub Family: Meleagridinae

Genus: *Meleagris*

Species: *M. gallopavo*

M. ocellata

3.4 Research design

The research had a 2 factorial design. There were two ways of rearing system. The first one was scavenging turkey rearing by using natural feed and the second system was captive rearing of turkey by using ready feed of a renowned company. In the first part, the turkeys were reared completely as like backyard farming. The turkeys were scavenged the farm area, moving to and fro for searching their food. On the other hand, the turkeys are remaining in a shed from the very beginning to until sold. In this system, they were provided ready feed, water and other facilities by the owner. Mostly this types were looks like a commercial farm. It was noticed that in each types of

farming there were provided 10 toms and 20 hens in totally there were 30 turkeys were provided in each part for the research purpose

3.5 Husbandry practices in the farm:

Husbandry practice means the housing, management, biosecurity, feeding, health management etc. were in totally included.

3.5.1 Housing management:

The main reason was to provide housing for birds for protection from the environment. Housing also provides protection from predators as well as to reduce the spread of pathogens and provides protection from vandalism. Additionally, housing enables the separation of birds according to their treatments for easy management. In the case of small flocks, simple structures were built by using locally available material. For captive production, turkeys were raised under intensive conditions similar to those of broiler chickens. Some factors was considered to construct a turkey house which were

3.5.1.1 Orientation:

The orientation of the houses with respect to the sun and prevailing winds was important. An east-west orientation was preferable as it minimized the heat gain in summer. The house was constructed in a manner by which prevailing winds to enhance drying of manure or litter. The house was prepared as a reasonable distance from other houses to minimize disease spread.

3.5.1.2 Topography:

The topography should be high and level with no abrupt slopes. The shed was relatively level area which was free from flood, wet and predators, were requires less site preparation and also reducing construction costs.

3.5.1.3 Type of house:

Poultry houses should be open-sided (rely on natural ventilation) or environmentally controlled (temperature and ventilation are controlled). Open-sided houses were very common in ukhiya because they were cheaper to construct and maintained easily than environmental houses.

3.5.1.4 Width:

In theoretically it was told that the house should not more than 25ft in width because widths greater than 25ft caused difficulties breathing due to gas (ammonia gas)

production and the ventilation wasn't well enough; it will be better if the width of a house is in between 20-25ft. So, open-sided houses were built for rearing turkey for better environment with 20ft width.

3.5.1.5 Length:

Any length could be used. So, for this purpose, there was reared 60 turkeys and so the length was taken 40ft to make the house.

3.5.1.6 Floor space:

Solid floors were preferred as they are durable and easy to clean by disinfectant.

Though the house was prepared before the arrival of poult, the floor space was provided according to their weight gain and Month of rearing. On an average, every 2-4 weeks later it was changed. The house was surrounded by fences and solid floors was covered by rice husk (litter materials), they need some specific floor space to survive which was calculated and given below in table-1

Table-1: Floor, feeder and watered space requirement for rearing of turkey poults in captive and free range (Scavenging) condition

Age	Floor space (sq. ft)		Feeder space (sq. ft)		Drinker space (sq. ft)	
	Captive	Free range	Captive	Free range	Captive	Free range
4-6 weeks	1.5	1.5	2.0	2.0	1.25	1.00
7-10 weeks	2.25	2.0	3.5	3.5	2.0	1.75
11-16 weeks	2.75	2.5	5.0	4.75	2.5	2.25
17-20 weeks	3.75	3.25	6.5	6.0	2.5	2.25
21-24 weeks	5.00	4.5	7.5	7.0	2.5	2.25

Source: Science Forecast Publications LLC. | <https://scienceforecastoa.com/> 3 2018 |

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3.5.1.7 Drainage:

Porous soil and gentle slope was made to enhance dryness and having well sewerage capacity to make the shed always dry

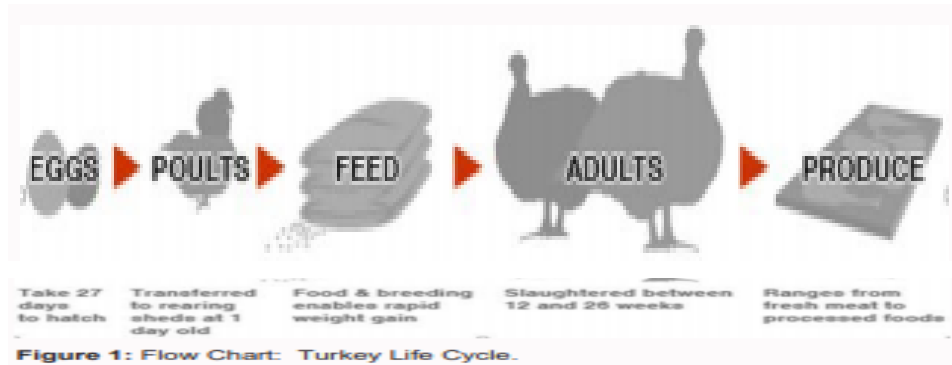
3.6 Biosecurity:

Biosecurity is utilization of measures which can stop or slow down the introduction and spread of infection into or between components of production systems. It includes managing people, equipment, pests and their potential for carrying diseases into a flock. Biosecurity must be a priority to control infectious disease and minimize introduction of pathogens into flocks. Biosecurity measures include:

- i. Allow only necessary visitors to production sites by installing fence enclosures;
- ii. Control movement of workers and equipment between shelters, production sites and age groups;
- iii. Provide foot baths, showers and protective clothing at strategic points;
- iv. Reduce microbial load on trucks and equipment by washing and disinfecting at critical times;
- v. Locate production sites strategically in relation to other production sites and movement of poultry to minimize transfer of disease causing organisms;
- vi. Control rodents and wild birds effectively, both of which are potential disease vectors; and
- vii. Confine pets away from commercial poultry.
- viii. Immediately following depopulation, the buildings and equipment should be thoroughly cleaned and disinfected before new birds are introduced.
- ix. Manure should be removed and disposed of at least 1 km away from the production sites. Mortality disposal should also be a part of the biosecurity protocol.

3.7 Sample collection:

Poults of Turkey were selected at the age of 27th days old weighting of about 278gm on an average, were collected from Rafiq's Bohomukhi Farm situated at Alir jahal, Cox's Bazar Sadar of Cox's Bazar districts of Bangladesh. Afterwards, collected turkey samples were then brought in the experimental site on the next day (28th days old) after capturing with minimal stress, which was selected before and located in Cox's Bazar. Transportation process was done with utmost care and usually done in the late night to early morning.



3.7.1 Preparation of house for poults:

Whole shed were surrounded by fence and the roof of the shed were prepared by tin and beneath that there were a fence board to make the shed safe from become warmer After prepared the outer side, the poultry house was cleaned and disinfected and allowed to rest for at least 7 days prior to poult placement also, equipment such as feeders, drinkers etc. was cleaned and disinfected too. At the age of 31days when the study was started, the house was separated into 2 parts. One part was for scavenging turkey and the other parts for the captive turkey.

3.7.2 Litter materials:

The common litter materials used for brooding are wood shavings saw dust, paddy husk, chopped saw etc. Fresh litter (rice husk, straw, wood shavings etc.) were spread over the floor area. Rice husk are the very common litter which was used in poultry farm in Bangladesh because litter provides insulation from the floor and will soak up moisture from the droppings. It also helps to prevent damage to the birds' legs due to slipping on slippery surfaces. The depth of the litter was 4 to 5 cm (1.5 to 2 inches). The litter should be raked at frequent intervals to prevent caking.

3.7.3 Preparing for arrival of poults:

On the arrival day, clean water was provided before the arrival of poults which was mixed up with glucose and vitamin B complex (thiamin). After the arrival of turkey poults they were kept in that room in which water and food were provided before. The workers were introduced drinkers to poults by dipping their beaks in the drinker which were placed on the floor. Feed was placed in feed tray called as feeder and placed on the flat surfaces of the floor for the poults that was easy to feed. The light sources were on 24 hours before the arrival of poults from which the environmental temperature was

maintained mostly at night. The temperature was maintained gradually and that is 25-30 C, which was calculated by room thermometer.

3.7.4 Rearing systems:

Two systems of rearing are followed and these were:

- 1) Free range or scavenging system of rearing
- 2) Intensive or captive system of rearing

At the age of 31 days the turkey were selected randomly and divided into two groups which were named as scavenging and captive rearing system. After that, they were shifted to their selected shed which was separated earlier into 2parts. Before their shipment the turkey poult weighing each and every one. In each group there were 10 toms and 20 hens.

3.8 Health Management:

Health management means good management, to make the body well, growth rate is high, better feed intake capacity, good F.C.R and mostly free from disease. It appears that turkey's tom are very much ferocious to make their own territory. For prevention of attacking of tom poult of the farm, there was taken some measures such as Debeaking (beak trimming), Desnooding and Toe Clipping etc. these helped to prevent harm from heavy injury, following by better health and growthness and also low the disease susceptibility. If there is any occurrence or damage the protocol of health management that may causes diseases. There are four primary causes of disease. They are

- 1) Genetics,
- 2) Nutritional deficiency
- 3) Environment (Heat or Cold) and
- 4) Infectious agent (Virus, Bacteria, Fungi etc.)

If one of the above was occurred in a farm, the farm invites the diseases.

3.8.1 Debeaking (beak trimming):

Poults should be debeaked in order to control feather picking and cannibalism, especially if they are raised in confinement. Debeaking was done at the age of 10 days old to prevent cannibalism which was done before the arrival in the farm. And it will helps to remain good health.

3.8.2 Desnooding:

The removal of the snood or dew-bill (the tubular fleshy appendage on top of the head near the front) is referred to call as “desnooding”. It helps to prevent the head injuries from picking or fighting and may reduce the spread of erysipelas. The snood was removed at one-day-old age by thumbnail and finger pressure. After about 3 weeks, it was cut off close to the head with sharp, and pointed scissors.

3.8.3 Toe Clipping:

Toe clipping or removal of toenails is usually done at the hatchery. Toe clipping can improve the grade of processed turkeys. Turkeys in large groups, especially when excited, often step on each other causing scratches or skin tears on the backs and sides. The problem is aggravated with increased flock sizes and densities, especially when turkeys are reared in confinement. The most common form of toe clipping involves cutting the inside and middle toe (front) on each foot. Toes of turkeys were clipped as 5 weeks of age which was cut with surgical scissors, a nail clipper and a modified hot-blade debeaker.

3.8.4 Deworming:

Deworming means to remove external and internal parasite from the G.I tract, stomach etc. This process can be done orally for internal parasite, Pour on the body, injectable or dipping on solution for external parasite. Avinex and Piper vet were provided sequentially for every 90 days interval. Ivermectin (1:1) mixed with distilled water to make a solution which was pour on at 12 weeks of age due to lice on the body and there after provided at the age of 137 days.

3.8.5 Vaccination:

“Prevention is better than cure” it’s a renowned theme which demands that sometimes disease may curable but it takes some lose both health and money. So, vaccination is the only way to prevention disease and keeps the animal safe and also can be save the money. For the purpose of prevention from disease, the turkey poults were provided vaccine by maintaining the following a schedule.

Table-2: Vaccination schedule of turkey

Age of Turkey	Vaccine
15days (given before arrival)	BCRDV (ND)
24 th days (given before arrival)	IBD vaccine
5 th weeks (in farm)	ND(live vaccine)
6 th weeks (in farm)	Fowl cholera
9 th weeks (in farm)	ND (killed vaccine)
15 th weeks (in farm)	ND lasota
18 th weeks (in farm)	Fowl cholera
21 st weeks (in farm)	ND killed

3.9 Nutrition and Feeds:

For the body maintenance, feed and nutrition is very essential. Without nutrition body was not happened. So, nutritional requirement was the main issue in the growth factor

3.9.1 Nutritional requirement:

Turkeys grow quickly and convert feed into high-quality meat. Feeding a properly balanced ration is important for best performance. During the fourth week of age, small amounts of feed should be provided in feed trays, box lids, egg flats and/or spread on newspapers on litter to encourage them to feed, which was done in the farm from where the turkey poults were brought. After the arrival of farm, placing feeder and drinker were close together in the first few days and assists the poults to eat and drink, thus reducing mortality due to starvation. However, feeder and drinker were washed at 3 days interval to prevent wet feed and dirty water. There were two systems of rearing one is free range or scavenging rearing and another is captive or intensive rearing. In each system different types of feeds were provided to check their growth performance. In free range system a complete mixer of feed were prepared by locally available ingredients. On the other hand, a completely ready mixed feed were provided which was collect from the local feed shop. But in each condition it should be maintained strictly about the requirement of nutrition for their better health. So, nutritional requirement of turkey which was followed on the basis of the following chart as weekly basis

Table-3: Nutritional requirement of turkey in different age

Item	0-4 weeks	4-8 weeks	8-12 weeks	12-16 weeks	16-20 weeks	20-24 weeks
ME (kcal/kg)	2800	2900	3000	3100	3200	3300
CP (%)	28	26	22	19	16	14
Calcium (%)	1.2	1	0.85	0.75	0.65	0.5
Phosphorus (%)	0.7	0.6	0.5	0.5	0.4	0.4
Lysine (%)	1.6	1.5	1.3	1	0.8	0.65
Methionine (%)	0.5	0.45	0.38	0.33	0.28	0.23
Vit-A (IU)	4000	4000	4000	4000	4000	4000
Vit-D3 (IU)	900	900	900	900	900	900
Choline (mg)	1900	1800	1300	1100	950	800
Niacin (mg)	70	70	50	50	40	40

Source: Science Forecast Publications LLC. | <https://scienceforecastoa.com/> 3 2018 | Volume 1 | Edition 2 | Article 1008

Though there was different mixer of feed, the nutritional requirements were maintained strictly for their better growth performance.

3.10 Feeding Management

3.10.1 Requirement of feed in free range rearing system:

In this system turkey poults were kept in a house from the evening to morning of the next day just like as the backyard rearing of household poultry. Mostly scavenging rearing means they were moving to and fro for searching their feed by their own from dawn to dusk and collected food. Generally, in this rearing study, they were provided feed at the morning for maintaining their body requirement when they were release from their house. After that they were searching their feed outside the house. At the evening, they come to their house for rest. Before entering house, the turkeys were provided concentrate mixed feed too. The concentrate were mixed by maintaining a proper ratio by readily available feed elements from the locality. So, the ration of mixer were mixed by following the below methods.

Table-4: Concentrate mixer (for 1kg mixer the amount of ingredients are specifically in a box) **for scavenging turkey bird**

Ingredient	Amount (1kg mix)	Ratio	Total
Broken Maize	200gm		38kg
Rice Husk	350g		66.5kg
Wheat bran	250gm		47.5kg
F.F Soya	195gm		37kg
Profeed (feed mix)	3gm	3gm/1kg	600gm
DCP	1gm		200gm
Salt	1gm		200gm
Total	1kg		190kg

On the other hand, they mainly search green grass, green vegetables, climber, creepy plant, pleats, leaf, fodder supplement etc. from moorland and wet or swamp types area like pond, bill, khal etc. At the evening they come to their house for rest. Before entering house, the turkeys were provided concentrate mixed feed too. The feed mixes were prepared before supply to them by maintaining the nutritional requirement properly according to their needs and body requirement.

Table-5: Feed Supply schedule in scavenging shed.

Time	Food item
6.00 am	Concentrate mix
6.00 am	Concentrate mix
6.00 am – 6.00pm	Searching on Grazing land

It was noted that a male tom ate 14.013 kg of concentrate feed on an average before sold. On the other hand, a hen ate average 11.055 kg of feed before sold. The supply of water was ad libitum.

3.10.2 Requirement of feed in captive rearing system:

In captive rearing the turkey were always kept in the shed. So, they need feed for their body requirement which was supplied from the outside and these feeds were readily available in the local market and bought for them. A commercially produced, crumble

starter ration was provided for poult which was starting from the beginning and followed by grower and finisher also provided by maintaining their age.

ইয়ন ব্রয়লার ফিডের পুষ্টিমান বিশ্লেষণ এবং ব্যবহারকাল									
খাদ্যের নাম	খাদ্যের ধরন	বয়স (দিন)	আর্দ্রতা % (সর্বোচ্চ)	আমিষ % (সর্বনিম্ন)	আঁশ % (সর্বোচ্চ)	ফ্যাট % (সর্বোচ্চ)	ক্যালসিয়াম % (সর্বনিম্ন)	ফসফরাস % (সর্বনিম্ন)	বিপাকীয় শক্তি (কি.ক্যা/লিটার)
ব্রয়লার স্টার্টার	ক্রাফল	১-১৪	১২	২২.৫	৫	৫.৫	১	০.৫	২৯৫০-৩০০০
ব্রয়লার গ্রোয়ার	পিলেট	১৫-২৪	১২	২১	৫	৬.৫	১	০.৫	২৯৫০-৩০০০
ব্রয়লার ফিনিশার	পিলেট	২৫-বিক্রি	১২	২০	৫	৬.৭৫	১	০.৫	৩১০০-৩২০০

Fig-2: Formulated ready feed with its nutritional value

The (broiler starter) rational feed was provided for poult which was starting from the beginning and ended upto 8th weeks of age as they are habituated from the farm, where the poult are born. Thereafter, a mixer of starter and grower feed is provided as a mix ration of 1:2 for 3days and then mixed up with 2:1 ratio for the next 3days. Than provided grower feed (pellet size) completely, without any mix up. Grower fed was provided at the age of 9th to 16th weeks. Finally finisher feed was provided after 16th weeks of age which contain 20% protein.

Table-6: Time period for different types of feed provided in captive method

Age	Name of feed
Arrival-8 th week	Broiler starter
3days (2:1)	Broiler (starter + grower)
3days (1:2)	Broiler (starter + grower)
9 th -19 th weeks	Broiler grower
3days (2:1)	Broiler (grower + finisher)
3days (1:2)	Broiler (grower + finisher)
20 th –last	Broiler finisher

As there is lack of protein in the feed, additionally protein supplement (profeed-3gm/1kg of feed) was added with the ready feed. Range feeding alfalfa or napier grass was added in the menu as supplement of protein and mineral. Organic feed like green grass, vegetables was provided. Organic feed helped in brightness and to make the body fit. Typically, 2 kg of green grass was provided per kg body weight of a turkey. Usually, a turkey was ate 20-30 kg of green grass as a feed before they were ready for

market. There was a big land in which Napier grass was cultivated. So, Green grass was affluent in production in the field and supplied profusely as their need. The green grass was provided twice in a day. It was also noted that there were 8 drinkers as a whole for the captive shed. The drinkers were filled up as early as possible after finishing of water. So, it was ensured that the supply of water is good.

Table-7: Feeding schedule in for captive turkey

Time	Food item
6.00 am	Ready Feed
10.00 am	Green Grass
4.00 pm	Ready Feed
6.00 pm	Green Grass

In the captive rearing a male tom ate 25.639 kg of feed on an average before sold. On the other hand, a hen ate average 21.437 kg of feed before sold. The supply of water was also ad libitum.

3.11 Disease management:

Turkeys are better than any other poultry species because they have very good capacity of disease resistance. But it is also true that ND, Fowl cholera, IBD are very often occur in the turkey flock rapidly. In the work, both the scavenging (11 poults) and captive (14 poults) flocks of the turkey were badly infected by ND viruses.

3.12 Weight measurement:

Measuring of weight is an important part of any study. A good weight of a bird gives more pleasure to the farmer and most importantly the profit margin is very much rely on a good body weight. In this study the body weight was taken individually in every month later and noted that. At the last day before sold, the body weight was also taken by a weight measuring machine.

3.13 Analytical technique

After collection of all information about different variables of scavenging and captive rearing system, they were checked for completeness, cleaned, organized, coded and

then entered into MS-Excel and STATA (Stata 14, Stata Statistical Software, Stata Corporation, College Station, Texas 77845 USA) for analysis. Both the descriptive, statistical and econometric methods were used to achieve the objectives.

3.14 Cost analysis:

Cost are of 2 types. One is variable cost and the other one is fixed cost

3.14.1 Variable cost:

Variable cost is a term used in cash basis accounting that referred to the recognition of expenses as they are paid in cash. The variable cost were included labour cost, poult cost, electricity cost, feed cost, medicine and treatment cost etc.

$$TVC = OC + IOC$$

Here,

TVC= Total Variable Cost

OC = Operating cost (All the cash cost are in totally is operating cost)

IOC= Interest on operating cost

Now,

$$OC = m + n + o + p + q + r + s + t$$

Here,

m= Bird (Poult) cost

n= Feed cost

o= Labour cost

p= Biosecurity cost

q= Deworming cost

r= Vaccination cost

s= Treatment and medication cost

t= Electricity, water cost

&

$$IOC = \frac{OC}{2} \times 4\% \text{ (here 4\% is the bank interest for the livestock loan)}$$

$$\text{So, the Total Variable Cost, (TVC)} = OC + \left(\frac{OC}{2} \times 4\%\right)$$

3.14.2 Fixed cost:

Fixed cost are non-other that cost which are always remain fixed throughout the year. It may be changed or unchanged. Here, Fixed cost were included the house rent and the equipment cost. So, the fixed cost were,

$$\text{TFC} = \text{House rent} + \text{Equipment cost}$$

3.15 Return analysis:

Return means the outcome after any study. So after turkey rearing the outcome denotes from these two.

- 1) Return from selling whole Birds
- 2) Return from selling Processed Birds

3.16 Outcome analysis:

After calculating cost and return the profit or loss margin was calculated below

3.16.1 Gross margin (GM):

Gross margin is the difference between total return and total variable cost. So, the gross margin was,

$$\text{GM} = \text{TR} - \text{TVC}$$

Here,

GM= Gross Margin

TR= Total return

TVC= Total Variable Cost

3.16.2 Net return or profit (NR):

Net Return (NR) was used to estimate the costs, returns and profitability of turkey production in the study area. The equation is expressed as;

$$\text{NR} = \text{TR} - \text{TC}$$

Here,

NR = Net Return

TR = Total Returns from turkey (Tk.)

TC = Total cost

Here,

Total cost was the summation of total variable cost and total fixed cost.

So, $TC = TVC + TFC$ (Tk.)

Here,

$TVC =$ Total variable cost (Tk.)

$TFC =$ Total fixed cost (Tk.)

As a whole,

$$NR = TR - (TVC + TFC)$$

3.16.3 Benefit cost return (BCR):

Benefit cost ratio is the ratio of total return and total cost. Whereas the ration calculate on a single unit like as Tk. 1. The profit or loss were described as a unit of 1 (one) taka. This was depended or calculated through 2 variables,

- i. Full cost basis
- ii. Cash cost basis

On the basis of full cost, $BCR = \frac{\text{Gross Return}}{\text{Gross Cost}}$

On the basis of cash cost, $BCR = \frac{\text{Gross Return}}{\text{Total variable Cost}}$

3.17 Paired t test:

Paired t test was used to comparison the mean value of body weight, income from per turkey rearing both scavenging and captive methods. The paired t-test is a method used to test whether the mean difference between pairs of measurements is zero or not. Sometimes it is called the dependent sample t-test, which used to determine whether the mean difference between two sets of observations is zero. In a paired sample t-test, each subject or entity is measured twice, resulting in pairs of observations. The purpose of the test is to determine whether there is statistical evidence that the mean difference between paired observations is significantly different from zero. The Paired Samples t Test is a parametric test. A paired t-test is used when we are interested in the difference between two variables for the same subject. Often the two variables are separated by time. Since we are ultimately concerned with the difference between two measures in one sample, the paired t-test reduces to the one sample t-test.

The test value t formula is with d.f. (n-1).

$$t = \frac{\bar{D} - \mu_D}{S_D/\sqrt{n}}$$

n= Sample size

\bar{D} =Differences of the values of the pairs of data

S_D = the standard deviation of the differences
the expected value μ_D is zero if the hypothesis is $\mu_D = 0$. The confidence interval
of the difference in the paired mean difference.

CHAPTER-IV

RESULTS

From the present experiment, detailed information about feeding behavior of turkey after providing mixed feeds to the scavenging methods and ready feed for the captive methods. In this chapter weight gain and feed intake of turkey at different rearing methods, specific growth rate of turkey tom and hen, feed conversion ratio, mortality, morbidity and mostly cost and benefit analysis was performed by paired-t test

4.1 Analysis and calculation of weight measurement:

Every farmer wants a good body weight of his birds which makes him the happiest man at that time. The most important things is the profit margin which is very much rely on a good body weight. In this study, before starting of the study the initial body weight of each turkey was noted sequentially. And this process of weighing body weight of every bird was taken very carefully. After the end of every month that means every one month later the body weight was measured by a digital weight balance one after one and noted that very cautiously. At the end of the study time, the final body weight of each turkey were shown in Table-8

Table-8: Body weight of male and female birds of both scavenging and captive methods

Scavenging rearing system				Captive rearing system			
Male		Female		Male		Female	
Sl no.	B.W	Sl no.	B.W	Sl no.	B.W	Sl no.	B.W
S1	5734	S1	4533	C1	7691	C1	6987
S2	5491	S2	5164	C2	7435	C2	6314
S3	6345	S3	5249	C3	8309	C3	7408
S4	5605	S4	4498	C4	7448	C4	6829
S5	5842	S5	4908	C5	7246	C5	7259
S6	6429	S6	4690	C6	7401	C6	6603
S7	5956	S7	5306	C7	7951	C7	6862
S8	5650	S8	4891	C8	8129	C8	6582

		S9	4860			C9	6711
		S10	5248			C10	7140
		S11	4635			C11	6748
		S12	4831			C12	7190
		S13	5127			C13	6581
		S14	4791			C14	6810
		S15	4694			C15	6691
		S16	5089			C16	7036
		S17	4996			C17	6599

The body weight was taken individually in every month later and noted that. At the last day before sold, the body weight was also taken by a weight measuring machine. So finally the body weight of male and female of both scavenging and captive rearing system are given in a chart that were given below in table-9

Table-9: Average body weight measurement of turkey including the largest and smallest body weight of different sex

Traits	Scavenging		Captive	
	Male	Female	Male	Female
Avg BW(kg)	5.88	4.91	7.70	6.84
Biggest(kg)	6.25	5.31	8.31	7.41
Smallest (kg)	5.49	4.50	7.25	6.31

4.2 Average (Mean) weight gain (MWG):

Average weight means the sum of total body weight divided by the amount of species.

It was also calculated in another way

$$MWG = MFW - MIW$$

Here,

MWG= Mean weight gain

MFW= Mean final weight

MIW= Mean initial weight

4.2.1 Average final weight (MFW):

On the above table, there was calculated the whole body weight of turkey tom and hens individually. So, it was easy to calculate the average final body weight which was often called as mean final weight (Table-10)

Table-10: Mean body weight of turkey in both scavenging and captive methods

Traits	Scavenging		Captive	
	Male	Female	Male	Female
Average BW(kg)	5.88	4.91	7.70	6.84

[Note: Avg= average; BW= body weight]

4.2.2 Average initial weight (MIW):

There was calculated the whole body weight of turkey tom and hens individually during entry of starting time of the study. So, it was easy to calculate the average initial body weight which was often called as mean initial weight (Table-11).

Table-11: Initial body weight of turkey in both scavenging and captive methods

Traits	Scavenging		Captive	
	Male	Female	Male	Female
Avg BW(kg)	0.3	0.28	0.31	0.30

[Note: Avg= average; BW= body weight]

So, Average Weight Gain (MWG) of both male and female of both methods was calculated. In table-11 shows the mean weight gain of the scavenging rearing method was 5.58kg in case of male and in case of female it was 4.63kg whereas the mean weight gain of the captive rearing system was 7.39kg in indicated the male and 6.54kg in case of female.

Table-12: Calculation of mean weight gain

Traits	Scavenging		Captive	
	Male	Female	Male	Female
MFW (kg)	5.88	4.91	7.70	6.84
MIW (kg)	0.3	0.28	0.31	0.3
MWG (kg)	5.58	4.63	7.39	6.54

4.3 Specific growth rate (SGR):

The specific growth rate period is defined as the rate of increase of biomass of a cell population per unit of biomass concentration.

$$\text{Specific growth rate (SGR) (\%)} = \frac{\log_e W_2 - \log_e W_1}{T_2 - T_1} \times 100$$

Where, W_1 = the initial live body weight (g) at time T_1 (day)

W_2 = the final live body weight (g) at time T_2 (day)

T_2 = 180; [the final live body weight was measured at the age of 180 days]

T_1 = 30; [the initial body weight was measured at the age of 30days]

Table-13: Calculation of specific growth rate, SGR (%)

Traits	Scavenging		Captive	
	Male	Female	Male	Female
(W_2)	5.88	4.91	7.70	6.84
(W_1)	0.3	0.28	0.31	0.3
$T_2 - T_1$	150	150	150	150
SGR (%)	1.98	1.91	2.14	2.08

Table-13 illustrates the SGC of this study was 1.98% denotes the male turkey and 1.91% in case of Female turkey in the scavenging rearing. On the other hand, In case of captive rearing system the SGC of male turkey was 2.14% and the SGC of female was 2.08% (Table-13).

4.4 Feed intake:

Feed is the precious thing for every animal. In the study, the feed was provided adlibitum both shed according to their needs. In a life time the turkey flock were taking feed. So the average feed intake was the total amount of feed intake by all turkey which was divided by the number of turkey. As a whole the total FI of turkey male in the scavenging rearing was 112.1kg of feed whereas the average was 14.01kg of feed and the FI of female in the scavenging rearing was 187.85kg of feed whereas the average was 11.05kg of feed. On the other hand, the total FI of turkey male in the scavenging rearing was 204.8kg of feed whereas the average FI was 25.64kg of feed and the FI of

female in the scavenging rearing was 364.48kg of feed whereas the average was 21.44kg of feed (Table-14).

Table-14: Calculation of Average (Mean) feed intake from the total feed intake

Traits	Scavenging		Captive	
	Male	Female	Male	Female
Total FI	112.1	187.85	204.8	364.48
Average FI(kg)	14.01	11.05	25.64	21.44

[Note: FI= feed intake]

4.5 Feed conversion ratio (FCR):

FCR means the conversion of feed into body weight. As a whole a bird can take as much food for growth. At the final time, the body weight was measured as well as the calculation of total feed intake in the life time. At that time the total feed intake was divided by total body weight and the result was the FCR. It can be calculated by using the following formula-

$$FCR = \frac{\text{Dry Feed fed(g)}}{\text{Gain in weight of turkey(g)}} \times 100$$

Table-15: FCR of turkey in different rearing system

Traits	Scavenging		Captive	
	Male	Female	Male	Female
Average FI (kg)	14.01	11.05	25.64	21.44
Final Body Weight (kg)	5.88	4.91	7.70	6.84
FCR	2.38	2.25	3.33	3.14

Table-15 indicates the FCR of male was 2.28 and female was 2.25 in scavenging rearing system whereas, the FCR of male was 3.33 and female was 3.14 in captive rearing system. So, a graph was formed in the below

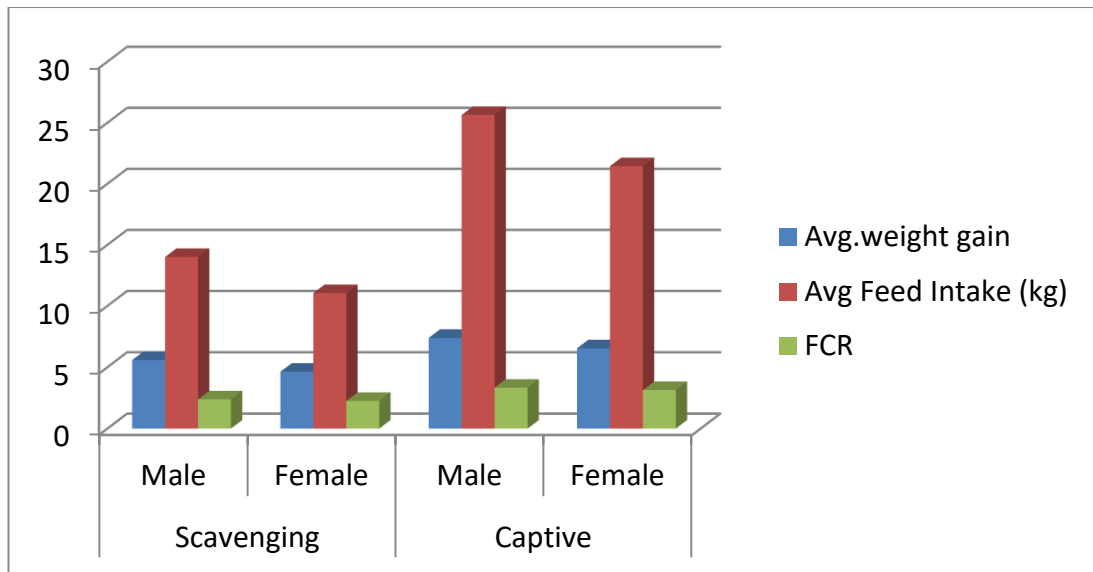


Figure-3: Average weight gain, Avg. Feed Intake (kg), FCR of turkey in scavenging and captive methods

4.6 Calculation of yield:

The turkey were stocked initially at the shed after taking the weight and at the end of the study the final weight of the remaining turkey were taken. That means the actual amount produced when an experiment was carried out from which the gross yield of each system was measured and compared according to different rearing system. So in totally in the scavenging system the avg weight of the tom were 5.88 kg after taking 14.013 kg of feed and the F.C.R was 2.38 and the avg weight of the hen were 4.91 kg after taking 11.054 kg of feed and the F.C.R was 2.25. On the other hand, in the captive rearing system, the avg weight of the tom were 7.701 kg after taking 25.64 kg of feed and the F.C.R was 3.33 and the avg weight of the hen were 6.84 kg after taking 21.437 kg of feed and the F.C.R was 3.14 as a whole.

4.7 Treatment of disease:

After the infection the infected turkeys were separated from the flock and provided medicine (Liq Ciprocine @ 2ml/1L DW for 7days (drinking water); Liq Acideo @ 1ml/2L DW for 4days; Pulv Lisovit @ 1gm/3L DW for 7days. During treatment procedure, there were caused some death which were severely affected among the sick birds from both flocks. The number of death was 5 in both flocks.

4.8 Morbidity and mortality rate of turkey:

Morbidity means the condition of suffering from a disease or medical condition or the rate of disease in a population. On the other hand, Mortality means the death condition after being sick. In the study the morbidity and mortality results were given in a chart with its frequency.

Table-16: Morbidity and mortality rate of turkey farming both scavenging and captive methods

Characteristics	scavenging				Captive			
	Male		Female		Male		Female	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Morbidity	4	40	7	35	5	50	9	45
Mortality	2	20	3	15	2	20	3	15

In the study research, 40% of male and 35% of female in the scavenging rearing system were found sick where as 50% of male and 45% of female were found sick due to new castle disease (ND) virus infection.

On the other hand, 20% of male and 15% of female of scavenging rearing system were death due to ND virus infection. In the captive method similar picture were found as like as the scavenging methods had occurred. And it was the death of 20% of male and 15% of female of captive rearing system due to the same case.

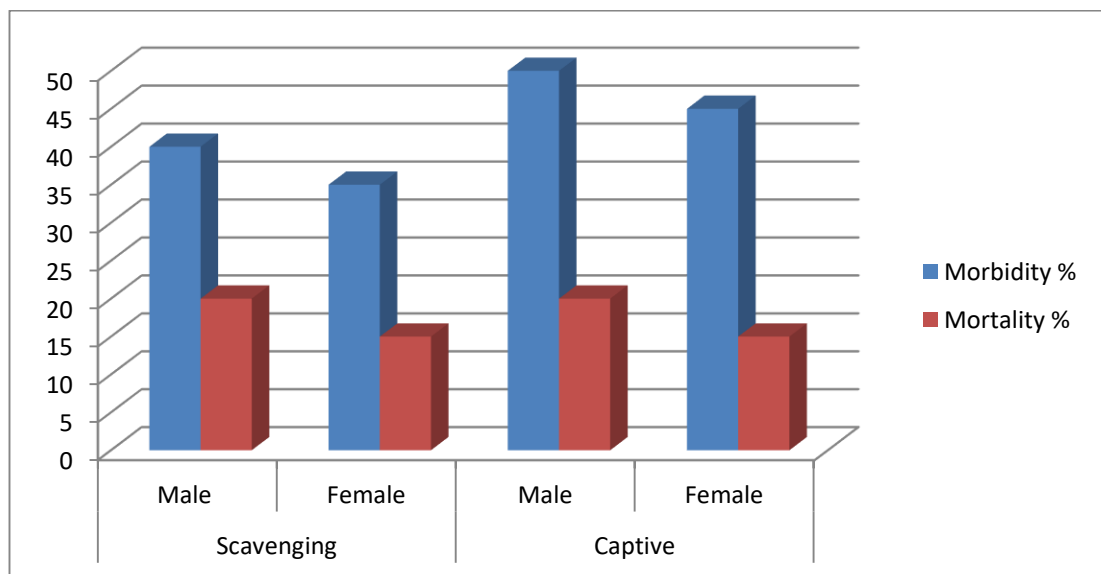


Figure-4: Percentages of Morbidity and Mortality of turkey in scavenging and captive methods

4.9 Cost analysis

The inputs used for the turkey production in the study area were housing and equipment cost, labour cost, feed cost, day old poults purchased, cost to maintain Biosecurity, Deworming cost of poults, vaccination cost, Treatment and medication cost, Electricity and water cost.

In this study period, there were a lot of ways of cost. These costs were mainly of two types:

4.9.1 Total variable cost (TVC):

The Total Variable cost are the sum of labour cost, feed cost, day old poults purchased, cost to maintain Biosecurity, Deworming cost of poults, vaccination cost, Treatment and medication cost, Electricity and water cost. So, total variable cost was showed the variable costs

4.9.1.1 Labour

The sources of labour in the study area were mainly hired labour. A man of labour was used in the production process over a period of 5 months (22 weeks). There was no exclusive use of family labour by any turkey farmers, rather family labour was used to supplement the hired labour. The estimated labour charged @1500/month. This amount will distributed for the poults individually the tom and hen separately. For each Tom of both methods, the labour cost was Tk. 180 and for the hen of each methods was Tk. 160 per turkey

4.9.1.2 Feed:

An approximate of 569.5 kg of commercial feed was used to rear an average of 30 matured turkeys of for the period of 5 months. On the other hand, there was prepared of mixed feed in the farm by the naturally available feed supplement in the nature. The commercial ready feed which was used in the captive shed, were mainly broiler starter and grower and layer's mash feed. On the other hand, the concentrate feed mix was provided in the scavenging methods of turkey rearing system. Approximately 300kg of mixed feed was provided on an average of 30 matured turkeys of for the period of 5 months. The concentrates of commercially available feed were used as much as their need with an average price of Tk. 37/kg. In totally the feed cost was Tk. 21072. And

the average feed cost of turkey was Tk. 759/tom as well as Tk. 674/hen. On the other hand, the concentrates feed mix which was prepared by the locally available item, were used in the scavenging rearing turkey bird, with an average price of Tk. 24/kg. In total, the feed cost was Tk. 7201 and the average feed cost of turkey was Tk. 69/tom as well as Tk. 226/hen.

4.9.1.3 Cost of purchasing day old poults:

The main item of this study was the poults, and these were bought from the local market of Cox's bazar district on an avg price of Tk. 230/poult.

4.9.1.4 Cost to maintain biosecurity:

Biosecurity is one of the most important issue to make free the farm from the harmful germ which are available in the environment to make normal severe disease. So, Pulv Timsen was used in the farm every day at a dose of 1gm in 1 liter and spray the whole shed twice in a day. The avg price per turkey was Tk. 32/Tom and Tk. 29/hen in the scavenging rearing method while Tk. 63/Tom and Tk. 60/hen were recorded as an average cost of biosecurity per bird in captive rearing methods.

4.9.1.5 Deworming cost of poults:

Deworming was done in both shed by maintaining a certain period of time. The avg price of deworming per turkey was 3.6tk/Tom and 3.15tk/Hen in the scavenging rearing method while Tk. 4/Tom and Tk. 3.4/Hen were recorded as an average cost of deworming per bird in captive rearing methods. In totally the cost of biosecurity in the study was Tk. 207.

4.9.1.6 Vaccination cost:

“Prevention is better than cure” this is the main theme of vaccination. Vaccination was done in this study very strictly and carefully. So the total vaccination cost was 828tk. In the scavenging rearing system, the avg cost per turkey was Tk. 14.4/tom and Tk. 13.5/hen. On the other hand it was also Tk. 14.4/tom but slight difference in female vaccination average per turkey in the captive rearing system and it was Tk. 14.25/hen.

4.9.1.7 Treatment and medication cost:

The medication which form part of the capital resources included the cost of drugs and veterinary services administered in the course of production. Some of the drugs used included amprolium, stress remover and sulfaquinoxaline. The avg price of medication per turkey was 21tk/Tom and 37.5tk/Hen in the scavenging rearing method while Tk. 40/Tom and Tk. 44.5/hen were recorded as an avg cost of medication per bird in captive rearing methods. In totally the cost of biosecurity in the study was Tk. 2260.

4.9.1.8 Electricity and water cost:

Electricity and stationeries used for the smooth running of the turkey production. So the total vaccination cost was Tk. 3333. In the scavenging rearing system, the average cost per turkey was 40tk/tom and Tk. 34/hen. On the other hand, slight difference in cost of average electricity and water per turkey in the captive rearing system and it was also Tk. 80/tom and Tk. 68/hen.

After calculating the values of variable cost elements from the table 16, it was Tk. 805.9/bird in case of male of scavenging rearing system whereas in case of captive method it was Tk. 1397.71/bird. On the other hand, in case of female of scavenging rearing system it was Tk. 747.3/bird and Tk. 1279.39/bird was the variable cost for female of captive rearing system.

Table-17: Cost of per Turkey farming per batch both Scavenging and Captive methods in the study areas.

Cost Items	Scavenging		Captive	
	Male	Female	Male	Female
A. Variable Cost				
Bird cost @230tk/bird	230 (20.46)	230 (23.27)	230 (13.13)	230 (15.13)
Feed cost	269.1 (23.94)	225.5 (22.81)	758.9 (43.32)	674.15 (44.34)
Labour cost@1500/month	180 (16)	160 (16.19)	180 (10.28)	160 (10.52)
Biosecurity cost	32	29	63	60

	(2.85)	(2.93)	(3.6)	(3.95)
Deworming cost	3.6 (0.32)	3.15 (0.32)	4.0 (0.23)	3.4 (0.22)
Vaccination cost	14.4 (1.28)	13.5 (1.37)	14.4 (0.82)	14.25 (0.94)
Treatment and medication cost	21 (1.87)	37.5 (3.79)	40.0 (2.28)	44.5 (2.93)
Electricity, water cost	40 (3.56)	34 (3.44)	80 (4.57)	68 (4.47)
Operating cost (OC)	790.1 (70.3)	732.65 (74.11)	1370.3 (78.23)	1254.3 (82.5)
Interest on OC (IOC)	15.8 (1.41)	14.65 (1.48)	27.41 (1.56)	25.09 (1.65)
Total variable cost(A)	805.9 (71.71)	747.3 (75.6)	1397.71 (79.79)	1279.39 (84.15)
B. Fixed cost				
Rent of House:	300 (26.69)	225 (22.76)	300 (17.13)	225 (14.8)
Equipment cost	18 (1.6)	16.25 (1.64)	18.0 (1.03)	16.0 (1.05)
Total fixed cost(B)	318 (28.29)	241.25 (24.4)	318 (18.15)	241 (15.85)
Gross or Total cost (A+B)/bird	1123.9	988.55	1715.71	1520.39

[Note: Figure in parentheses indicates percentages of total]

4.9.2 Fixed cost:

The Fixed Cost are the sum of housing and equipment cost. As, in this study there was only one study, the whole cost are included along with the depreciation cost together. So, the fixed cost were,

$$TFC= X+Y$$

Here,

TFC= Total fixed cost

X= housing cost

Y= equipment cost

4.9.2.1 Housing cost:

In the study period, a house was selected to rear the turkey as a monthly rent basis. The house rent was 300tk/tom and 225tk/hen in both scavenging and captive rearing method. In totally it was 3000tk/month.

4.9.2.2 Equipment cost:

In the study analysis, the total Equipment cost was 1005tk. In the scavenging rearing system, the avg cost per turkey was 18tk/tom and 16.25tk/hen. On the other hand it was also 18tk/tom but slight difference in female vaccination avg per turkey in the captive rearing system and it was 16tk/hen.

So, the fixed cost was calculated from table 16 and in case of male in both rearing methods was Tk. 318/bird whereas slight difference in the fixed cost of female in both system and it was Tk. 241.25/bird in scavenging methods and Tk. 241/bird in captive methods.

So, the total cost was Tk. 1123.9/bird in male of scavenging system whereas Tk. 988.55/bird in female of scavenging system. In case of captive methods Tk. 1123.9/bird in male and Tk.1520.39/bird in female

4.10 Return from turkey :

Table-18 represents the turkey output is the total number of matured turkeys produced (kg/live bird) over the period of 5 months in the study area. Therefore, an average of 308.5kg of live weight turkey was produced during the production period whereas the total weight of scavenging rearing method was 130.5kg and 178kg in the captive rearing of turkey. Among this 47kg was the total weight of tom and 83kg was total weight of hen. The average weight per kg of a matured turkey production was 5.88kg/Tom and 4.91kg/hen in the scavenging rearing method. On the other hand, in captive method 62kg was of tom and 116kg of hen. The average weight per kg of a matured turkey production was 7.70kg/Tom and 6.84kg/hen in the captive rearing method.

The turkey was sold in two ways. These were whole sell and processed meat sell like a super shop. In the whole sell of turkey, the price was Tk.370/kg of bird whereas Tk.450/kg in the processed meat sells.

4.10.1 Income after selling of live bird:

In case of scavenging turkey, the sold whole bird of male was totally 37.15kg and earned totally Tk. 13000 and in case female the total whole body weight was 63.81kg and after selling earned Tk. 22335. So, in case of scavenging rearing it was Tk.35335 as selling of live bird as a whole. On the other hand, in captive rearing system of turkey, it was Tk.52830.by selling of 41.57 kg of male and earned Tk. 14551 as well as 109.37kg of female and earned TK. 38279.

4.10.2 Income after selling of processed bird:

The bird was slaughtered at halal method and process the bird meat at 1kg of pack size and sold it @ Tk. 450/kg. The bird was also processed to maintain 60% of dressing percentage were available to feed. So, in the scavenging method the weight of processed was 11.92kg of tom meat and earned Tk. 3219. Similarly, by maintaining the same rate 23.25kg processed meat of hen are sold and earned Tk.6249. So, in totalTk.9468was earned from processed meat in this scavenging system.

Whereas, in the captive study, the total weight of processed meat was 22.28kg of tom meat and earned Tk.6019. Similarly, by maintaining the same rate 12.90kg processed meat of hen are sold atTk.3482. So, in total Tk.9501was earned after selling of total processed meat in this captive system (Table-18).

Table-18: Return of per turkey farming per batch both scavenging and captive methods in the study areas.

Return Items	Scavenging		Captive	
	Male	Female	Male	Female
Return from live bird selling	13000	22335	14551	38279
Return from processed bird selling	3219	6249	6016	3482
Gross return	16219	28584	20567	47761
Gross or total return/ bird	2027.38	1681.41	2570.88	2809.47

4.11 Calculative values

The cost and return of the experiment was very important for the profit margin. The return of captive methods was more than the scavenging methods whereas the cost was also more than scavenging methods

Table-19: Profitability of per Turkey farming per batch both scavenging and captive methods

Cost and Return	Scavenging		Captive	
	Male	Female	Male	Female
(A)Gross Return (Tk.)	2027.38	1681.41	2570.88	2809.47
(B)Gross cost (Tk.)	1123.9	988.55	1715.71	1520.39
(C) Cash Cost (Tk.)	805.9	747.3	1397.71	1279.39
(D)Net Return (Tk.)(A-B)	903.48	692.86	855.17	1289.08
(E)Gross Margin (Tk.) (A-C)	1221.48	934.11	1173.17	1530.08
(F) BCR (Full Cost Basis) (A/B)	1.8	1.70	1.50	1.85
(G) BCR (Cash Cost Basis) (A/C)	2.52	2.25	1.84	2.20

4.11.1 Net return

The net return of male was Tk. 903.48/bird and female was Tk. 692.86/bird in scavenging rearing system whereas, the net return of male was Tk. 855.17 and female was Tk. 1289.08/bird in captive rearing system (Table-19).

4.11.2 Gross margin

In Table-19 shows gross margin of male was Tk.1221.48/bird and female was Tk. 934.11/bird in scavenging rearing system whereas, it was Tk. 1173.17/bird for male and Tk. 1530.08/bird for female in captive rearing system.

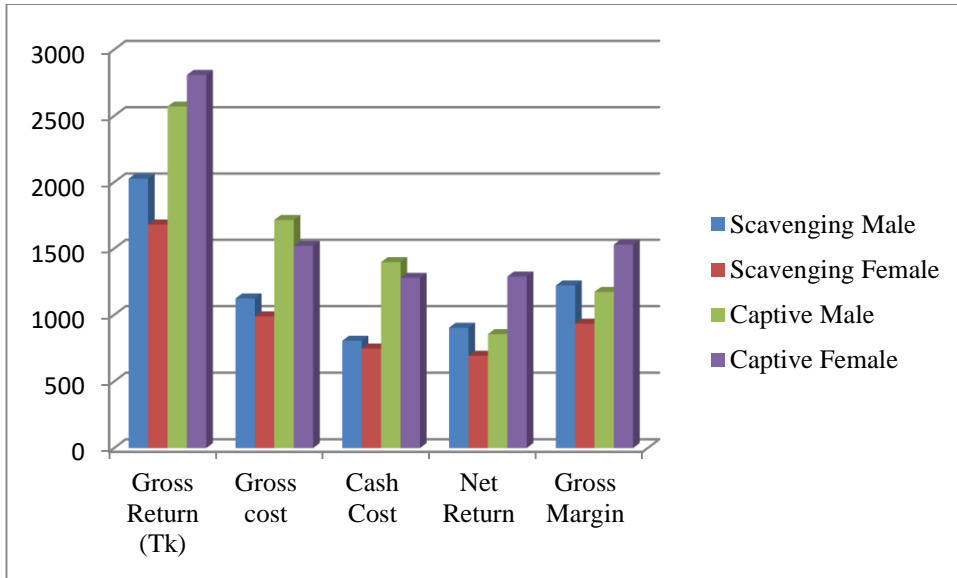


Figure-5: Profitability of turkey rearing in scavenging and captive methods

4.11.3 BCR (Benefit Cost Ratio):

Benefit cost analysis in full cost basis and cash cost basis were greater than 1 for scavenging and captive rearing system. BCR was highest in female of captive method which was 1.85 and lowest in male of captive methods which was 1.84, which means that turkey bird rearing is profitable in captive and scavenging method but the captive one was more profitable than scavenging method.

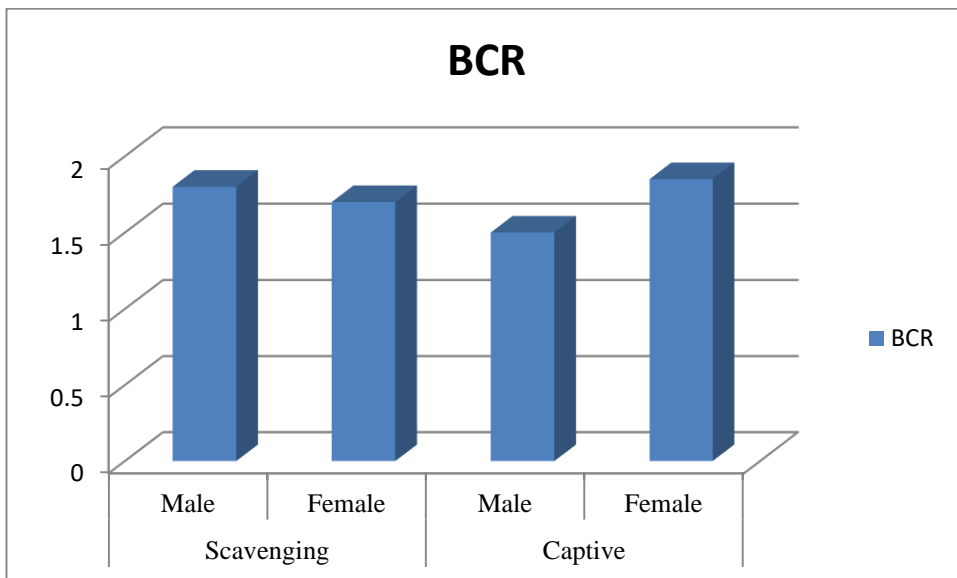


Figure-6: Benefit Cost Ratio (BCR) of turkey rearing in scavenging and captive methods

4.12 Paired t test for comparison of mean

a) **Hypotheses:**

i) The null hypothesis is:

H0: There is no difference in mean of body weight in scavenging and captive methods.

And the alternative hypothesis is:

H1: There is a difference in mean of body weight in scavenging and captive methods

ii) Another null hypothesis is:

H0: There is no difference in mean of income in scavenging and captive methods.

And the alternative hypothesis is:

H1: There is a difference in mean of income in scavenging and captive methods

Table-20: Paired Sample Test

Variable Pair	Mean	Std. Error	Std. deviation	95% Confidence intervals		t	d. f	Sig(2-tailed)
				Lower	Upper			
BWCM- BWSM	1.89592	.0766251	.3831255	1.737774	2.054066	24.743	24	0.0000
ICM – ISM	843.12	49.25022	246.2511	741.4725	944.7675	17.119	24	0.0000

[**Note:** BWSM= Body weight in Scavenging method, BWCM=Body weight in Captive method. ISM= Income in Scavenging method, ICM= Income in Captive method.]

From the Table-20 , it was observed that calculated value of t statistics were greater than the tabulated value of t in both parameter (body weight and Income) in 24 degrees of freedom at 1% level of significance ($p < 0.0001$). So reject the null hypothesis for both parameter (body weight and Income). It means that, there is a significant difference in mean of body weight of turkey between scavenging and captive methods. It was also proved from the Table-19 that there is a difference in mean of income from turkey between scavenging and captive methods which is highly significant. That means the captive method of turkey rearing was more profitable than scavenging method.

CHAPTER-V

DISCUSSION

According to Acker (1968), turkey is a simple stomach animal of poultry bird which contain only one compartment of stomach, they usually need a concentrated ration which must be low in fiber and highly digestible since they have small stomach capacity and are without the large numbers of microorganisms needed for bacterial digestion of fibrous feeds. Research has shown that turkeys can be grown at a maximum rate with early maturity, improved finish, all mash, high energy diets, graduated in the quality and quantity of protein and other nutrients according to age and sex of birds (Marsden, 1971). Present study was highly maintained the nutritional requirement very strictly. The turkey reared in the scavenging system were mostly rely on vegetables and green grass and the capacity of digestion was also good.

Ogundipe and Dafwang (1980) reported that the standard weights for adult toms and adult hens are 16-26 and 9.18 kg for the Bronze (large sized breed); 15 and 8.18 kg for white Holland (medium sized breed), 10.45 kg and 5.91 kg for Beltsville small white (small sized breed). Normal mature males of all varieties of turkey have a conspicuous black beard attached to the skin of the upper breast region and occasionally have small beard but beards are reared in females of colored varieties (Marsden, 1971). In this research, it was found that the growth rate of tom was better than the hen. At a short time period the weight gain of locally produced poult in a commercial farm were slightly backward than the renowned turkey breed. It was also noticed that in the scavenging study, the average weight gain of male was 5.88 kg rather than average weight of hen was 4.91 kg. On the other hand in captive rearing system it was 7.70 kg for per tom whereas 6.84 kg for per hen.

Mature cocks and hens of the Broad Breasted Bronze and the Beltsville Small White weigh 19 kg and 11 kg; 9 kg and 6 kg respectively (Williamson and Payne, 1977). The Broad Breasted Bronze, a developed selection from the standard bronze attained popularity for meat production during the 1940's and 1950's (Acker, 1968). It was found in this experiment that the growth rate of tom is better than a hen and became larger. At a certain period of time a male tom was weighed well than a hen. In this

study, average mean weight of a tom at the age of 6month was 5.58 kg rather than 4.63 kg of hen in scavenging rearing. Similarly, it was also noticed that the tom was 7.39 kg whereas 6.54 kg of hen weight at similar period of study. It was easy to calculate by specific growth rate (SGC) on each methods and the SGC of male was 1.98% and female was 1.91% in outdoor rearing and 2.14% of male as well as the female was 2.08%.

Oluyemi and Roberts (1982) reported that even if birds are to be fed adlibitum, the quantity of feed to be given still need to be determined. Compared with other poultry, turkeys have greater efficiencies and up to the 5 weeks of age poults use approximately 2.0 pounds (0.9 kg) of feed per pound/kg live-weight increase, while at the age of 12 weeks, they require approximately 2-3 pounds (Marais et al., 1970). In this research, the tom of captive rearing system was 7.70 kg after taken on an average of 25.64 kg of commercially available ready feed which was brought from the local market and the FCR was 3.33. On the other hand, the tom of free range rearing system was 5.88 kg after taken on an avg of 14.01 kg of mixed feed which was prepared in home by the locally available concentrate feed along with the green grass. So the FCR was 2.38. here the FCR of free range rearing system was lower than intensive rearing method because in the scavenging method the poult are not fully depend on prepared feed, they were habituated with the green roughage from the pasture land, but the captive rearing poult were fully depends on the ready feed which fulfill their nutritional demands. Similarly, the FCR of Hen of scavenging turkey was 2.25 and the captive turkey was 3.14.

However, Ogundipe and Dafwang (1980) stated that all heavy breed turkeys may attain first year breeding or “standard” weight (16.36) at 36 weeks while all small type turkey may attain breeding or standard” weight (10.45 kg) at 34 weeks. These according to them can be expected only when the birds are fed well balanced diets and kept free from diseases, parasites and other stress factors that can lower feed intakes and lower growth rates. They also stated that turkeys are more delicate than chickens and since they are raised mainly for meat, the demand is likely to fluctuate with seasonal demands for meat. Turkey growers generally lose more birds during the poult stage than at any other time of the season. High mortality in poult could be as a result of improper management such as inadequate provision of light at night in brooder houses

resulting in piling and stampeding due to their poor vision but another cause of mortality is disease. For a farm management was the main focus to achieve profit. Without good management it was difficult to achieved goal. As lose management could invite the disease. Turkey were very much susceptible by some valiant disease. In the present study due to ND viral affect there were affected so many bird and also caused some death but the morbidity was better than mortality. As death of bird is the other face of loss. So, managerial steps like biosecurity measures was taken too safe the farm from severe infection. The economic efficiency of investments into the poultry industry depends to a large extent, on environmental conditions such as nutrition and general management. Management in this context means identifying the various alternative production strategies or various cost and return elements that could be employed to obtain the highest possible return (Ogundipe and Sanni, 2002).

The variable or operating expenses are those that will be incurred only if production is carried out and the amount of this cost will depend on the kinds and quantities of inputs used. These costs components are used up in production cycle and thus must be re-incurred for each batch or crop. Operating expenses include cost of birds, feed, drugs, vaccination, litter materials, heating (cost of fuel, electricity and gas), water, salaries or wages for labour, marketing cost, advertisement, etc. (Ogundipe and Sanni, 2002). In this study, the total variable cost noted that was 805.9 tk/ bird in case of male of scavenging rearing which was 71.71% of total cost whereas the fixed cost was 318 tk/bird which was 28.29% of total cost. Similarly in case of female in scavenging rearing it was 747.3 tk/bird which was 75.6% of total cost and the fixed cost was 241.25 tk/bird which was 24.4% of total cost. On the other hand, in case of captive rearing total variable cost of male was 1397.71 tk/bird which was 79.79% whereas 318 tk/bird in fixed cost which was 18.15% of total cost. Similarly in case of female it was 1279.39 tk/bird which indicates 84% of total cost and 241 tk/bird was the fixed cost which noted that was only 15.84% of total cost in case of female in captive rearing system.

Shetter and Jadha (1999) who reported that the cost of chicks accounted for 26% and next to feed in small scale broiler production cost in Bidar. The turkey farmers however asserted that cost of the poults could be reduced if there were enough and available hatcheries and/or breeders in the study area. The cost of chicks or poults were

accounted slightly lower in my experiment. It was relatively higher cost ratio of scavenging rearing system than that captive rearing system. In agreement with this study, Ojo et al (2000) stated that the high and persistent increases in the prices of poultry feeds have constituted a big hindrance to expansion in the Nigerian poultry since the early 1980 and consequent upon the high cost of feeds, the prices of poultry products have continued to rise. The high cost of feed also could be due to competition between man and his livestock for grains and conventional sources of plant proteins. In the present study, it was also found that the feed cost was very high which deprived people to rear turkey at commercial way. Though the turkey have many future prospects, the higher price of feed could play a bad impact on the farm.

Moctar (2002) stated that the average gross margin per bird and average net farm income per bird obtained for the majority of the poultry farmers who are small scale farmers obtained over N2, 293.10 and N2, 234.94 respectively. In agreement of present study, gross margin of male was Tk. 1221.48/bird in scavenging rearing system rather than the gross margin of male of captive rearing was Tk. 1173.17/bird. In case of scavenging rearing system, gross margin of female was Tk. 934.11/bird rather than the gross margin of female of captive rearing was Tk. 1530.08/bird. It was also identified in the trial, net return of male was Tk. 903.48/bird and female was Tk. 692.86/bird in scavenging rearing system whereas, the net return of male was Tk. 855.17/bird and female was Tk. 1289.08/bird in captive rearing system.

CHAPTER VI

PROBLEM AND PROSPECTS

6.1 Problems of turkey rearing in Bangladesh

6.1.1 High mortality rate

In case of turkey, early mortality of bird is a major factor. Sometimes they gain leg problem from brooding period because of slippery litter materials. Starving out often cause of death of turkey. Still now farmers are not well aware about special care and management of younger turkeys.

6.1.2 Poor housing

Farmers are not acquainted with the scientifically recommended space requirement for rearing turkey. Actually they provide space on the basis of assumption. Moreover, they are not aware about using suitable litter materials and its management. Many farmers never take special care during extreme hot and cold situation which ultimately hamper the production performance of birds.

6.1.3 Higher diseases Outbreak

Outbreak of diseases is great problem in turkey production. In our study area many small farm destroyed due to outbreak of viral diseases. People are not aware about vaccination as a result many diseases occurs to the birds.

6.1.4 Inadequate marketing facilities

Market of turkey is not like broiler and layer in Bangladesh. There is absence of well-organized market for turkey and its products. No structured market value chain has been identified yet in Bangladesh. Farmers buy and sell turkey mainly through personal communication.

6.1.5 Lacking of authentic sources of poultry

Sources of authentic variety of poult are great problem in our country. People rear poults from different source those are not maintain any record of recognized variety. As a result appropriate feed and management hampered that effect the production rate.

6.1.6 Lack of knowledge

There is absence of opportunity for capacity building of turkey farmers in terms of receiving training, getting information. As most of the concern stakeholders are not

aware enough about turkey farming in Bangladesh, farmers are not getting required knowledge and skill. Therefore they are using traditional procedure for rearing turkey

6.2 Prospects of turkey farming in Bangladesh:

Now-a-days turkey farming is a profitable enterprises and it has a lot of prospects. Some points are discussed below-

6.2.1 Superior meat and egg quality:

The meat of turkey is considered by many peoples as a luxury meat. The protein, lipid, carbohydrate and mineral content of turkey egg are 13.1%, 11.8%, 1.7% and 0.8%, respectively. Turkey meat also has high nutritional and sensorial properties which make it almost ideal raw material for rational and curative nutrition. The protein, fat, and energy contents of turkey meat are 24%, 6.6%, 162 Calories per 100 g of meat. Mineral like potassium, calcium, magnesium, iron, selenium, zinc and sodium are also present in turkey meat. It is also rich in essential amino acids and vitamins such as B3 (niacin), vitamin B6 and B12, unsaturated fatty acids and essential fatty acids, and low cholesterol contents.

6.2.2 Good adaptability with our country climate

Turkey is a unique bird, which is suitable for rearing in hot humid climatic condition like Bangladesh. In fact, turkeys are adaptable to wide range of climatic conditions and can be raised successfully almost anywhere in the world if they are well fed and protected against diseases and predators.

6.2.3 Employment for women

The poultry sub-sector is crucially important in the context of agricultural growth. Turkey farming is undoubtedly an attractive economic activity, especially for the rural women and poor population in the country.

6.2.4 Lower feeding cost:

In poultry production system feed cost represent 65-70 % of total cost if we lower the cost by supplying lowest cost feed. However, other poultry species such as geese and turkey can obtain added nutrients from forage because they are better able to digest fiber due to larger microbial population in their digestive tracts.

6.2.5 Higher production rate:

Production of turkey is higher than other chicken. Turkeys grow faster than broiler chickens and have a slaughter weight that is about double of broiler chicken at the age of twelve weeks. Turkey rearing is profitable and cost of production is cheap as almost 50% of the feed they eat is green vegetables and field grasses as supplement to commercial feeds.

6.2.6 Lower disease rate:

Turkey is more disease resistant in comparison to other poultry species like chicken, duck and quail. Mortality rate of turkey is very low in comparison to other poultry bird. Turkeys are resistant to Marek's and Infectious bronchitis and commonly encountered with other diseases like Mycoplasmosis, Fowl cholera, Erysipelas etc.

6.2.7 Higher dressing percentage

The dressing percentage of turkey is 60-80%, which is highest of all farm species.

6.2.8 Aesthetic value

Turkey rearing is a new farming activity in Bangladesh, where 34.78, 19.57 and 45.65% of respondent farmers have been rearing turkey as ornamental or both egg and meat purposes. It has an aesthetic value due to their beauty.

6.2.9 High market demand

At present turkey market is limited to some particular customers as an ornamental bird as well as for meat purposes and its price is higher than other poultry species. There are a good number of people in Bangladesh who are fond of turkey meat now. So there is huge opportunity to expand turkey market in Bangladesh.

6.2.10 Increasing interest in people:

Turkey rearing gained a good popularity in our country among common people in a short period of time. So farmers are now being more interested in rearing turkey. If more technical support can be provided to farmers, this sector can be explored.

6.2.11 Profitable business:

Turkey grow faster like broiler chicken, become slaughter purpose within a very short period and its care and management is comparatively easy. Turkey farming can be opted as a viable farming, as a little investment is required for housing, and management.

CHAPTER VII

CONCLUSION AND RECOMMENDATION

7.1 Conclusion

There is a greater potential in the production of indigenous turkey. Now-a-days, strong interest shown in its production and recognition of its value which encourage people to culture turkey for the improvement of their financial status. This study was carried out to identify commercial turkey production by measuring its cost benefit analysis. There is need for genetic improvement and characterization of our local turkey strains so that their performance and productivity can be improved. A vigorous upgrading program using exotic Toms, to cross-breed with indigenous hens is necessary, if the fullest benefit of indigenous turkey production in the state is to be harnessed. Education through extension work may help in promoting strategies that limit the spread of diseases and turkeys should never be reared together with chickens. Implementing disease control strategies will go a long way in making the indigenous turkey an economically viable option for the production of economical, high quality animal protein and, also increase the standard of living as well as alleviate both human and income poverty in rural state. After collection of information of different variables were entered into MS-Excel and STATA for analysis. Both the descriptive, statistical and econometric methods were used to achieve the objectives. It was found from the results that, the FCR of male was 2.28 and female was 2.25 in scavenging rearing system whereas, the FCR was 3.33 and 3.14 for male and female, respectively in captive rearing system. It was also observed that calculated value of t statistics were greater than the tabulated value of t in both parameter (body weight and Income) in 24 degrees of freedom at 1% level of significance ($p < 0.0001$). It means that, there is a significant difference in mean of body weight as well as income of turkey between scavenging and captive methods. Though there having some problem but the prospects denotes that the profit margin is comparatively better than anything. In favor of high quality animal protein and profitability, turkey rearing helps to increase the standard of living as well as alleviate poverty in Bangladesh.

7.2 Recommendations:

Based on the findings of this study and in order to ensure sustainable turkey production in the study area, the followings recommendations are advocated:

1. There is need for turkey farmers to target production to high demand periods (e.g. festive periods like Christmas, Easter and Sallah) where they can easily sell and make more profit since marketing of turkeys and their products form one of the major problems of turkey production in the study area.
2. Storage and packaging facilities should be encouraged by private and public organizations to help retail sales of turkey parts and hence, make turkey meat affordable.
3. As a way of minimizing cost and adulteration of feed, the producers should be encouraged and trained to formulate their feeds. Also, there is the need to find alternatives to the high cost protein supplements in turkey diets, such alternatives should have comparable nutritive value which is not only cheaper than the conventional protein sources but, which are not consumed by man.
4. Turkey producers should be visited periodically by the extension officers. There is the need to further strengthen turkey research activities at all levels in the country for lack of essential information on breeding and production of turkeys.
5. There is need for encouraging the youths and the unemployed to embark on small scale turkey production especially as it has the potential of improving their income.

CHAPTER-VIII

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