FINANCIAL PROFITABILITY AND RESOURCE USE EFFICIENCY OF BEEF FATTENING IN SOME SELECTED AREAS OF BANGLADESH

HUSSAIN AHMED

DEPARTMENT OF AGRICULTURAL ECONOMICS

SHER-E-BANGLA AGRICULTURAL UNIVERSITY

DHAKA-1207

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FINANCIAL PROFITABILITY AND RESOURCE USE EFFICIENCY OF BEEF FATTENING IN SOME SELECTED AREAS OF BANGLADESH

BY HUSSAIN AHMED

REGISTRATION NO.: 14-05881

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Approved by:

Dr. Monoj Kumar Majumder **Associate Professor** **Dept. of Agricultural Economics** **Sher-e-Bangla Agricultural University** **Supervisor**	**Dr. Rokeya Begum** **Professor** **Dept. of Agricultural Economics** **Sher-e-Bangla Agricultural University** **Co-supervisor**

Dr. Monoj Kumar Majumder
Chairman
Dept. of Agricultural Economics
Sher-e-Bangla Agricultural University

Department of Agricultural Economics
Sher-e-Bangla Agricultural University *Fax: +88028155800*
Dhaka-1207, Bangladesh *Web site: www.sau.edu.bd*

CERTIFICATE

This is to notify thesis entitled, ***"FINANCIAL PROFITABILITY AND RESOURCE USE EFFICIENCY OF BEEF FATTENING IN SOME SELECTED AREAS OF BANGLADEH"*** *submitted to the faculty of Agribusiness Management, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of* ***MASTER OF SCIENCE IN AGRICULTURAL ECONOMICS,*** *embodies the result of a piece of bona fide research work carried out by* ***HUSSAIN AHMED****, Registration No* ***14-05881*** *under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.*

I further certify that such help or source of information, as has been availed of during the course of this investigation has duly been acknowledged.

Dr. Monoj Kumar Majumder
Associate Professor
Dept. of Agricultural Economics
Sher-e-Bangla Agricultural University
Supervisor

Dedicated to My

Beloved Parents

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SAU, Dhaka

ABSTRACT

The present study was designed to measure the financial profitability of beef fattening farmers and to estimate the resource use efficiency of beef fattening production in some selected areas of Jhenidah district in Bangladesh. Primary data were collected from 50 farmers in two upazilas of Jhenidah district following random sampling method. Both tabular and statistical analyses were applied in this study. The major findings of the study revealed that beef fattening was profitable. Total cost of production was Tk. 1,41,558.9 per cow. Gross returns was Tk. 1,73,797.7 and net returns was Tk. 32,238.8. Benefit Cost Ratio (BCR) was found to be 1.23. Production function analysis suggested that, among the variables included in the model, feed cost had negative and significant effect, purchasing cost of calf and medicine and vaccination cost had a positive and significant effect on profitability. On the other hand, electricity cost had negative and insignificant effect , water cost and labour cost had positive but insignificant effect on the gross return of beef fattening production. This study also identified some of the problems and constraints associated with beef fattening production. High price of feed was the main problem of beef fattening. The problems and constraints, of course, are interrelated with one another and hence, need to be removed comprehensively through an integrated programme for the overall development of beef fattening.

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ABBREVIATIONS AND ACRONYMS

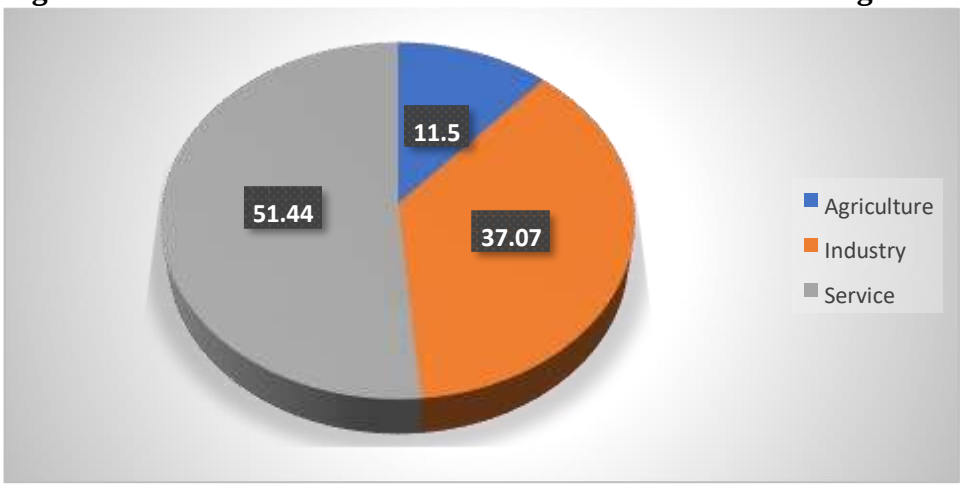
BBS	Bangladesh Bureau of Statistic
BCRC	Beef Cattle Research Council
BCR	Benefit Cost Ratio
BER	Bangladesh Economic Review
DLS	Department of Livestock
et al.	and others (at elli)
GDP	Gross Domestic Product
GNP	Gross National Product
GR	Gross Return
HSC	Higher Secondary Certificate
MFC	Marginal Factor Cost
MPP	Marginal Physical Product
MVP	Marginal Value Product
NGOs	Non Government Organizations
TC	Total Cost
TFC	Total Fixed Cost
TVC	Total Variable Cost

CHAPTER-1
INTRODUCTION

1.1 Background

Bangladesh is mainly an agriculture dependent country. Among three sectors, the role of agriculture to country's GDP is 11.50% (BER, 2022). Bangladesh has over 167 million population and has a land area of 1,47,570 sq. km. Bangladesh ranks number eight position for the most populous country in the world. It is heavily dependent on agriculture, particularly in the livestock industry. Agriculture is the economy's largest single producer, accounting for around 11.50% of GDP (BER, 2022) . Crop production, forestry and livestock are the three main industries in the agricultural sector. The non-agricultural sector, notably the industrial sector, is built on the foundation of the agricultural sector. The increase of the agricultural sector also has an impact on food security, employment opportunities and the elimination of rural poverty. Raw resources for industry are provided by the agricultural sector, which also effectively drives demand for industrial goods. Likewise, it is crucial to the expansion and stability of her economy as seen by its significant contribution to GDP, creation of jobs, and export revenue. A significant source of foreign exchange is come from the agriculture sector, which produces agricultural and raw goods for export. It is very significant because it is connected to the rest of the economy.

Figure-1.1 The contribution of different sectors in GDP in Bangladesh



Source: BER (2022)

From this chart we can see that the contribution of agriculture to nation's GDP is 11.50 percent. But it is a matter of concern that this percentage is declining as comparing with previous years. Despite the fact that the production of the agricultural sector is rising regularly, the contribution of agriculture's GDP to the country's economy is steadily declining. In 2016 the agriculture performed 14.06 percent of the GDP, but in 2022 it only contributes 11.50 percent. It demonstrates the declining contribution of GDP to the agricultural sector to the overall economy.

Table 1.1 The contribution of agriculture in GDP

Year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
GDP %	14.06	13.62	13.14	12.56	12.52	12.07	11.50

Source: BER (2022)

For Bangladesh's agriculture and overall economy, the beef fattening is very important. As a key provider of agricultural power services, employment opportunities, and a source of meat protein, livestock is an essential part of Bangladesh's complex farming system. This industry needs to be revived with the right technologies in order to provide more beef production to meet up with the demand. Through the past few years, the production of meat (beef, mutton, and chicken) was increased. As a result, there is more animal protein for the increasing production. Table 1.2 provides an overview of the production of meat from FY2012–13 to FY2021–22.

Table 1.2 Meat production in Bangladesh (Lakh Metric Tons)

Fiscal year	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Meat	36.20	45.20	58.62	61.25	71.54	72.60	62.78	84.40	92.76	92.65

Source: BBS (2022)

1.2 Nutritional value of beef

Human's important food is beef, which is also considered a very nutrient-dense natural food in terms of what the body requires. Similar to that, it offers a variety of nutrients in sufficient proportions for the development and growth of the human body. Almost every nation in world engages in beef production and has a development strategy or policy that shows how important beef is to a healthy diet.

Table 1.3 Nutritional value of beef (In every 100 gm cooked beef)

Items	Quantity
Calories	250
Protein	35 gm.
Fat	10 gm.
Phosphorus	200 mg.
Sodium	55 mg.
Magnesium	25 mg
Potasium	300 mg.

Source: Beef cattle research council (2022)

1.3 Importance of beef fattening

Beef fattening plays an important role in our country. Many people run their livelihood through beef fattening. Moreover; it is an important source of food in our country. It is also an important source of protein. Cattle fattening plays many significant role. For example: (i) It improves food security, (ii) It helps households for employment, generation of income and a store of value, (iii) It creates opportunity for investment, (iv) Draught power and manure is provided by it for sustainable agriculture, and (iv) Some cultural roles are also fulfilled by cattle. High-protein food is very popular in the country and the demand for it's is high. Cattle fattening helps to meet this high demand. The expanding urban population's appetite for ruminant meat creates chances for animal fattening as well as expands markets. Animal fattening is a very lucrative business that gives farmers a premium return.

1.4 Prospects of beef fattening in Bangladesh

Livestock industry plays very important role in agricultural economics, management of production, employment of large number of people, reduction of poverty and provision of the protein of animal. However, the government did not give proper emphasize on this sector, which hindered the development. The sector's contribution

to the nation's overall production is declining daily, which is unexpected. It indicates the high demand for the food which is produced domestically and it also indicates the industry's bright future.

Millions of Bangladeshis could escape poverty by engaging in beef fattening farming. Beef is one of the animal products with the highest nutritional content. It includes all necessary elements. These factors have led to the development of the beef fattening industry becoming of utmost significance in Bangladesh's rural economy. This sector must be upgraded and developed.

Table 1.4 Availability, demand and production of meat

Products	Availability	Demand	Production
Meat	147.84 (gm/day/head)	72.50 lakh Metric Ton (120 gm/day/head)	92.65 Lakh Metric Ton

Source: BBS (2022)

1.5 Objectives of the study

a) To identify the socio economic characters of beef fattening farmers.

b) To calculate the profitability of beef fattening in the selected areas.

c) To estimate financial efficiency of beef fattening.

d) To identify problems and probable solutions of beef fattening.

1.6. Justification of the study

The major focus of the current study is to determine the finamcial profitability level and business potentiality of beef fattening farming in the Jhenidah district. There are now a surprisingly large number off-farms which are operating in this region. It will consequently boost jobs and local production. It also shows farmers with the opportunity to make additional income. The majority of food supplying authorities think that raising animals will be important in the future. In order to generate a significant amount of foreign currency for Bangladesh's expanding population, beef fattening farming needs to be given attention. The industry was underappreciated. The primary goal of food security cannot be achieved without any effort to develop it. It

should be more productive as soon as possible, just like every other sector of tropical agriculture.

1.7 Organization of the thesis

This thesis is consisted of total eight chapters. These chapters have been organized by maintaining a sequence. The sequence is described below. Chapter 2 presents the review of literature. Methodology for the study is presented in Chapter 3. Chapter 4 includes the socio-demographic profile of beef fattening farmers. Chapter 5 describes profitability analysis of beef fattening. Chapter 6 presents the resource use efficiency of beef fattening. Chapter 7 presents problems and constrains of beef fattening. Summary, conclusion and recommendations are presented by chapter 8. References is given in the last.

. CHAPTER-2

REVIEW OF THE LITERATURE

The primary goal of this chapter is to review several similar research to the current investigation. So far, only a few research on the financial profitability and resource use efficiency of beef fattening in Bangladesh have been undertaken. Furthermore, while some of these studies may not be completely applicable to contemporary research, their results, technique of analysis, and recommendations have a substantial influence on current research. The next section provides a review of some of the previous research initiatives relevant to the current study.

Hossain *et al.* (1996) carried out an experiment to evaluate the rural beef fattening case using conventional practices for the use of feeding. He found that farmers employ traditional rice straw, green grass, sugarcane tops, wheat and locally available resources such as pumpkin, carrot, banana, vegetable by products for beef fattening.

Grant *et al.* (1990) conducted an experiment in which three rumen cannulated Holstein dairy cows housed in free stalls (with 0.7% slope) which were fed three total mixed meals that differed in silage particle size. They discovered that the most rumination activity occurred at night.

Hicks *et al.* (1989) conducted an experiment in which 93 crossbred yearling steers were examined every 30 minutes for 24 hours on day 40 of a 138-day feeding trial. Steers spend 6.6 percent of their time eating, 15.5 percent ruminating, and 54.4% lying. Peak eating times were at 06.50 h (47.3% of steers eating) and 17.00 h (times of fresh feed addition), with another modest peak at 21.00 h (17.9% eating). During the day, ruminating and lying peaked at times opposite to eating. Individual steers with the longest eating periods also had the longest rumination and lying periods. Steers who spent more time eating and ruminating acquired weight at a somewhat faster rate. For every 1% increase in laying time, daily gains increased by 0.02 Ib. The findings imply that the frequency of eating, ruminating, and lying is connected to animal performance.

Ozbeyaz *et al.* (1997) studied on Ten Brangus Jersey (F1), 21 Simmental Jersey (F1) and 28 Limousin Jersey (F1) crossbred at a state farm in Turkey. For the three

crossbred type respectively, overall daily weight gain during the 510 day fattening period averaged 0.64, 0.59 and 0.54kg for males and 0.53, 0.54 and 0.54 kg for females. For both sexes there were no significant differences between breed types in respect of daily weight gain. Brangus crossbred males had gained about 39.6 kg more live weight than Limousin crossbred at the end of the fattening period, but difference was not significant. Brangus crossbred males were 64 kg and Limousin crossbreds were 24.4 kg heavier than Simmental crossbreds; these differences were significant. For groups of 4 Brangus Jersey, Simmental Jersey and Limousin Jersey bulls slaughtered at 457.5, 436.8 and 450.7 kg respectively. Dressing percentage averaged 58.0, 56. 1 and 58.2, skin weight 36.5, 37.8 and 39.3 kg bone percentage 16.0, 16.2 and 15.9 and rib-eye area 86.3, 96.4 95.6 cm.

Manurung and Zulbardi (1996) led an research to assess the effect of urea molasses treatment on rice straw quality. Five levels of urea (0, 0.5, 1, 1.5, and 3%) and four levels of molasses (0, 1, 2, and 3%) were combined with 5 kg chopped rice straw and stored in plastic bags for 21 days. The results showed that treating rice straw with urea and molasses lowered the dry matter and silica concentrations while increasing the crude protein content (P 0.01). The digestibility of dry matter and organic matter was not considerably changed by urea treatment but was significantly boosted by molasses treatment.

Acorda *et al.* (1992) fermented rice straw with different combinations of NaOH, soybean meal (S), 5% urea (U), 10% molasses (M), and 30% cage layer manure (CLM) in double layer polyethelene bags for 45 and 90 days. They also discovered that rice straw plus S+U, S+U+M, CLM, M+CLM, S+U+CLM, and S+U+CLM+M had higher crude protein amounts than other mixes. All of the mixes exhibited higher digestible organic content in dry matter than rice straw alone.

Barnah *et al.* (1992) studied the effect of urea and molasses treatment on the chemical composition and nutritional content of paddy straw in crossbred calves. 12 male crossbred calves 6-7 months old with an average live weight of 42 kg were fed ad libitum diets including untreated or 2:5, 3:7.5, and 4:10 urea molasses treated rice straw (groups A and D, respectively). They also observed that the intake of dry matter was

increased (P 0.05) in group D. Digestibility of dry matter, organic matter, crude protein, ether extract, crude fibre and nitrogen free extract was higher (P 0.01) in group D compared with group A. Digestible crude protein content of 4% urea and molasses treated rice straw increased from 0 to 5.11% and total digestible nutrients increased from 40.16 to 54.43%.

Su *et al.* (1984) used molasses and urea to study body weight change in beef cattle. 30 Charolais Chinese Yellow cattle aged 17-19 months were divided into five groups and fed a low energy, low protein diet without or with urea 0.06 and molasses 0.5, 1.0, 1.5, or 2.0 kg head per day. The average total body weight gain was 32.3, 36.0, 37.2, and 37.5 kg, respectively. The fourth group, which gained 39 kg per day at 1.96 kg concentrates, 1.5 kg molasses, and 0.1-0.2% body weight, was adequate.

Ahmed and Dolberg (1979) found that animals could be fed treated straw for maintenance and consumed 4 to 6 kg straw per day. They also stated that soaking straw in water resulted in a small increase in digestibility and addition 10% molasses and 2% urea by weight with straw ration in feeding time is sufficient to meet the animal's maintenance requirements.

Tareque (1985) found that rice straw performs approximately 23.57 million tons (81%) of the total 29.1 million tons roughages which was available for the ruminants in Bangladesh, while green grasses contribute only 1.6 million tons.

Ahmed (1992) conducted a research on dependence of farmers on livestock for their survival. He discovered that landless and marginal farmers rely heavily on livestock for their survival, and livestock is critical to their earnings and livelihood.

Colpan *et al.* (1995) reported that male Limousin Jersey beef cattle, from 12 to 18 months old in two groups of 6 each were feed on a diet containing 80% concentrates and roughages containing of 85% sugar beet pulp and 15% wheat straw and that diet supplemented with 1.5% zeolite. Average live weight at the end of feeding was 333.25 and 354.80 kg, respectively and average daily gain 1132 and 1246 g. The cattle took 7.860 and 7.418kg DM/kg gain. At slaughter, average cold carcass weight and average weight of meat in the carcass were 188.60 and 148.23 and 204.20 and 161.00 kg, respectively. The average hot and cold dressing percentage was 56. 71 and 55.54 and

56.54 and 55.39. It is concluded that 1.5% zeolite had a favourable effect on performance and carcass quality of beef cattle.

Daniel *et al.* (1986) carried out an experiment with crossbred calves fed on urea molasses liquid diet, six Holstein Friesian Hariana calves, 8-12 months of age were given a conventional ration (CR). A similar group was given to appetite for 150 days urea 2.5, molasses 9.2, minerals 3 and water 2.5% then CR to day 306 and final 1.5 times CR to day 336. The control group was given 2 kg green sorghum and wheat straw to appetite where the second group got straw 0.8 kg live weight. The animals were weighed initially and at 150, 306 and 336 days. Daily weight gains for the three periods were 458, 651 and 608 g, 102, 679 and 983 g in control and second group, respectively. It was concluded that younger calves fed on urea molasses had a much lower growth rate than older ones.

Lozand *et al.* (1987) carried out an experiment for 70 days with Hereford Aberdeen, Angus Zebu steers weighing initially about 274 kg in a 2 randomized block factorial experiment. Taking 3 replications each of two steers were given diet of molasses and urea with sunflower meal or cottonseed meal. Average daily gains were 1.015, 0.980, 0.0884 and 1.060 kg with the four treatments respectively.

Budmaska and Kalinka (1994) conducted a feeding trial, Black pied bulls over 6 months old in 4 groups were fed on a basal diet plus maize silage and concentrates. The diets are supplemented with 2.5% urea, the basal diet plus UMS or ACMS, or maize silage that was mixed with ammonia carbonate 10 kg/t just before feeding. Average daily live weight gain was 713, 726, 748 and 807 g respectively. The trial was repeated on young bulls of initial live weight 167 to 173 kg. Average daily live weight was 728, 781 and 802 g. Bulls took 7.5, 6.9, 6.8 and 6.7 feed units/ kg gain. At controlled slaughter, killing-out percentage was 50.4, 51.6, 53.0 and 53.3, carcass yield was 49.9, 50.7, 52.0 and 52.2% and yield of lean was 76.9, 78.0, 77.4 and 78.7%.

Alam (1995) found that cattle in Bangladesh are inseparable and integrated part of agricultural farming system, ranking 12th in the world and 3rd in the Asian countries. He also found that in 1990, the production of beef per animal was 80 kg in India, 185 kg in Pakistan, 240 kg in Indonesia, 109 kg in China, 232 kg in Austria, 178 kg in New

Zealand, 247 kg in Denmark, 284 kg in U.K. and 297 kg in U.S.A. Whereas the production of beef per animal was 62 kg in Bangladesh.

Nogaski and Kijak (1998) compared fattening performance from 181 to 540 days of age of 27 Polish Black and White and 20 Limousin Polish Black and White heifers and bulls. Crossbred bulls and heifers were heavier at 540 days of age and had greater daily gains than the respective purebreds (P 0.01). Feed conversion efficiency was also greater for crossbreds than purebreds (P 0.05). Crossbreds had a lower percentage of internal fat in the carcass and a greater longissimus dorsi muscle area than purebreds (P 0.01). The purebreds had a lower dressing percentage than the crossbreds (P 0.01). Jorge et al. (1998) found from 36 months of age, 36 Gir, Guzera, Tabapua and Nelore bulls, with an initial body weight of 357.6, 362.0, 369.6 and 376.4 kg respectively, were finished in a feedlot on a diet containing concentrates. Bulls were slaughtered at a body weight of 405, 450 or 500 kg. There were no significant differences among the bulls with the three slaughter weights in daily gain or carcass daily gain, but bull slaughtered at 500 kg had a significantly longer period in the feedlot and a lower efficiency of gain than bulls slaughtered at lower weight.

CHAPTER-3

METHODOLOGY

3.1 Introduction

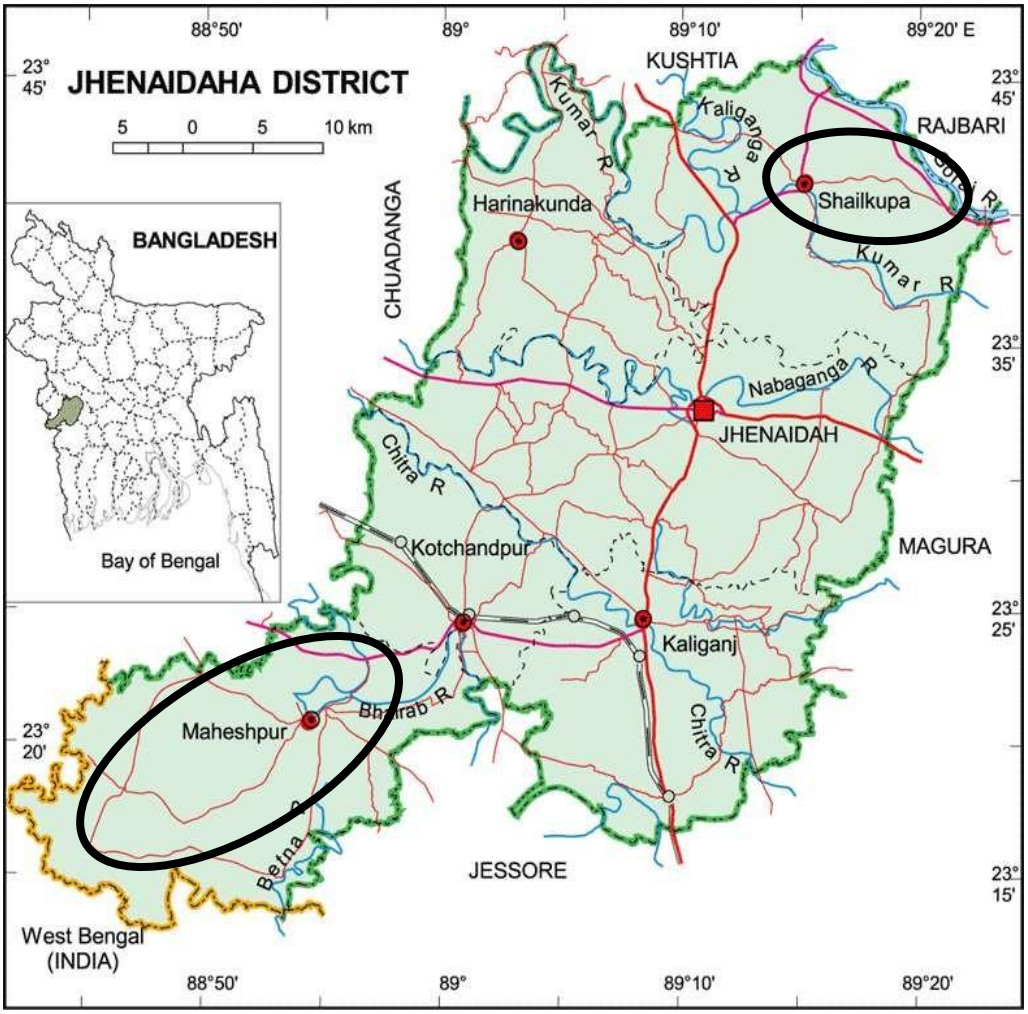
Methodology is an essential and significant component of any study. The creation of a proper result of the study is heavily depends on the methodology. Lack of perfect methodology frequently yields misleading results. As a result, an author must take careful considerations in order to carry out the study in a scientific and logical manner. The author bears a great deal of responsibility for clearly describing the methods and procedures which are used in selecting study areas, sources of data, analysis, and interpretations in order to reach a proper conclusion. Methodology is basically methods of collecting primary data from specific areas of Bangladesh in order to estimate financial profitability and resource use efficiency of beef fattening. This chapter introduces the methodological framework, which is divided into three main sections. The sampling process, sample frame, sample size, and survey design are all described in the first part. The method of data collection, official and informal surveys, and primary and secondary data were all described in the second section. The third section provides a detailed explanation of data analysis methodologies.

3.2 Description of the study area

3.2.1 Location

The sample farmers were chosen from two areas in the Jhenidah district. They are Mahespur and Shailkupa. These two areas are found between 25 and 35 kilometers from the district headquarters. The upazilas locations are shown in figure 3.1 in the Jhenidah district.

Figure 3.1 A map showing the study areas



3.2.2 Area and population

The area and population of Mahespur upazila and Shailkupa upazila is shown in Table 3.1. The highest population (419.53 per sq.km) is in Mahespur. Then the smaller population (373.42 per sq.km) is found in Shailkupa.

Table 3.1 Area and population of the study areas

Upazila	Area (sq.km)	Population	Male (%)	Female (%)
Mahespur	419.53	3,32,514	50.01	49.99
Shailkupa	373.42	36,1648	49.99	50.01

Source: BBS (2021)

3.2.3 Educational and occupational Status

Literacy rate and educational institutions:

Average literacy rate is 72.7% (BBS,2022). There are many educational institutions. The district has many colleges, secondary schools, primary schools. Among colleges, Government KC college is very popular. Many students get chance in renowed universities of the country from this college in every year. 1 Polytechnic institute is found in the district. The Polytechnic institute is also renowned. Recently a veterinary college is established in the district which is helping to create veterinary doctors in the country. The overall educational facilities is good in the district.

Main sources of income:

A large number of people mainly depends on agriculture for income. After agriculture, people depends on business for their income generation. The amount of non-agricultural labour is very low. People here works very hard for their income generation. A few amount of industries is noticed here. The amount of rent remitence is very low. People also do some others activities for their income generation.

3.2.4 Transport, communication and marketing facilities

Transportation and communication are essential for the improvement of a country. Several research sites are well linked to various parts of the country. The network of local road enables locals to sell agricultural products and other products in nearby and distant markets. The roads in the research areas are paved, but others are muddy. Farmers frequently do not cheat as they get good prices for their products. This becomes possible because they have good connections with the different markets. Area routes include rickshaws, pickup trucks, bulldozers, trucks, cars, and boats. Many hats are found which are held more than one day a week. Local bazars are also found in every morning and in afternoon.

3.3 Sampling procedure

It is not possible to take data from a total population in an empirical study. As a result, researchers are frequently bound to draw conclusions based on data which was collected by him from a representative sample of the population. The quantity and quality of information obtained from the survey are usually affected by the sample size

and the amount of variation. Both factors can be controlled with appropriate sampling methods (Scheaffer, 1979). The goal is to create a sampling scheme that is cost-effective, simple to implement, and yields with unbiased estimates with low variance (Barnett, 1991). The following section discusses the main properties of the sampling theory which was used for this study.

3.3.1 Sampling method

Because of the limitations of covering the entire population, smaple is selected from the population and it can be use in eccmomics. It can also be used in marketing. It can used in other discipline also (Barnett, 1991; Kinnear and Taylor, 1987). The authors believe that the main obstacle to conduct an entire population interview is cost. Given financial, time, effort, and constraints of management of data, a researcher can use sample as a more effective method. They contend that sampling saves more money and it also saves time. Moreover, more accurate results is produced by sampling compared to a census. Because a census requires more manpower to complete the work, and there also requires supervision of staff and management of various issues. Sampling theory allows for costeffectiveness while producing the acceptance of the results (Casley and Kumar, 1988; Kinnear and Taylor, 1987).

3.3.2 Defining the population

The initial step for making the sampling process is identification of the people, which includes the category or the feature. The category or the feature includes some things. Either it can be under investigation, either it can be the sample unit, either it can be the location and either it can be the level of investigation (Kinnear and Taylor, 1987). Beef fattening was the subject of the investigation. Farmers of Jhenidah district provided the sample units.

3.3.3 Sample size

The first question that often arises in a sample survey is "how large the sample should be?" Casley and Kumar (1988) and Kinnear and Tayler (1987) proposed that if a researcher takes a proper survey sample, then he will facc a small sampling error as well as a small standard error. If you have unlimited resources, you can get this. However, given obstacles such as finance, time, management of data, considerations

in sample size selection must be made. In general, if the sample size is larger, then the reliability will be higher and the error will be lower and the confidence will be greater that the findings reflect the characteristics of the entire population**.**

However, due to time limitation and money problems, the researcher is forced to choose between optimum and acceptable levels of confidence and same things also happens for reliability and error. Simple sample size guidelines was introduced by Poate and Daplyn (1993) were used to select a representative sample size of beef fattening farmers. A total of 50 farmers were chosen for samples for this study**.**

3.3.4 Preparation of survey schedule

It is essential to create a draft survey schedule and test it in the areas where the survey is conducted. The researcher pre-tested two draft survey schedules. The draft survey had a score of 3.5. Preparation of a survey schedule was carried out in selected areas among 5 beef fattening farmers and 5 intermediaries. Following the pre-test, the questionnaire was rearranged, it also improved and it also modified based on field experience, and it was ready for the final survey. The final interview schedule was developed following pre-testing, correction, and modification. Semi-structured questionnaires were very useful to collect data from beef fattening farmers and these data was primary data. The respondents were faced questions in a straightforward and friendly manner where explanations were provided where necessary. In this case, unambiguous questions were avoided.

3.3.5 Preparation of the questionnaire

A questionnaire is an essential component of the research.When the pre test is done, questionnaire's information is improved by the researcher and it is also updated by the researcher, and then the researcher asked selected respondents to answer the questions. The study's objectives guided the development of all of the questions. To obtain an accurate response from the respondent, the researcher carefully designed the questionnaire in Bangla.

3.3.6 Collection of data

Data collection is a difficult work. It must be done honestly because a effective research is dependent on accurate data. Data collection is basically done by a structured

questionnaire, and face-to-face interviews were conducted. Paper and pencil were used for this interviews. By establishing the survey schedule, field level primary data were collected from meatier where direct interview was conducted. Prior the starting of the study, a brief explanation was given to the farmers about its purpose. Respondents were ensured that the information they provided would be kept secret. During the interview period, data were recorded and information was carefully checked. Respondents were asked to provide as much accurate data as they could provide.

3.4 Processing, editing and tabulation of data

The collected data was analyzed and it was also verified. This were done due to compliance and completeness. Before entering data into a computer, editing and coding are performed. To eliminate any potential errors, the data which was collected was summarized and it was also reviewed with great care. It was simple, it was used widely, and it was also simple to understand. For this reason, data was presented in the form of a table. Furthermore, performance analysis was used to a lesser amount so that we could achieve the desired results. Data was entered into a computer and analyzed using the appropriate Microsoft Excel software. This software was very helpful for data computation.

3.5 Analytical techniques

Data were analyzed in order to meet the study's objectives. In the current study, diffeent analytical methods were used. A portion of the data which was significanat was analyzed using the tabular method. This technique is widely used because of its perfect ability to present the most basic picture of the economy of the farm. Some mathematical techniques such as percentage, arithmetic mean and average were used so that we could analyze the data and we could describe the socioeconomic chaaraecters also.These mathematical techniques were also used to calculate cost and return and to calculate undiscounted benefit cost ratio in the selected areas. Cobb-Douglas production function model were used in order to estimate the profitability and resource use efficiency of beef fattening which is related to a theory and the theory name is production fuction theory.

3.6 Economic profitability analysis

The beef fattening's net economic returns were calculated using a set of financial prices. During the study period, the financial prices were the market prices which were provided by the farmers for output. They paid these prices for purchasing input items. The following cost items were identified for the study:

- Land rent
- Labor cost
- Feed cost
- Medicine and vaccination cost
- Electricity cost
- Water cost
- Maintenance and repairment
- Interest
- Purchasing price of calf

Profit = Total Returns – Total Cost

Profits from cow are determined based on the number of main products and by product (cowdung). In this study, we can see variable costs, fixed costs and total costs. Total variable costs (TVC) included feed cost, medicine and vaccination cost, electricity cost, water cost. Fixed costs (FC) included the rental amount of land, maintenance and repairment, permanent labour, family labour, purchasing price of calf, interest. Total Cost (TC) included total variable costs and fixed costs.

3.7 Cobb-Douglas production function

The cobb duouglas production function model is very popular all over the world. It represents the technical relationship between the output and the input elements. C.W. Cobb and P.H. Douglas applied this work in the American manufacturing industry so that they could measure labor production and finance. After some times this production

function becam very popular all over the world for agricultural sector such as livestock, crop.

Cob and Douglas invented a form which was

$$\mathbf{Q = aL^{\beta}K^{1-\beta}U} \quad (3.1)$$

This forces the expansion amount to one. Their later conversion was

$$\mathbf{Q = aL^{\alpha}K^{\beta}U} \quad (3.2)$$

Where, **α+β** it does not have to be equal to one. This method of operation has not been used in agriculture in its original form.

Cobb-Douglas production work, in its stochastic form, can be described as

$$Yi = \beta 1\ X2\beta i2X3\beta i3\ eui \quad (3.3)$$

There, Y = output

X2 = labor input X3 = capital input u = the name of the stochastic disorder, e = the basis of the natural logarithm.

From Eq. (3.3) it is clear that the relationship between the output and that of both inputs is not linear. However, if we change this model, we get:

$$\ln Y_i = \ln\beta_1 + \beta_2 \ln X_{2i} + \beta_3 \ln X_{3i} + u_i$$

$$= \beta_0 + \beta_2 \ln X_{2i} + \beta_3 \ln X_{3i} + u_i \quad (3.4)$$

Where, $\beta_0 = \ln\beta_1$.

Here we can see, the model is linear in parameters β0, β2, and β3 and a vertical line model is also found for the model.

There is also a flexible log-linear model:

$$\ln Y_i = \beta_0 + \beta_2 \ln X_{2i} + \beta_3 \ln X_{3i} + \ldots\ldots + \beta_k \ln X_{ki} + u_i \quad (3.5)$$

3.7.1 Specification of the Cobb-Douglas production function

The Cobb-Douglas production method was used to examine the input-output relationship in beef fattening farming. The following model specifications were used to determine the perfomance of the most significant changes in beef fattening production.

$$Y = aX_1^{b_1}X_2^{b_2}X_3^{b_3}X_4^{b_4}X_5^{b_5}X_6^{b_6}e^{u_i} \quad (3.6)$$

The Cobb-Douglas production function was converted into the next logarithmic form.

Where, Y = Total annual Return (Tk / ha);

X_1 = Labour cost (Tk);

X_2 = Purchasing cost of calf (Tk);

X_3 = Feed Cost (Tk);

X_4 = Water Cost (Tk);

X_5 = Electricity costCost (Tk);

X_6 = Medicine and vaccination cost (Tk);

a = Disconnect; b_1 … .b_6 = Coefficient of

corresponding fluctuations;

Ui = Error Time;

i = 1, 2, …… .6.

3.8 Measurement of resource use efficiency

For measuring the resource use efficieny, the ratio of MVP to MFC is required. Firsly, geometric mean of dependent variable is calculated. After that, geometric mean of every individual independent variables are calculated. By dividing the geometric mean of independent variable to the geometric mean of dependent variable, we will find a result. Whenever this result is multiplied by coefficient, we will get MVP and MFC is considered as 1. Thus, we will get the ratio of MVP to MFC.

In this study the MPP and the corresponding values of MVP were obtained as follows:

$$MPPxi*Pyi = MFC \quad (3.7)$$

Where, MPPxi *Pyi = MVP,

$$But, MPP = bi*(Y/Xi) \quad (3.8)$$

$$So, MVP = bi* (Y/Xi) Pyi \quad (3.9)$$

Where, bi = regression coefficient per resource

Y = Mean output

Xi = Mean value of inputs

Pyi = price of output

MFC = price per unit of input.

Decision Criteria: The decision criteria for choosing efficiency will be-

- If the ratio of MVP to MFC is equal to unity, then we can say that the resource is efficiently utilized.
- If the ratio of MVP to MFC is greater than one, then we can say that the resource is underutilized.
- If the ratio of MVP to MFC is less than one, then we can say that the resource is overutilized.

CHAPTER-4

SOCIO-DEMOGRAPHIC PROFILE OF BEEF FATTENING FARMERS

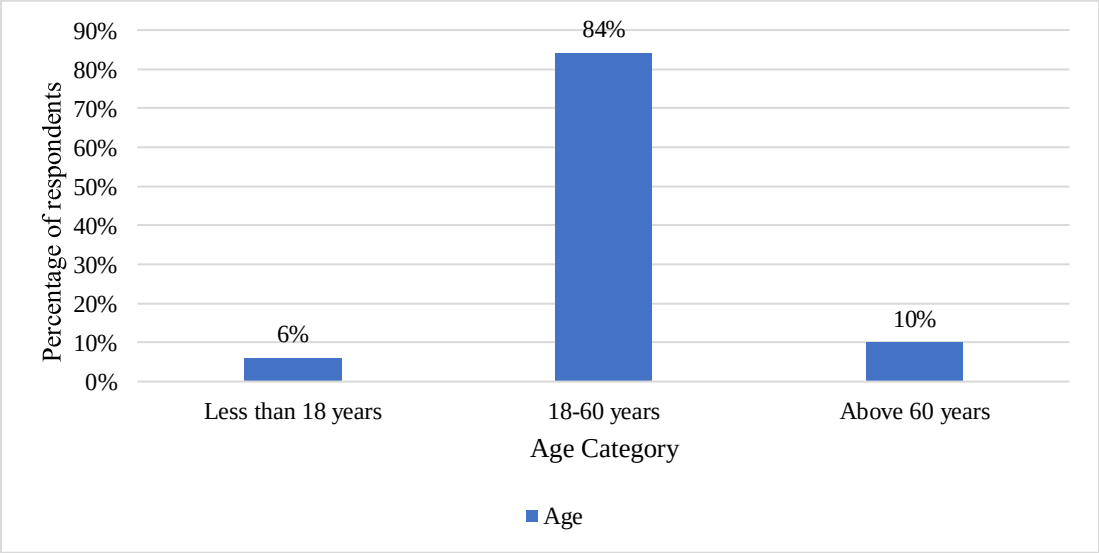
4.1 Introduction

In this chapter, we will discuss about the socio economic charecters of the farmers. Farmer's socioeconomic indicators are critical in production planning. People's lifestyle differ in a variety of ways. The quality of a person's life greatly influences his behavior. There are fundamental characteristics that reflect the individual and these fundamental charecteristics have huge role for developing his or her character and as well as personality also. For this reason, it was thought that the diverse qualities of different farm families would influence their business combination, mode of usage, buying pattern, and employment patterns. This study was conducted in the Jhenidah discrict. In the current study, 50% farmers were taken from Shailkupa upazila and another 50% farmers were taken from Mahespur upazila in the Jhenidah district.The socio-economic aspects of the sample families were determined in the final. This were family size, age of the farmers, occupation of the farmers, level of education of the farmers, family member's participation, land used etc. They are discussed below:

4.2 Age of the farmers

Figure 4.1 shows that 84% farmers were in the age between 18 to 60 years. This indicates that the middle age people engaged in beef fattening farming. 6% people were less than 18 years. The older people were not eager for this profession. 10% were avobe 60 years. The middle age people were very eager for this sector.

Figure 4.1 Age of the farmers

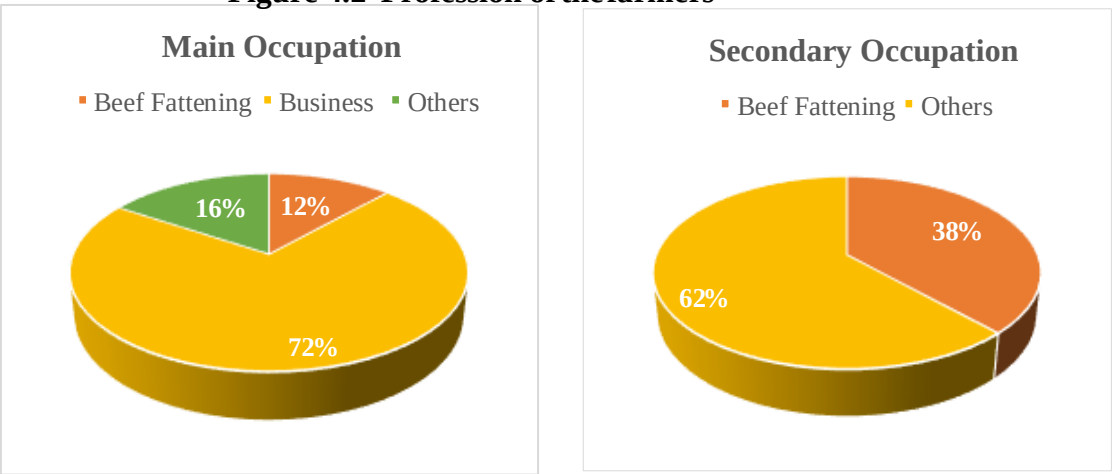


Source: Field survey, 2022

4.3 Profession of the farmers

Among the respondents, we can see that 72% respondent's main occupation was business and only 12% respondents main profession was beef fattening. Some farmers preferred beef fattening as secondary profession (38%). Most of the people did beef fattening as side business. This sectors required less time. So most of the farmers took it as a secondary occupation.

Figure 4.2 Profession of the farmers

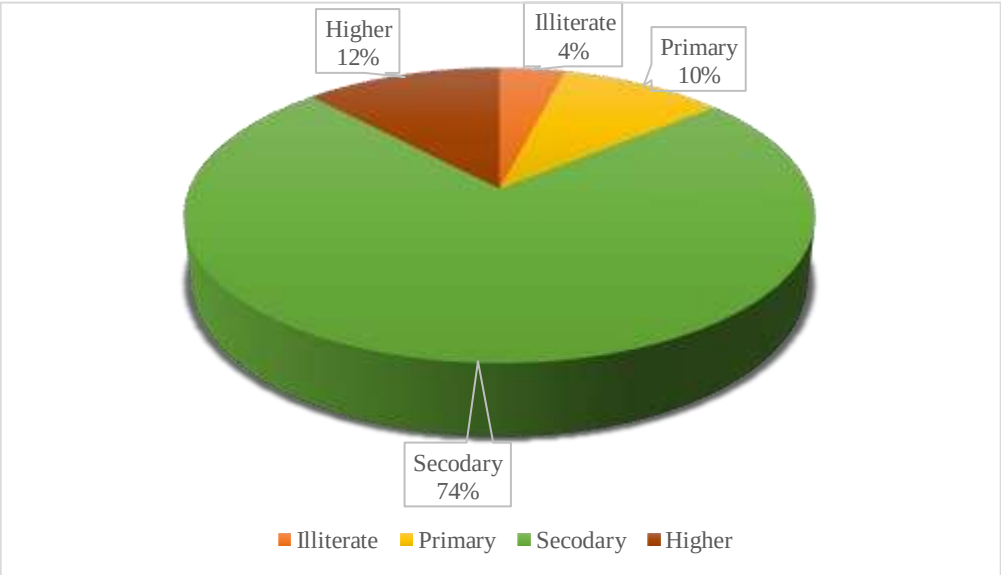


Source: Field Survey, 2022

4.4 Education of the farmers

Most of the farmers were in the secondary education. Moreover, a few farmers were in primary level. The amount of illiterate farmers were very small. A small amount of farmers were higher educated. As maximum farmers were in secondary education level, they could easily understand about training and they could take necessary steps for the improvement of beef fattening.

Figure 4.3 Education of the farmers



Source: Field survey, 2022

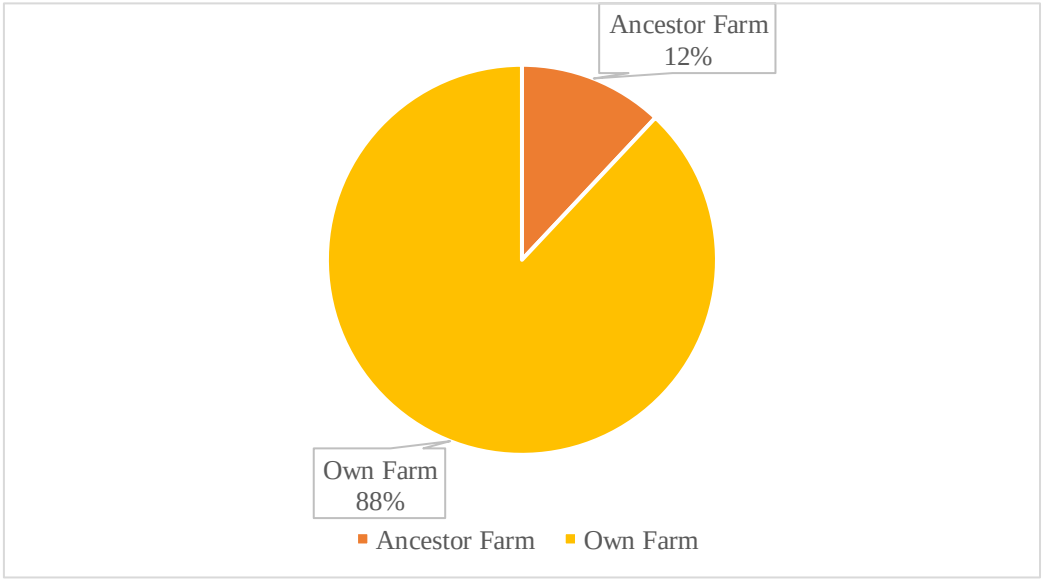
4.5 Family members engaged in beef fattening

Most of cases, farmers wife helped him for beef fattening. This percentage was 78%. In some cases farmers son, daughter also helped him for beef fattening consisting 22%. The family members played an important role for beef fattening. They helped a lot for beef fattening.

4.6 Type of farm

Most of the farmers farm had own firm (88%). Very few amount had ancestor firm(12%). Many farmers took loan during the starting of business. For this reason, most of the farmers had own firm.

Figure 4.4 Type of farm

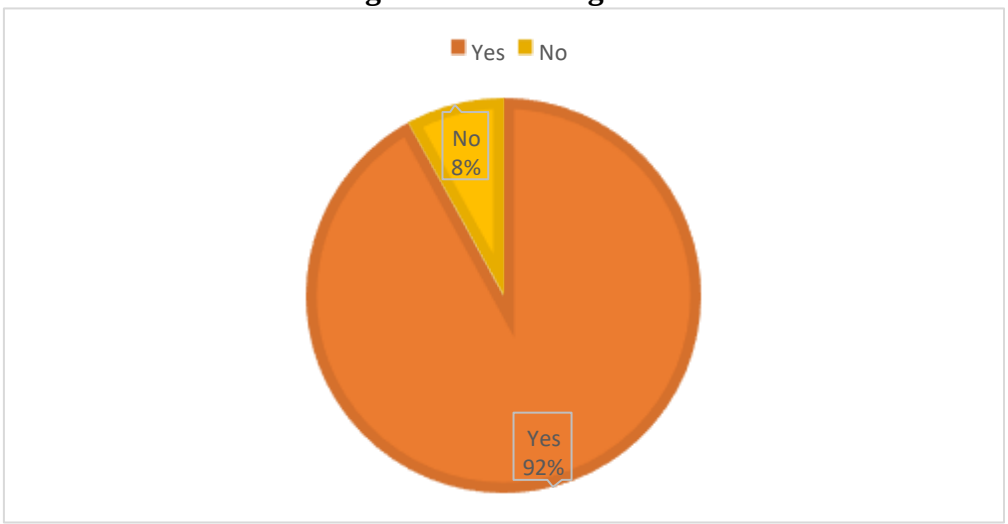


Source: Field survey, 2022

4.7 Training

Among the farm owners, 92% took training and rest 8% did not take training. The training was mainly provided by upazila livestock office and youth development organization. Upazila livestock office arranged training for 1 days. On the other hand, youth development organization arranged training for 7 days. The training was very effective for the farmers.

Figure 4.5 Training

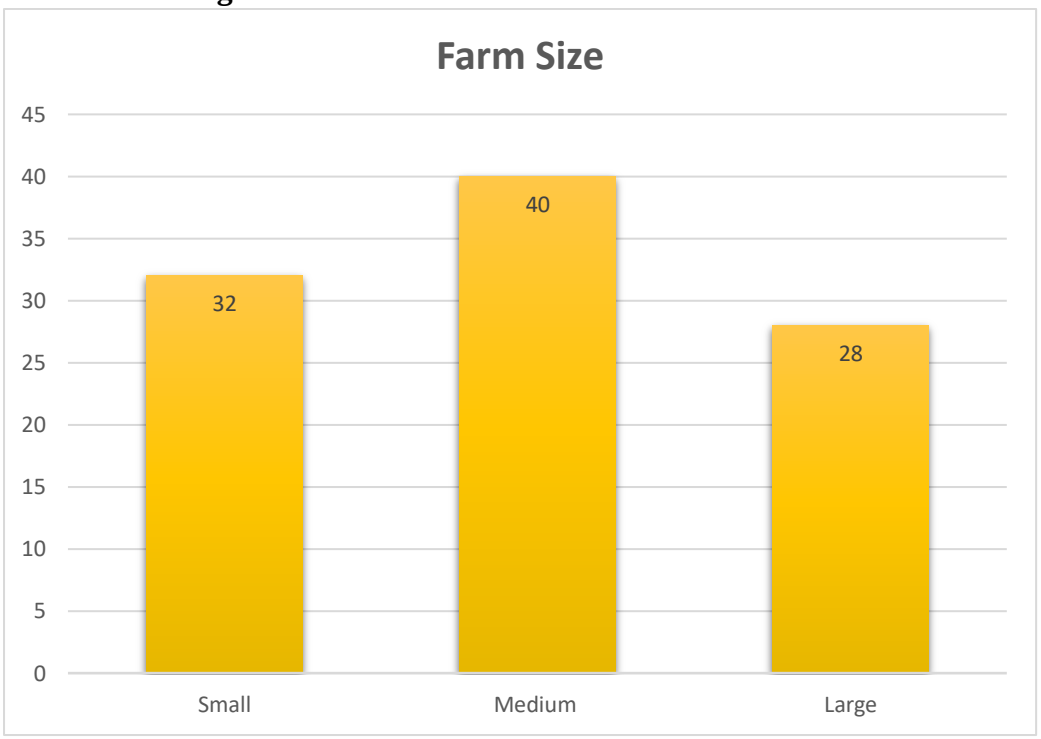


Source: Field survey, 2022

4.8 Farm size based on number of cow

Figure 4.6 revealed farm which consist of 6 to 8 cows, that's percentage was high which was 40%. Small farm (up to 5 cows) was 32%. The percentage of large firm (more than 8 cows) was 28%. The amount of medium farm was high. Average farm size in the study area was 7.

Figure 4.6 Farm sized based on number of cow



Source: Field survey, 2022

CHAPTER-5

PROFITABILITY OF BEEF FATTENING

5.1 Introduction

The primary goal of this chapter is to evaluate the costs, returns and profitability of beef fattening. Profitability is a very important consideration for making farm-level decisions about producing any input. It can be calculated using net return, gross margin, and the return-to-cost ratio. The costs of all items were added so that we could determine the total cost for production. Returns were found by getting the value of main products and the value of by-products.

5.2 Profitability of beef fattening

5.2.1 Variable Cost

5.2.1.1 Feed Cost

Feed covered a large portion of the total cost. Total feed cost was 48,623.96 taka per cow. The highest cost was incurred (Tk. 48623.97) which consist of 34.33% of the total cost (Table 5.1). Different cost for different feeds are given below:

Cost of Straw

Straw is an important feed for cow. The cost of straw was 9,003.12 taka per cow which occupied 6.36 percent of the total cost (Table 5.1). Farmers used straw very much in the selected areas. Straw was also available there.

Cost of green grass

Green grass is a popular feed for cow. The cost of green grass was 6,482.16 taka per cow which covered 4.58 percent of the total cost (Table 5.1).Farmers were very eager to use this feed for cow. Green grass was also available.

Cost of rice dust

Rice dust was mainly found by processing of rice. It was a costly feed for cow. Rice dust's cost was 2,437.92 taka per cow. It consisted of 1.72 percent of total cost (Table 5.1).

Cost of molasses

Molasses was a popular feed. It was also a processed feed. The cost of molasses was 228.08 taka per cow which covers 0.16 percent of the total cost **(**Table 5.1). Farmers fed a small amount of molasses in the study area.

Cost of oil cake

Oil cake was a costly feed. Oil cake's price was 50 taka per kg. Oil cake was an important feed for cow. The cost for it was 2,332.5 taka per cow. It covered 1.65 percent of total cost (Table 5.1).

Cost of wheat husk

Wheat husk was mainly found from processing of wheat. Farmers used wheat husk a significant amount for cow. Here, the total cost of wheat husk was 17,598.75 taka per cow. It carried 12.43 percent of total cost (Table 5.1)

Cost of pulse husk

Pulse husk is mainly found from processing of pulse crops. The cost was very high and it was 70 taka per kg. The cost for pulse husk was 2,130 taka per cow. The percentage of total cost of pulse husk was 1.50 (Table 5.1).

Cost of broken rice

Broken rice is mainly found from processing of rice. Cost was high. The cost was 1,479.6 taka per cow and it covered 1.04 percent of total cost (Table 5.1). Farmers fed less amount of it.

Cost of soya been meal

Soya bean was a very high price feed. The per kg price for soya bean meal was 80 taka. It's cost was 1,128.8 taka per cow which is 0.80 percent of the total cost (Table 5.1). Farmers fed less amount of soya bean meal.

Table 5.1 Cost and return from beef fattening (Per cow)

Items	Quantity	Price per unit (Tk.)	Amount (Tk.)	Percentage of total
A. Variable Cost				
Feed (Kg)				
Straw	643.08	14	9,003.12	6.36
Green Grass	1,620.54	4	6,482.16	4.58
Rice Dust	76.19	32	2,437.92	1.72
Molasses	10.37	22	228.08	0.16
Oil Cake	46.65	50	2,332.5	1.65
Wheat husk	319.98	55	17,598.75	12.43
Pulse husk	30.43	70	2,130	1.50
Broken rice	36.99	40	1,479.6	1.04
Soya bean mill	14.11	80	1,128.8	0.80
Silage	308.99	14	4,325.9	3.05
Readymade feed	28.13	50	1,406.5	0.99
Other's feed	2.83	25	70.63	0.05
Total Feed Cost			**48,623.96**	**34.33**
Medicine and vaccination				
Medicine			3,021.91	2.13
Doctor			176.19	0.12
Vaccine			1,002.86	0.71
Total Medical Cost			**4,200.96**	**2.96**
Electricity Cost (Per Unit)	166	4.14	687.24	0.48
Water Cost			289.44	0.20
Total Variable cost			**53,801.6**	**38.01**
B. Fixed cost				
Land rent			1,686.78	1.19
Maintenance and repairment			273.46	0.19
Interest			1,482.19	1.05
Permanent labour (Man-days)	44	60	2,640	1.86
Family labour (Man-days)	30	60	1,800	1.27
Purchasing price of calf	1	79,874.87	79,874.87	56.42
Total Fixed Cost			**87,757.3**	**61.99**
Total Cost			1,41,558.9	100.00
Return				
Selling price of cow			1,69,597.7 (207 kg)	97.58
By-product (Cowdung)			4200.00	2.42
Total Return			**1,73,797.7**	**100.00**

Source: Field survey, 2022

Cost of silage

Silage was a very popular feed. Price was not very high. Farmers used this feed very much. The cost for silage was 4,325.9 taka per cow which was 3.05 percent of the total cost (Table 5.1).

Cost of ready made feed

Ready made feed was costly feed. Farmers used less amount of this feed. The cost of it for per cow was 1,406.5 taka which carried 0.99 percent of the total cost (Table 5.1).

Cost of others

Others cost usually carried a less amount .The amount was 70.63 taka per cow. It carried 0.05 percent of total cost (Table 5.1).

5.2.1.2 Medicine and vaccination cost

Medical cost includes medicine cost, doctor cost and vaccination cost. Doctor took a fixed amount of money for every supervision. There was also a cost for vaccination. The total medical cost was 4,200.96 taka per cow which covered 2.96 percent of total cost (Table 5.1).

5.2.1.3 Electricity cost

Farmers used electricity for beef fattening. For single cow the cost of electricity was 687.24 taka (Table 5.1). It carried 0.48% of the total cost. Per unit electricity cost was 4.14 taka.

5.2.1.4 Water cost

Water was available in the study area. Water cost for different firm was not very much. The water cost for per cow was 289.44 taka (Table 5.1). It carried 0.20 percent of the total cost.

5.3 Fixed cost

5.3.1 Land rent

Farmers had to pay a small amount for land rent. The land rent for cow was not much more. It was 1,686.78 taka per cow which covered 1.19 percent of total cost (Table 5.1).

5.3.2 Maintenance and repairment

Maintenance and repairment cost was small amount. Maintenance cost for per cow was 273.46 taka. It covered a very small portion of the total cost (Table 5.1). It carried 0.19 percent of the total cost.

5.3.3 Interest

Farmers usually took loan from bank during the starting of the business. The amount of interest for per cow was 1,482.19 taka (Table 5.1). It carried 1.05 percent of the total cost. For maximum farmers, interest was given on 4% interest.

5.3.4 Permanent labour

Permanent labour worked very hard for beef fattening. For per cow, the cost of permanent labour was 2,640 taka (Table 5.1). It carried 1.86 percent of the total cost.

5.3.5 Family labour

The family labour also worked very hard to earn high profit from beef fattening. Family labour cost was 1,800 taka per cow. It occupied 1.27 percent of the total cost. I asked the farmers if any family members worked for his beef fattening farming. They said yes for this answer. After that i asked them if any labour will work as a substitute of your family member then how much will you pay for that work. They said an amunt. By this way i calculated family labour cost.

5.3.6 Purchase price of calf

Purchasing price of calf is the highest cost for beef fattening .This cost was 79,874.87 taka per cow. It possessed 56.42 percent of total cost (Table 5.1).

5.4 Total cost

Total cost=Total fixed cost + total variable cost

=87,757.3 +53,801.6

=1,41,558.9

So, total cost per cow is 1,41,558.9 taka per cow (Table 5.1).

5.5 Return of beef fattening farming

5.5.1 Gross return

Return per cow from beef fattening is shown table 5.2. This amount is mainly earned by selling of cow and cowdung of cow. However, the gross return from per cow is 1,73,797.7 taka (Table 5.2).

5.5.2 Gross margin

Gross margin is mainly computed by deducting the total variable cost from the gross return. By applying this formula we got gross margin and that was 1,19,996.1 taka per cow (Table 5.2).

5.5.3 Net return

Net return is determined by deducting total cost from the gross return. Here, the net return was 32,238.8 taka per cow (Table 5.2).

Table 5.2 Gross return, Net return and BCR of beef fattening (Per cow)

Measuring Criteria	Quantity (Per cow)	Rate (Tk./Per cow)	Amount (Tk./Per cow)
Main Product Value	1	1,69,597.7	1,69,597.7
By product (Cowdung)		4200	4200
Gross Return (GR)			1,73,797.7
Total Variable Cost (TVC)			53,801.6
Total Cost (TC)			1,41,558.9
Gross Margin (GR-TVC)			1,19,996.1
Net Return (GR-TC)			32,238.8
BCR (undiscounted)(GR/TC)			1.23

Source: Field survey, 2022

5.5.4 Benefit cost ratio (undiscounted)

Benefit Cost Ratio (BCR) is a very important measure. Benefit Cost Ratio (BCR) was discovered 1.23. It indicated that if we invested one taka in beef fattening farming, then

we would get 1.23 taka back from that beef fattening farming. So, we can say that beef fattening was profitable in the study area.

5.6 Concluding remarks

We can easily understand different cost items for beef fattening, different inputs for beef fattening, the return per cow from beef fattening of the farm by above findings and results. If we use these inputs timely and efficiently, then we will get increased production and profitability. So, we can easily say that beef fattening was profitable. Beef fattening helped farmers to increase their incomes and as well as earnings also.

CHAPER-6

RESOURCE USE EFFICIENCY OF BEEF FATTENING

This chapter attempts to identify and quantify the effects of the major variables on beef fattening. The Cobb-Douglas production function was chosen to estimate the contribution of key variables on the beef fattening farming. Table 6.1 displays the estimated values of the model.

6.1 Functional analysis for measuring production efficiency

A production function is a relation or a mathematical function that specifies the maximum output that can be produced with given inputs and technology levels. Keeping in view in mind the study's objectives and the effect of explanatory variables on beef fattening output, six explanatory variables were chosen to estimate the quantitative effect of inputs on output

6.2 Estimated values of the production function analysis

F-value was used to measure the goodness of fit for different types of inputs.

The coefficient of multiple determinations (R^2) indicates the total variations of output explained by the independent variables included in the model.

Coefficients having sufficient degrees of freedom were tested for significance level at 1 percent and 5 percent levels of significant. Stage of production was estimated by returns to scale which was the summation of all the production elasticity of various inputs.

The estimated coefficients and related statistics of the Cobb-Douglas production function for beef fattening farming are shown in Table 6.1.

Table 6.1 Estimated co-efficient and their related statistics of beef fattening

Variables	Coefficient	t-value
Constant	7.768*** (0.940)	8.27
Labor cost (X_1)	0.003 (0.0040)	0.74
Purchasing cost of calf (X_2)	0.092** (0.046)	2.02
Feed cost (X_3)	-0.054** (0.023)	-2.33
Water cost (X_4)	0.001 (0.019)	0.05
Electricity cost (X_5)	-0.017 (0.028)	-0.62
Medicine and vaccination cost (X_6)	0.467*** (1.09)	4.30
Adjusted R^2	0.67	
F-value	15.22	

Note: *** and ** indicate significant at 1% and 5% level respectively. () indicates standard error.

6.3 Interpretation of the production function

Labor cost (X_1)

The estimated coefficient of labor cost was 0.003. It was not significant at the required degrees of freedom.

Purchasing cost of calf (X_2)

The estimated coefficient of purchasing cost of cow was 0.092 and significant at 5% level for beef fattening. It implies that 1 percent increase in the purchasing cost of calf , keping others factors constant, would increase gross return by 0.092 percent.

Feed cost (X_3)

The estimated coefficient of feed cost of cow was -0.054 and significant at 5% level for beef fattening. It implies that 1 percent increase in the feed cost , keping others factors constant, would decrease gross return by 0.054 percent.

Water cost (X_4)

The estimated coefficient of water cost was 0.001. It was not significant at the required degrees of freedom.

Electricity cost (X_5)

The estimated coefficient of electricity cost was -0.017. It was not significant at the required degrees of freedom. Basically electricity bill was very high. The farmers used many electrical instruments such as fan, light. The farmers ran the fan maximum time of the season and also used the light almost 18 hours in the season. As there was high price for the electricity, electricity was overutilized.

Medicine and vaccination cost (X_6)

The estimated coefficient of medicine and vaccination cost of cow was 0.467 and significant at 1% level for beef fattening. It implies that 1 percent increase in the medicine and vaccination cost cost of cow, keeping others factors constant, would increase gross return by 0.467 percent.

Adjusted R^2

Here the term adjusted means adjusted for the degrees of freedom. The adjusted R^2 for beef fattening was found to be 0.67 which indicated that about 67 percent of the variations of the output were explained by the explanatory variables included in the model (Table 6.1).

F -Value

The F-statistic was computed to denote the overall goodness of fit of any fitted model. The F-value for the beef fattening was estimated at 15.22 which were highly significant at 1 percent level. It means that the explanatory variables included in the model were important for explaining the variation in gross return of beef fattening (Table 6.1).

6.4 Findings of the resource use efficiency of beef fattening

In order to identify the status of resource use efficiency, it was considered that a ratio equal to unity indicated the optimum use of that factor, a ratio more than unity indicated that the yield could be increased by using more of the resources. A value of less than

unity indicated the unprofitable level of resource use, which should be decreased to minimize the losses because farmers over used this variable. The negative value of MVP indicates the indiscriminate and inefficient use of resource.

The ratio of MVP and MFC of labour cost (0.017) for beef fattening was positive and less than one, which indicated that in the study area, labor was over used (Table 6.2). So, farmers should decrease the use of labour to attain efficiency considerably.

Table 6.2 showed that the ratio of MVP and MFC of calf (0.19) for beef fattening was positive and less than one, which indicated that in the study area, calf cost was over used. So, the farmers should try to decrease the calf cost to attain efficiency level.

Table 6.2 Resource use efficiency of beef fattening

Variables	**Geometric Mean**	$\bar{Y}_i$ **(GM)/** $\bar{X}_i$ **(GM)**	**Co-efficient**	**MVP**	**MFC**	**r = MVP/ MFC**	**Decision**
Income (Y)	169196.6						
Human labor cost (X_1)	2928.43	57.78	0.003	0.17	1	0.17	Overutilization
Calf cost (X_2)	79198.66	2.14	0.092	0.19	1	0.19	Overutilization
Feed cost (X_3)	48053.75	3.52	-0.054	-0.19	1	-0.19	Overutilization
Water cost (X_4)	207.007	817.35	0.001	0.82	1	0.82	Overutilization
Electricity cost (X_5)	633.377	267.13	-0.017	-4.54	1	-4.54	Overutilization
Medicine and Vaccination cost (X_6)	4199.495	40.29	0.467	18.82	1	18.82	Underutilization

Source: Field Survey, 2022

The ratio of MVP and MFC of feed was found to be (-0.19) which was negative and less than one, which indicated that in the study area, feed were over used (Table 6.2).

So, farmers should decrease the use of feed for beef fattening to attain efficiency considerably.

The ratio of MVP and MFC of water was found to be (0.82) for beef fattening which was positive and less than one, which indicated that in the study area, water was over used (Table 6.2). So, farmers should decrease the use of water to attain efficiency considerably.

The ratio of MVP and MFC of electricity was found to be (-4.54) for beef fattening which was negative and less than one, which indicated that in the study area, electricity was over used (Table 6.2). So, farmers should decrease the use of electricity to attain efficiency considerably

The ratio of MVP and MFC of medicine and vaccination was found to be (18.82) for beef fattening which was positive and more than one, which indicated that in the study area, medicine and vaccine cost were under used (Table 6.2). So, farmers should increase the use of medicine and vaccine to attain efficiency considerably.

Marginal Factor Cost which is equal to one since both dependent and explanatory variables are converted to monetary value; and is defined as the increase in the cost of inputs due to purchase of additional unit of inputs.

From the table 6.2 we can see that feed cost was overutilized. Farmers used more feed than recommended dose.

Recommended data	**Field data**
For a100 kg weighted cow the daily required feeds recommended by livestock experts is:	For a 100 kg weighted cow in the study area farm owner used some feeds daily which are given below:
Straw=2 kg	Straw=2 kg
Green grass=2 kg	Green grass=5 kg
Minerel mix=1.2 kg	Minerel mix=1.5 kg
Molasses=200 gm	Molasses=50 gm
Salt=25 gm	Salt=15 gm
Urea=35 gm	Silage=1 kg
	Oil cake=200 gm
	Soya bean meal=50 gm

Source: Chittagong.gov.bd Source: Field survey, 2022

From the above feed list, we can see that farmers used more feed than the recommended feed. So,the feed cost was overutilized.

Moreover, we can see that the medicine and vaccination was underutilized. Vaccination for worm, cleaning the body with liquid medicine if any insects attack on cow body (Source: Chittagong.gov.bd) is recommended. Farmers used the vaccination for worm, but they did not properly use liquid medicine for the attack of insects. Moreover, in a year many diseases attack on cow, they did not properly give treatment to cow due to lack of medical facilities and doctors in the study area. So, we can say that medicine and vaccination cost was underutilized.

CHAPTER-7

PROBLEMS & CONSTRAINS OF BEEF FATTENING

7.1 Introduction

This chapter helps to determine the level of difficulty that farmers faced. Farmers encountered numerous problems when rearing cow. The issues were social and cultural, as well as economical and technical also. This chapter seeks to depict some of the social issues and some of economic issues as well as the barriers to beef fattening. Farmers ideas are used to identify the problems and challenges they encountered. The following are the main concerns and problems associated with beef fattening :

7.2 Problems of beef fattening

Table 7.1 Problems of beef fattening

Problems	Percentage of respondents	Rank
High price of feed	92 %	1
Lack of quality feed	78%	2
Lack of medical facilities	72%	3
Lack of training	64%	4
Shortage of quality breeds	50%	5
Problems of water	42%	6
Problems of electricity	38%	7
Other problems	20%	8

Source: Field survey, 2022

7.2.1 High price of feed

It was the main problem for the farmers. The farmers had to suffer a lot for the excess price of feed. There are some feed which price was increased to taka 20-30 per kg. This was a great concern for the farmers. 92 % farmers defined high feed price as a acute problem. This was very much alarming for the farmers.They told that there were some feeds whose price were 80 taka per kg which was 50 taka per kg before. This high feed price was the main obstacles for the farmers.

7.2.2 Lack of quality feed

Lack of quality feed was also a great problem. Due to the high feed price, food was not available for the farmers. So, they suffered a lot for the quality of food. 78% farmers told this was a big problem for them. Moreover, farmers told that if Government import high quality feeds from the foreign country and make it available to the farmers with a reasonable price, it will be very helpful for them.

7.2.3 Lack of medical facilities

There was a livestock office in every upazila. Medicine shop and doctor was not much sufficient for the farmers. Sometimes at night, they had to go to the doctors. 72% farmers told that it was a problem for them.

7.2.4 Lack of training

Farmers faced problem for training as beef fattening training was very important for them. Although some organizations arranged training, but that was not sufficient for them. 64% respondents told it as a problem. Training was very important for the farmers. They told they required more training about beef fattening.

7.2.5 Shortage of quality breeds

Shortage of quality of breeds was also major problem. 50% farmers defined it as a problem. Most of the farmers preferred local breed. The farmers were not eager for foreign breed.

7.2.6 Problems of water

Farmers did not face problems for water due to the availability of water. In the village areas there were sufficient amount of water due to modern technology. 42% farmers told they had to face problem for water.

7.2.7 Problems of electricity

Electricity problem was not a major issue because of the availability of electricity. 38% farm owners defined electricity problem as a problem. Electricity was available in the study area.

7.2.8 Others problems

Others problems did not affect much more. The main problem was high feed price for the cow. The high feed price affected the farmers very much and they suffered a lot. 20% farmers faced others problems.

CHAPTER-8

SUMMARY, CONCLUSION AND RECOMMENDATIONS

8.1 Introduction

This chapter describes the summary which was found in the previous chapters. The conclusion was reached using empirical data. Policy recommendations are developed to address Bangladesh's present inefficiencies in beef fattening production. Section 8.2 provides an overview of the study's principal findings; Sections 8.3, 8.4, 8.5, and 8.6 provide the study's conclusion, policy recommendations, limitations, and scope for future research.

8.2 Summary

Agriculture plays a huge role for the economic growth of the country. Agriculture plays an important role in GDP. Beef fattening plays a big role in agricultural production. For overall economic growth and development, beef fattening plays a huge role. This sector plays a huge role for achieving the macroeconomic goals. This sector helps for creation of jobs. It also helps for alleviation of poverty. It also plays a big role in human development. Moreover, huge role is found in food and nutritional security by it. In rural areas and in urban areas, there is high elasticity of meat demand. Agriculture plays a huge role for the overall economic development of the country by contributing in the GDP. Agriculture contributes 11.50 percent to the gross domestic product (GDP) as a whole in the year of 2022. Traditionally, beef fattening is a seasonal production. Recent total demand for meat is 72.50 Lakh Metric Ton and total production 92.65 Lakh Metric Ton. If large scale research is conducted, more profitability can be earned from this sector. Moreover if the meat is exported to the foreign countries, more foreign currency can be earned.

Some objectives were selected for beef fattening in few selected areas in Jhenidah district. The objectives were as follows:

a) To identify the socio economic characters of beef fattening farmers.

b) To calculate the profitability of beef fattening in the selected areas.

c) To estimate financial efficiency of beef fattening.

d) To identify problems and probable solutions of beef fattening.

The sampling frame for the current study was chosen with care in order to pick an area with a high demand for beef as well as the potential to boost productivity. On the basis of increased beef production, two upazilas from Jhenidah district were chosen for the study, including Shailkupa and Mahespur. Beef fattening farmers provided primary data. Selected respondents were questioned in-person using pre-tested semi-structured questions. The collected data were examined to check if the data has consistency and completeness. Before putting the data into application software, it was edited and it was coded also. The collected data were summarized and checked for avoiding any inaccuracies. Sociodemographic characteristics of sample farmers included many things such as initial investment, education of the farmers, family member's participation, type of farm, occupation of the farmers and so on. About 84% of total respondents were 18-60 years age. Maximum amount of farmers were educataed. About 10% of the total farmers was in primary education, 74% respondents was in secondary education, 12% was in higher education and 4% was illiterate. About 88% farmers had own farm and 12% farmers had ancestor farm. Most of cases farmers wife helped in farming and in some cases their children also helped in farming. About 32% farmers had up to 5 cows, 40% farmers had 6-8 cows, 28% farmers had avobe 8 cows. About 92% farmers took training and 8% farmers did not took training. Economic profitability is a very important consideration for running any production. The estimated cost of land rent for beef fattening production was obtained by Tk. 1,686.78 per cow. The permanent labor force used for the production of beef fattening was found to be about 2640 taka per cow. Therefore, the total cost of feed was found to be Tk. 48,623.96 representing 34.33 percent of the total cost. The cost of medicine and vaccination per cow was estimated at Tk. 4,200.96. The total electricity cost and water cost per cow was Tk. 687.24 and Tk. 288.66 respectively. The total variable cost was Tk. 53,801.6 per cow which was 37.97% of the total cost and total fixed cost was Tk. 87,757.3 which was 61.98% of the total cost. The total cost per cow was Tk. 1,41,558.9 per cow. Gross return, gross margin, and net return were obtained in Tk. 1,73,797.7, Tk. 1,19,996.1, and Tk. 32,238.8 per cow. The Benefit Cost Ratio (BCR) was rated at

1.23 which means that one take on investment in beef fattening production makes Tk. 1.23.

The Cobb-Douglas production function model was utilized in this study to investigate the effects of major variable inputs. The model contained the six most relevant explanatory variables to explain the gross income or return on beef fattening production. Feed cost and electricity cost had negative effects and others variables had positive effects. The predicted sign of the coefficient implies that positive contribution is found to the gross return by selected inputs. The F-value for the beef fattening farming was 15.22 which were highly significant at 1 percent level. The multicollinearity test revealed that there were no significant correlations between the explanatory factors. Except for the underutilization of medicine and vaccination, resource usage efficiency showed that all resources were overutilized for beef fattening production. As a result, important components in the production process of beef fattening had a good influence. This research also uncovered some of the issues and constraints connected with beef fattening. High feed price, lack of quality of feed, lack of training, lack of medical facilities, scarcity of medicine and doctors were the main problems faced by farm owners.

8.3 Conclusion

Based on the study's findings, it is possible to infer that the beef fattening business is a successful enterprise, despite the fact that it faces numerous constraints to its quick development and growth. beef demand is quite high in metropolitan areas and beef fattening farmers can not meet the demand with their beef supply. If appropriate corrective measures are implemented, beef fattening farming might become a sustainable commercial enterprise, helping the country address its problems of low income, unemployment, undernutrition, and an adverse balance of payment condition.

8.4 Recommendation

Some recommendations are made for effective beef fattening farming in the study area which are given below:

a) High feed price is the main problem for beef fattening. The Government should create a monitoring committee for the high feed price so that the feed price becomes affordale to the farmers.

b) The government should establish feed mill so that the farmers get available feed for successful beef fattening farming. The government can import high quality feed from foreign country and make these feed available to the farmers with a resoonable price.

c) The government should give proper attention on sufficient amount of training for beef fattening programme.

d) The Department of Livestock Services (DLS) should take proper steps so that the beef fattening farmers get registration of veterinary card to ensure timely supply of veterinary services and medicines to them. They should provide more medical services to the farmers.

e) The government should ensure availability of quality breeds for beef fattening farmers to improve beef fattening programme.

8.5 Research limit

There are various limitations to study because research conducted on farmers across the country via interview programs. Because the majority of the information was gathered in conjunction with the farmers, they did not always get along with the interviewer. Information gathered primarily from farmers reminders, which were always incorrect. Due to limited resources and time, significant and in-depth study has been hampered in certain ways**.**

8.6 Scope for further research

Although current research is meant to offer farmers, extension workers, policymakers, and researchers with useful information, it is not without criticism. This study was not able to combine some crucial areas due to time and budget constraints. However, the existing research's limitations allow for additional research methodologies, which are listed below**:**

- The current study was limited to 2 upazilas in the Jhenidah district. A comparable study might be conducted in different geographical locations of the country, with crosscountry comparisons to determine the comparative advantage of beef fattening production.
- The current study examines the profitability, returns, costs and entrepreneurship potentiality in Jhenidah district for beef fattening production. As a result, there is enough opportunity to undertake research on the resource use efficiency of beef fattening.
- The study of comparative productivity as well as profitability of different types of breeds may be conducted.

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APPENDIX

DEPARTMENT OF AGRICULTURAL ECONOMICS
SHER-E-BANGLA AGRICULTURAL UNIVERSITY
Sher-e-Bangla Nagar, Dhaka-1207
An Interview Schedule for the Study Entitled

FINANCIAL PROFITABILITY AND RESOURCE USE EFFICIENCY OF BEEF FATTENING IN SOME SELECTED AREAS OF BANGLADESH

Serial number: **Date:**

Dear Respondent,
All your information will be kept confidential and will be used for research purpose only. Please provide the following information.

Information of respondent:

Name……Village…….

Union……Upazila……

District…….

1. Socio-economic information:

Gender		**Male=1, Female=2**	
Educational qualification		**Class**	
Profession		**Main**	**Secondary**
		Beef Fattening=1, Others Livestock Farming=2, Businessmen=3, Off farm=4, Govt. Job=5, Private Job=6, Otrhers=7	Beef Fattening=1, Others Livestock Farming=2, Businessmen=3, Off farm=4, Govt. Job=5, Private Job=6, Others=7

2. Family profile:

Relationship	**Age**	**Education**	**Occupation**	
			Main	**Secondary**
			Beef Fattening=1, Others Livestock Farming=2, Businessmen=3, Off farm=4, Govt. Job=5, Private Job=6, Others=7	Beef Fattening=1, Others Livestock Farming=2, Businessmen=3, Off farm=4, Govt. Job=5, Private Job=6, Others=7

3. Type of farm:

	Ancestor farm =1 **Own farm =2** **Partnership farm=3**
Type	

4. Farm size based on number of cow:

	Number

5. Source of farm's production capital:

Source	Amount (Tk.)	Interest rate (Percentage)
1.Own		
2.Bank loan		
3.Informal sources (NGO, Money lenders)		
4.Own + Loan		
5.Others		

6. Do you have any specialized training about beef fattening ? Yes=1, No=0

Answer :……
If Yes, How many days……
Where……

7. Do you have any license for running the beef fattening? Yes=1, No=2

Answer :……
If Yes, From where you get license
……..
Do you know what are the procedure about that
……
……..

8. Do you receive extension service regularly ? Yes=1, No=2

If yes, Source…….

Days(Weekly/Monthly/As when necessary……..

9. How many workers work in the farm?

	Number

10. Cost of the farm:

a) Fixed cost:

Items	**Cost (Taka) / Year**
Land rent (Ha)	
Maintenance and repairment	
Interest	
Family labour	
Permanent labour	
Purchasing price of calf and age	
Others	
Total	

b) Variable cost:

Items	Quantity (Kg)	Price (Tk.)	Cost (Tk.)
Food			
Straw			
Green grass			
Rice dust			
Molasses			
Oil cake			
Wheat husk			
Mineral mix			
Pulse husk			
Broken rice			
Soya bean mill			
Silage			
Ready made feed			
Others			
Medical			
Medicine			
Doctor			
Vaccine			
Others			
Electricity bill			
Water bill			
Marketing Cost			
Transport cost			
Loading and unloading cost			
Market toll			
Feed cost during transportation and marketing			
Others cost			
Total			

11. Information of selling of cow:

Self	Local market	Faria	Paikar	Consumers
Amount (kg)= **Weight=** **Price (Tk/Kg)=**	**Amount (Piece)=** **Weight=** **Price (Tk/Piece)=**	**Amount (Piece)=** **Weight=** **Price (Tk/Piece)=**	**Amount (Piece)=** **Weight=** **Price (Tk/Piece)=**	**Amount (Piece)=** **Weight=** **Price (Tk/Piece)=**

12. Income from the by-products:

Sell of	Number/Amount	Price
Cow dung		
Skin		
Liver		
Stomach		
Brain		
Leg		
Others		
Total		

13. Weight measuring method:

1.Traditional
2.Digital weight machine
3.Applying formula

14. Problems of production:

Serial number	Problems	Yes=1, No=2
1	Water problem	
2	Electricity problem	
3	High feed price	
4	Lack of quality food	
5	Shortage of quality breeds	
6	Lack of training	
7	Lack of medical facilities	
8	Others	