

**AN ECONOMIC ANALYSIS OF SMALL SCALE BEEF
CATTLE FATTENING IN CHAR AREAS OF NORTH
WESTERN PART OF BANGLADESH**

A THESIS

BY

MOSTAK AHMED

Registration No.: 1305087

Session: 2013-2014

**MASTER OF SCIENCE (MS)
IN
ANIMAL SCIENCE**



**DEPARTMENT OF GENERAL ANIMAL SCIENCE AND NUTRITION
HAJEE MOHAMMAD DANESH SCIENCE AND TECHNOLOGY
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Submitted to the
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The Author

ABSTRACT

This study examined the profitability of beef cattle fattening in the north western *char* area of Bangladesh. A total of 130 cattle fatteners were randomly selected from one district namely Rangpur which representing the highest concentration of fatteners in the *char* area. Socioeconomic data as well as data on beef fattening were collected from the people selected at Kaunia and Gangachara upazilla of the district. The profit function was used to determine the profitability of beef cattle marketing and for statistical analysis descriptive statistics was used. In spite of beef cattle production was profitable agribusiness most of the farmers adopt traditional beef fattening system for beef target the cattle marketing during the Muslim festival “Eid-ul-Azha”. Profitability margin equals BDT 15947.56 per cattle. The benefit cost ratio of the entire fatteners was 0.51 that means for every one BDT invested in cattle fattening BDT 0.51 was realized as net profit and so it proved that cattle fattening is profitable and feasible agribusiness. The major problems facing the farmers include high cost of feeds, inadequate credit facilities, disease attack, price fluctuation and inadequate extension services. A policy and research emphasis should be geared toward feeds production at affordable price to the fatteners and access to feeds for better efficiency and encourage to use ready feeds of renowned feed company for cattle fattening. These practices can be used by the Ministry of Livestock and Fisheries Development extension agents to promote beef cattle fattening in areas where beef cattle fattening is not practiced in the country. The results of this study will be useful for farmers and researchers to identify the overall problems and their remedies on feeding, management and marketing related to small scale cattle fattening practices in Bangladesh.

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SYNONYM AND ACRONYMS

BQ	= Black Quarter
HS	= Hemorrhagic Septicemia
FMD	= Foot and Mouth Disease
NM	= Net Margin
TR	= Total Return
TC	= Total Cost
TVC	= Total Variable Cost
TFC	= Total Fixed Cost
GM	= Gross margin
VC	= Variable cost
BCR	= Benefit cost ratio
BDT	= Bangladeshi Taka
BBS	= Bangladesh Bureau of Statistics
SPSS	= Statistical Package for Social Science

CHAPTER I

INTRODUCTION

In Bangladesh, livestock is one of the most potential sub-sectors of agriculture which plays an indispensable role in promoting human health and national economy of the country. Large ruminants are cattle and buffalo and small ruminants are sheep and goat constitutes the major portion of livestock. The present population of livestock is 23.12 million cattle, 1.39 million buffalo, 24.15 million goat and 3.07 million sheep (DLS, 2010-11). Despite the large number of cattle available in the country, the contribution of the livestock sub-sector to the national economy is low. Cattle fattening helps to meet the rising demand for high-protein foods in the country and plays a great role in: (i) enhancing food security, (ii) providing households with employment, income, investment opportunity and a store of value, and (iii) providing draught power and manure for sustainable agriculture and (iv) cattle fulfilling cultural roles. The growing demands for ruminants' meats from city dwellers also present opportunities for fattening as well as improved markets for the animals. Fattening of animals is a highly profitable venture with return of premium to the farmer. Bangladesh is a low-lying densely populated country with more than 150 million people where about 75% live in rural areas and the rural poverty rate is 25.6%, of which 12.4% are extreme poor (Hodson R. 2006 and the daily Prothom alo 2014). Northern Bangladesh is currently working hard to develop its agribusiness potential mainly cattle fattening. Cattle fattening mostly conducted through micro-credit activities, could form an appropriate tool for poverty alleviation and improvement in food security among the people (Jean, 1993; Uza *et al.*, 1999 and Maikasuwa *et al.*, 2012). However, the country's meat producers estimate that slaughterhouses need up to 3 million beef cattle every year to feed Bangladeshi appetites, and to help meet

demand. More than 2 million beef cattle are smuggled from India to Bangladesh every year and most of the illegal trade takes place through the Indian border state of West Bengal. Farmers use rice straw of traditional varieties, green grass, sugarcane tops, wheat and rice bran, molasses, pulse bran and locally available resources such as vegetable by-products, rice gruel, boiled rice bran, oil cakes etc for cattle fattening. The acute shortage of feeds and fodder has long been identified as a serious constraint to optimum livestock production in Bangladesh (Saadullah, 1995). During the holy Eid-Al Azha festival Muslims always goes for Kurbanī (sacrificing slaughtered livestock). Animals including cows, goats, camels and sheep are slaughtered each year to mark the festival. Bangladeshi Muslims celebrate the Eid-ul-Azha in every year. About 1.8 million cattle are sacrificed within two or three days of this occasion each year (Sujan *et. al.*, 2011). So, the demand for cattle especially beef cattle increases several times higher during the holy Eidul-Azha festival. The price of cattle is also increased in this time. Keeping this occasion in mind, a large number of poor people are involved in bull fattening just before 3 or 4 months of Eid-Ul-Azha, when they sell the animals at prices which results in high margin. A cattle farming is a way of rearing cattle for profitable production of meat. Cattle fattening package is a four-steps rearing programme of male and/or infertile female emaciated cattle for harvesting their compensatory growth within a period of 60 to 120 days. Collection of animals considering their body characteristics followed by de-worming and feeding for effectively up to achieve a considerable level of live weight gain and marketing them readily are the four major factors to make the fattening package profitable. It is relatively easy and profitable system of cattle rearing to reduce poverty, unemployment and generate income for the rural people. So far we are aware a few literatures are available regarding socioeconomic status of cattle fattening farmers in northern Bangladesh. Also, there are no

documented studies in Char areas of Rangpur district to show the profitability of beef fattening. This study is an attempt to investigate the profitability of beef farmers in the study area.

Therefore, the present study was undertaken with the following objectives.

1. To determine profitability of beef cattle farmers in the char areas.
2. To identify the problems that affect profitability and marketing of beef cattle fattening in char areas.
3. To assess the socio-economic characteristics of beef cattle farmers in the study area.

CHAPTER II

REVIEW OF LITERATURE

The review of literatures as presented covers recognition of potential sources of vital information's about the analogous research study conducted by other workers and helps to identify the basic concepts of different components blended in researches. The contributions made by numerous research workers are compiled and the publications are documented in the bibliography. But there is little information available on cattle fattening by the Char farmers.

2.1 Socio economics characteristics of the farmers

P.K. Sarma *et al.* (2014) reported that, the socio-economic characteristics included age, educational qualification, years of experience, duration of fattening by respondents, types of cattle preferred for fattening and number of animal fattened by the respondents at a time. Curry (1996) stated that in order to come up with recommendation for specific strategies of improved management of beef cattle and to predict the effect of improved production system on the livelihoods of livestock keepers, it is important to first understand the socio-economic factors driving household members to undertake this enterprise. Table 1 illustrates that more than one third (36.7%) of the farmers were in the age category between 41-50 years and followed by 26.7% in 31-40 years age group, 17.3% in 50-60 years group and 7.3% were above 60 years of age farmers of more involved in cattle farming in the study area. Of the farmers, 82% were male and 18% female. Cattle farmers were well experienced in farming as well 14% had below 5 years experience, the highest participated farmers (47) was had experiences of 5-10 years in farming that mean 5-10 year experienced Sarma *et al.*, 131

farmer was more engaged in beef cattle fattening. Respondent farmers were asked about the duration of fattening, about 24.4% said the duration is between 1 to 3 months, while 62.2% of them said they took 4- 6 months to fatten their cattle. Five to six cattle were reared by about 47% farmers while large numbers is 7-8 animals were by only 20% farmers which more than one third of the sample had only 2-4 animals. The average number of cattle they fatten at a time was 5 cattle. About 46.7% of the respondents had primary education, 15.6% respondents completed their secondary education, while 24.4% had up to graduate education. This shows that literate people are more involved in the fattening business.

Tanvir ahmed (2009) studied among 215 respondents for beef fattening in which age of the respondents ranged from 20 to 70 years where revealed that the majority (50.2%) of the respondents were in the middle age category, 22.3% and 24.4% of the respondents were in the young and old aged respectively. In case of family size, 60.0% of the respondents belong to large sized family which was also a representative of typical family size of Bangladesh. Number and percentage distribution of respondents according to the occupation and land size revealed that out of the 215 respondents 70.2% are involved in agriculture, 11.2% in business, 8.4% in teacher, 6.5% in service and 3.3% in doctor. The total respondents were classified into six categories. The major category (138) of the respondents belongs to farmer categories which has also own land and 23 businessman, 18 teacher, 13 service holder and 4 doctor has own land. In total 91.2% respondents has own land and 8.8 has no own land. Distribution of respondents according to their own land differs significantly ($p < 0.01$). Almost all the respondents reported that one or more of their family member were involved in beef cattle rearing program. Not a single respondent is reported to hired labour for this purpose.

Begum *et al.* (2007) investigate the cattle fattening programs of rural farmers in Panchagarh district of Bangladesh through field survey. In this study 40% farmers had primary level of education and 20% had no education. About 56.7% farmers used cattle of 2-3 years of age and 36.7% farmers used cattle of 1-2 years age. About 70% farmers used bulls and 70% farmers had an average of 1-4 cattle for fattening. Fattening period of 3-6 months and 7-12 months were reported by 60% and 30% farmers, respectively.

Hashem *et al.* (1999) investigated the cattle fattening programs of rural farmers in different districts of Bangladesh through field survey. About 51.2% farmers were found having primary level education and 28% had no education. About 60.4% farmers used cattle of 2-3 years of age and 32.2% farmers used cattle of 1-2 years of age. About 71.20% farmers had an average of 2 cattle for fattening and 28.8% farmers had an average of 3 cattle. Fattening periods of 3-6 months and 7-12 months were reported by 42% and 30% farmers, respectively. About 86.40% farmers financed their cattle fattening business by themselves.

2.2 Profitability analysis for beef cattle fattening

P.K .Sarma *et al.* (2014) reported that, the result of the farm budgeting analysis revealed that the cost of cattle constitute two main components, as variable and fixed cost. Variable cost of fattening comprise of various inputs cost such as cost of calves, feeds, health care service, water and salt-lick (Mulla, 1997), labour charges, commission, market toll etc. On the other hand, fixed cost covered depreciation on fixed capital and equipment such as durable drinkers, spade, wheel barrow, bucket and rakes. Table 2 reveals that purchase value of animal was the highest about 73.90%, operating expenses accounting for about 98.47% of the total variable costs and 1.53%

only fixed cost of production. Feeder cattle/calve is the most important input used in the fattening program which constituted the greatest cost component. The study reveals that the average cost of cattle purchasing was about BDT 19,138.76. The component of feed used in fattening includes hay, grass, urea molasses, concentrated, gain, crop residuals, water etc. At the time of this study the average cost of feed for cattle fattening was BDT 3,980.86. Drugs/vaccines are another important input used for cow fattening. Antibiotics are typically viewed as tool for improving the health status of cattle (Mckinley, and Parish, 2007). The common drugs/medicine that were administered to animals during the fattening program include ivermectin injection, teramycin /oxytetramycin L.A. injection, B Complex injection, multivitamin injection, vbarminth tabs and vitamix powder. But now a day, some dishonest cattle farmer and trader used unauthorized tablets, injection, pill and chemicals for cattle fattening. The study reveals that the total cost of drugs and vaccines including veterinary services per beef cattle for an average of four months was BDT 752.63. The labour used for 132 an economic analysis of beef cattle fattening cattle fattening program including both family labour and hired labour. Since farmers fattened an average of five cows per batch, the average weekly cost of labour per head of cattle was estimated as BDT 141.39 and for four months, it is BDT 565.55. Fixed cost including depreciation cost of equipment which was used for cattle fattening including feeders, drinkers, rake, spade wheel, barrow, buckets and rental value of land. In the study, total fixed cost was BDT 396.67 which was lower than variable cost. Net margin earned by the farmer was BDT 13,350.84 per cattle. The benefit cost ratio of the cattle fattening enterprise was 0.52. That means for every one BDT invested in cattle fattening BDT 0.52 was realized as net profit. The average return on every BDT invested in the beef cattle fattening business (52%) is higher

than the prevailing public and private manages 16-20%, which implying that beef cattle fattening operators.

Begum *et al.* (2007) investigate the cattle fattening programs of rural farmers in Panchagarh district of Bangladesh through field survey. In this study, average buying and selling prices and net profit were Taka/cattle 7528, 9542 and 2055, respectively. Small scale cattle fattening programs could be recommended as an income generating activity for the rural farmers of Bangladesh.

Rahman (2007) investigated the factors affecting beef cattle production from farmer's level of consumers he observed that net profit per cattle were found Tk. 3128/-, 2023/-, 2511/-, 1708/- and 1525/- in Fulbaria, Kotowali, Fulpur, Muktagacha and Trisal upazillas under Mymensing district, respectively.

Hossain *et al.* (1996b) reported the result of cattle fattening periods covering 4.5 months and 5.7 months respectively. Hossain *et al.* (1986) showed that net income per cattle was Taka 7745/- and high cost in a period of 5.7 months.

Hossain *et al.* (1996a) conducted a study on beef fattening in the Manikganj district. Huq *et al.* (1997) reported that the farmers were benefited highly by selling fattened cattle before the Eid-ul-Azha in the Mymenshingh district.

2.3 Identified problems faced by beef farmers

P.K .Sarma *et al.* (2014) reported The problems faced by the farmers in the study area shown in Table 4 shows that about 14.59% reported that there is a high cost in feeding the animals, 13.62% reported inadequate credit to improve their business, while The third highest problem was cattle theft as

reported by about 13% of the respondents. About 11.87% of the respondents reported that disease as a threat to the business due to cross border cattle trade without veterinary check up in our country weak enforcement of policies, laws, regulations and standards has led to spread of diseases. Notably 11.67% reported price fluctuation as a factor that affects the profitability of the business because Indian businessmen were selling cattle on credit. Our businessmen make payment after selling the cattle in Bangladeshi market. About 9.73% of the respondents were of the opinion that higher transportation cost has been a problem affecting business because high toll charge in cattle market. They said that trucks carrying cattle from border areas to different places including Dhaka have to pay tolls at different Sarma *et al.* 133 places. Toll has to be paid to police while the truck crosses a district. Highway police has to be paid separately. The respondents mentioned, lack of extension service as reported by 8.75%, Shortage of cattle feed by 7.78%, high cost of labour about 7% and 0.97% reported lack of knowledge about fattening. High cost of feeds (14.88%) and inadequate credit facilities (13.90%) constituted the major problem to cattle fattening in the study area. Similarly, inadequate credit could be as a result of lack of collateral which has made it almost impossible for them to access of credit from the bank. The feed for livestock is a chronic problem for *char* dwellers. Ali and Anwar (1987) is corroborated by the finding of present study, shortage of animal feed was the greatest problem of the farmers for rearing cattle.

Tanvir Ahmed (2009) studied that, about 45% respondents reported shortage of animal feed, 50% reported lack of credit facilities and about 95% reported high cost of feed as the major problems for cattle fattening. The need lowering the feed cost, government support, training facilities to the people, providing bank loan facilities and cattle feed should be made

available were the most important suggestions and put forward by 85%, 75%, 70%, 65% and 60% of the respondents respectively.

Begum *et al.* (2007) investigate the cattle fattening programs of rural farmers in Panchagarh district of Bangladesh through field survey. In this study, about 96.6% farmers reported shortages of animal feed and 86.6% reported lack of credit as the major problems of cattle.

Hashem *et al.* (1999) also reported that lack of training, lack of credit facilities, price variation in different markets, disorganized marketing system were the problems for beef fattening in Bangladesh. About 81% farmers had the problem of transporting cattle for in the study area. Some unscrupulous cattle farmers are used human drugs to fatten up cattle ahead of the holy Eid-ul-Azha but it is a cause serious health hazards and even an unusual death of the cattle. They used human drugs of steroid group like 'Decason' tablets of Dexamethasone for cattle rapid fattening before the Eidul-Azha as earning windfall profit. Cattle traders also used steroid tablets and hormone injection for cattle fattening in order received high profit .It was harmful way of cattle fattening may cause death of the cattle after a certain time and meat consumption of cattle is also hazardous for human health. because farmers are fed cattle about 20-25 tablets and it creates unusual pressure on the kidney and different organs the drug slowly affects the normal circulation of urine of the animal, within few days the cattle looks fat when the urine comes to its whole body.

2.4 Marketing of cattle

Tanvir Ahmed (2009) studied that, a marketing system includes all activities involved in the flow of goods from the point to initial production to the ultimate consumers. It includes the exchanges activities associated with

transferring property rights to commodities, physically purchasing and allocation resources, handling products, dissemination information to participants, and making institutional arrangements for facilitating these activities (Amir and Knipscheer, 1989). Beef cattle marketing starts from the producers who seel the animals at their own homesteads or in the livestock selling markets and ends with the consumers purchasing meat from the butchers.

Talukder (1994) conducted a study on “Cattle Market Structure in Meghalaya”. He found that the seller concentration in the market was more unequal and wide, while buyers concentration was more equal during the period of study. The prices in the market were controlled by the sellers. Difference of prices according to breed and type was observed to vary widely in the market. Exotic crossbred cows fetched the highest prices.

Halim (1998) conducted a study on agribusiness of beef and beef products in Dhaka City. He showed the sources of supply of beef, existing marketing system, cost and margin and beef marketing related problems and solutions.

Karemullah *et al.* (1994) conducted a study on economies of cattle marketing in chittor district of Andhra Pracesh. They found that cattle marketing in Chittor district is renowned due to its location. The malpractices in the trade and the poor facilities at the markets demand greater attention of the marketing committees.

Wahiduzzaman (1981) conducted study on marketing of meat and its consumption pattern in Mymenshingh town. He showed the sources of supply of meat (beef and mutton), existing marketing system, cost and margins and consumption pattern of the people. In this study he found that cattle were mainly transported on foot.

Shamsuddin (1969) conducted a study on primary livestock markets in the districts of Mymensingh and observed that during winter season the assembling of livestock in the market was the highest. Marketing channels of livestock consisted to farmers, dealers, retail dealers and other non-farmers. Its was also observed that most of the animals were moved by driving on foot, trains, trucks were also used for transporting livestock.

CHAPTER III

MATERIALS AND METHODS

3.1 Study area

The study was done in char areas of two upazilla namely Gangachara and Kaunia under Rangpur district which are represents northern part of Bangladesh.

Table 1. Name of the districts and number of respondents interviewed for the study:

District	Upazilla	Union	Village	No. of beef farmers/Village	No. of beef farmers/U pazilla	Total No. of beef farmers
Rangpur	Kaunia	Balapara	Gopidanga	10	60	130
			Dhusmara	10		
		Tapamodhupur	Tapurchar	20		
		Haragach	Char Chatura	20		
	Gangachara	Gajoghanta	Romakanto	20	70	
			Mohishashur	15		
		Morneya	Hizirpara	20		
			Char Alal	15		

3.2 Survey design

This survey was conducted with the aid of a detailed structured questionnaire. From each upazilla, four villages were randomly selected. From each village, about 10-20 households were taken who were engaged in cattle fattening. A total of 130 households were interviewed taking from the both upazila.

3.3 Preparation of the interview schedule

The interview schedule prepared based on the objectives of the study. A draft schedule was developed before preparing the final schedule. The draft schedule was then pre-tested with selected respondents in the study area and then it was rearranged and modified. The schedule was developed in a simple manner to avoid misunderstanding and to get accurate answer. Eventually it was finalized according to the experience gathered in the preliminary field survey.

3.4 Data collection

A structured questionnaire was prepared for required data collection. Information was collected from respondents through face to face interview and making frequent personal visits. Just prior to data collection the objective of the study was clearly explained to the respondents. Then the questions were asked in a very simple manner with explanation wherever necessary. To collect the necessary information from the respondents both interviewing and observation were applied. The relevant data for this study were collected without biasness. In some cases respondents had specific written documents of their own. So in maximum cases they had a reply mainly from their memory. Interviews were normally conducted in the respondent's house during their leisure time. It was found that the

respondents were very co-operative when the aims of the study were explained to them. After completion of each interview, the researcher thanked the respondents for their help. The data were basically taken regarding the farmer's sex, age, education, farm size, social status, supply in market and expenditure associated with cattle fattening. Secondary data were collected from BBS, journals, articles, reports and various published articles/literature.

3.5 Parameters studies

The interview schedule contained the following items of information. General information of the fattening cattle owners, livestock population, management of the fattening cattle, feeds and feeding cattle, expenditure, indigenous knowledge on rearing and marketing of cattle. The problems and probable solutions related to small scale cattle fattening were identified.

3.6 Data analysis technique

Data were carefully analyzed with a view to fulfill the objectives of the study. The collected data were first transferred to master sheets and compiled to facilitate the needed tabulation. Tabular technique was applied for the analysis of data using simple statistical tools like average and percentages as well as Chi-square through Statistical Package for Social Science (SPSS) software.

The cost benefit analysis is a useful tool in determining the profitability of a beef cattle fattening enterprise when the fixed cost can be calculated. The economic analyzed the determinants;

$$NM=TR-TC..... (1) \text{ (Rahman, et al. (2002))}$$

Where,

NM = Net Margin

TR= Total Return

TC = Total Cost

$$TC = TVC+TFC..... (2)$$

Where, TVC = Total Variable Cost

TFC = Total Fixed Cost

This was employed to assess profitability of the enterprise. The following variables were calculated, where;

- a) Gross margin (GM) is the difference between the total revenue earned and the total variable cost incurred, $GM = TR-TVC$.
- b) Variable cost (VC) is the cost that varies with changes in output; it is a function of output level. The variable cost includes transportation, labour cost and cost price of live cattle for wholesalers
- c) Fixed Cost is the cost that does not vary with respect to output (tools and equipment).
- d) Total cost is the total expenditure for beef fattening enterprise including addition of both variable and fixed costs $TC= TFC+TVC$.
- e) Total revenue (TR) is the total income realized on output produced that is, quantity sold multiplied by price per unit.

- f) Net Revenue is the difference between the total revenue and the total cost.
- g) Benefit cost ratio i.e. (BCR) is the total revenue divided by the total cost, $CR=TR/TC$. When BCR is greater than 1, the business is profitable.

CHAPTER IV

RESULTS AND DISCUSSION

4.1 Socio economics characteristics of the farmers

The socio-economic characteristics included age, sex, occupation, and educational qualification of the farmers, duration of fattening by respondents, farming system and number of animal fattened by the respondents at a time. Curry (1996) stated that in order to come up with recommendation for specific strategies of management of beef cattle and to predict the effect of production system on the livelihoods of livestock keepers, it is important to first understand the socio-economic factors driving household members to undertake this enterprise. Table 2 illustrates that more than one third (53.08%) of the farmers were in the age category between 18-30 years and followed by 23.08% in 31-40 years age group, 13.08% in 41-50 years group, 6.15% in 51-60 years age group and 4.61% were above 60 years of age farmers of more involved in cattle farming in the study area. But in the study of P.K. Sarma *et al.* (2014) reported that more than one third (36.7%) of the farmers were in the age category between 41-50 years and followed by 26.7% in 31-40 years age group, 17.3% in 50-60 years group and 7.3% were above 60 years of age farmers of more involved in cattle farming in the study area. On the other hand, Tanvir Ahmed (2009) studied among 215 respondents for beef fattening in which age of the respondents ranged from 20 to 70 years where revealed that the majority (50.2%) of the respondents were in the middle age category, 22.3% and 24.4% of the respondents were in the young and old aged respectively. Among the farmers, 73.08% were female and 26.92% were male. But in the study of P.K. Sarma *et al.* (2014) reported among the farmers 82% were male and 18% were female.

Table 2. Socio-economic characteristics of cattle fattening farmers

Parameters	Variables	Frequency (n=130)	Percentage (%)
Age			
	18-30	69	53.08
	31-40	30	23.08
	41-50	17	13.08
	51-60	8	6.15
	>60	6	4.61
Gender			
	Male	35	26.92
	Female	95	73.08
Occupation			
	House wife	79	60.77
	Day labour	45	34.62
	Street bigger	3	2.31
	Sravent	2	1.54
	Cart wheel driver	1	0.77
Farming System			
	Full time	111	85.38
	Part time	19	14.62
Educational status			
	No formal education	91	70.00
	Primary level	34	26.15
	Secondary level	5	3.85

Number of animal fattened			
	1-2	105	80.77
	3-4	25	19.23
Duration of fattening			
Duration (Months)	1-3	42	32.31
	4-6	88	67.69

Respondent farmers were asked about the duration of fattening, about 32.31% said the duration is between 1 to 3 months, while 67.69% of them said they took 4- 6 months to fatten their cattle. Three to four cattle were reared by about 19.23% farmers while small numbers is 1-2 animals were by 80.77% farmers which more than two third of the sample animals. The average number of cattle they fatten at a time was 3 cattle. But in the study of P.K. Sarma *et al.* (2014) reported that the average number of cattle they fatten at a time was 5. About 26.15% of the respondents had primary education, 3.85% respondents completed their secondary education, while 70% had no any formal education. This shows that illiterate people are more involved in the fattening business in the char areas. But in the study of P.K. Sarma *et al.* (2014) reported that literate people are more involved in the fattening program.

4.2 Profitability analysis for beef cattle fattening

The result of the farm budgeting analysis revealed that the cost of cattle constitute two main components, as variable and fixed cost. Variable cost of fattening comprise of various inputs cost such as cost of cattle, feeds, health care service, labour charges, transportation etc. On the other hand, fixed cost covered depreciation on fixed capital and equipment such as durable mangers, spade, shade, and bucket. Table 2 reveals that purchase value of animal was the highest about 55.97%, operating expenses accounting for about 98.17% of the total variable costs and 1.83% only fixed cost of the production. The result near about the result of P.K. Sarma *et al.* (2014) that operating expenses accounting for about 98.47% of the total variable costs and 1.53% only fixed cost of production. Cattle shed were the most important input used in the fattening program which constituted the greatest cost component. The study reveals that the average cost of cattle purchasing was about BDT 17,609.40. The component of feed used in fattening includes concentrated ready feed, hay, grass, grain, crop residuals, water etc. At the time of this study the average cost of feed for cattle fattening was BDT 12307.79. But in the study of P.K. Sarma *et al.* (2014) reported that in the time of this study the average cost of feed for cattle fattening was BDT 3,980.86. There was a great different calculated BDT 8326.14.

Table 3. Cost and income from beef cattle fattening (Per cattle)

Return		Cost	
Line items	Amount (BDT)	Line items	Amount (BDT)
Selling price of fattened beef cattle	46680.77 (98.46)	Variable Costs (VC)	
Sales of manure	729.38 (1.54)	Purchase of cattle before fattening	17,609.40(55.97)
		Feed	12307.79(39.12)
		Drug/vaccine/Veterinary cost	213.32 (0.68)
		Labour charges	398.46(1.27)
		Ropes	63.42 (0.20)
		Transportation	175 (0.56)
		Miscellaneous	120.15 (0.38)
		Total variable cost (TVC)	30887.54 (98.17)
		Fixed Cost (Depreciation cost)	
		Shade	298.82 (0.94)
		Mangers	198.69(0.63)
		Spade	29.08 (0.10)
		Bucket	48.46 (0.15)
Total Fixed Cost (TFC)	575.05 (1.83)		
Total returns (TR)	47410.15(100)	Total Cost (TC) =TVC+TFC	31462.59(100)
Net Margin, NM = TR-TC = 15947.56			
Ratio = 0.51			

Note: Figures within the Parentheses indicate percentage of total

The common drugs/medicine that were administered to animals during the fattening program include deworming bolus, liver tonic drugs, Zn preparation and ivermectin injection, B Complex injection, some appetizer and vaccines collected from upazilla livestock office of certain major diseases specially for FMD, Anthrax, BQ and HS. In case of infected diseases antibiotics were used by advice of registered veterinarians. But now a day, some dishonest cattle farmer and trader used unauthorized tablets, injection, pill and chemicals for cattle fattening. The study reveals that the total cost of drugs and vaccines including veterinary services per beef cattle for an average of three months was BDT 213.32. But in the study of P.K. Sarma *et al.* (2014) reported that the total cost of drugs and vaccines including veterinary services per beef cattle for an average of four months was BDT 752.63. An economic analysis of beef cattle fattening program including both family labour and hired labour. But in the char areas most of the farmer fattened an average of two cattle per batch, so the average cost of labour per head of cattle was estimated as BDT 398.46 only for whole period of the fattening. Fixed cost including depreciation cost of equipment which was used for cattle fattening including cattle shed, mangers, spade and buckets. In the study, total fixed cost was BDT 575.05 which was lower than variable cost. Net margin earned by the farmer was BDT 15947.56 per cattle. But in the study of P.K. Sarma *et al.* (2014) reported that net margin earned by the farmer was BDT 13,350.84 per cattle and Hossain *et al.* (1986) showed that net income per cattle was Taka 7745/- and high cost in a period of 5.7 months. The benefit cost ratio of the cattle farmers was 0.51. That means for every one BDT invested in cattle fattening BDT 0.51 was realized as net profit. The average return on every BDT invested in the beef cattle fattening business (51%) is higher than the prevailing public and private manages 16-20%, which implying that beef cattle fattening operators. The result is more or less similar to the study of P.K. Sarma *et al.* (2014).

4.3 Descriptive statistical analysis results for beef cattle fattening

The economic data collected at the study area were subjected to Chi-square test through SPSS software to determine the input-out relationships of most important variable on net margin. The chi-square test of the beef cattle fattening as shown in table 3. On statistical analysis it was observed that equipment had positive relationships with the farmers' revenue from fattening. That means, an increase in the cost of equipment had adverse effect on farmers' income. The influence of cost of equipment could be felt only after a long period of time since depreciation occurs very slowly with good maintenance. However, significant factors affecting cattle fattening were feeds and purchase price of animals which were both highly significant at ($P < 0.05$).

Table 4. Chi-square test results for comparative beef cattle fattening in study area

Parameters	Mean \pm SE of Mean	Chi-Square	P- value
Cattle purchase cost	17609.15 \pm 289.44	70.538	0.71*
Feed cost	12307.79 \pm 319.48	77.692	0.94*
Veterinary cost	213.32 \pm 10.07	392.646	0.00
Labour cost	398.46 \pm 10.92	154.585	0.00
Rope price	63.42 \pm 0.66	96.708	0.00
Transportation cost	175 \pm 4.65	70.231	0.00
Mangers price	198.69 \pm 5.08	133.846	0.00
Shed cost	298.82 \pm 7.63	133.846	0.00
Spade price	29.08 \pm 0.74	133.846	0.00
Bucket price	48.46 \pm 1.24	133.846	0.00
Others cost	120.15 \pm 2.44	142.031	0.00
Total investment	31462.36 \pm 342.79	0.000	1.00
Cattle sold price	46680.77 \pm 409.88	145.8	0.00
Manure price	729.38 \pm 19.43	206.6	0.00
Total income	47410.15 \pm 414.53	62.492	1.00
Profit	15947.70 \pm 325.58	4.815	1.00

*Indicates significant at $p < 0.05$

4.4 problems faced by the respondents and their suggestions

(a) Identified problems faced by beef farmers:

The problems faced by the farmers in the study area shown in Table 4 shows that about 15.53% reported that there is a high cost in feeding the animals, 14.60% reported inadequate credit to improve their business, while the third highest problem was high chance of natural disasters as reported by about 13.60% of the respondents. About 13.20% of the respondents reported that disease as a threat to the business due to cross border cattle trade without veterinary check up in our country weak enforcement of policies, laws, regulations and standards has led to spread of diseases. About 11.70% of the respondents were of the opinion that lack of sufficient green grass supply due to unfertile sandy land and about 10.70% reported insufficient floor space due to necessary of plinth rising. Lack of extension services and shortage of cattle feed were reported by 9.71% and 7.77% respectively due to remote rural areas and absence of registered feed dwellers. The feed for livestock is a chronic problem for *char* dwellers. Cattle theft was one of the important complain by the respondent which noted about 2.91% due to Char areas. In case of marketing highest 16.73% reported unfair price from dalal as a factor that affects the profitability of the farmers because they have liaison with market contractors. Price fluctuation was reported by 15.80% during cattle selling and purchasing which affect profitability of beef fattening in the char areas. About 15.43%, 13.94%, 14.87%, 12.08% and 11.15% respondents mentioned higher transportation cost, lack of market place, no market regulation and unclean & unhygienic condition of market place respectively those has been a great problem affecting beef fattening program. The results more or less similar to of P.K. Sarma *et al.* (2014).

Table 5. Problems affecting beef cattle fattening and marketing as perceived by respondents

Problems	No. of respondents (515)	Percentage (%)
Cattle Fattening:		
High cost of feeds	80	15.53
Inadequate credit facilities	75	14.60
High chance of natural disasters	70	13.60
Disease attack	68	13.20
Lack of sufficient green grass supply	60	11.70
Insufficient floor space	55	10.70
Lack of extension services	50	9.71
Shortage of cattle feed	40	7.77
Cattle theft	15	2.91
Problems	No. of respondents (538)	Percentage (%)
Marketing:		
Unfair price from dalal	90	16.73
Price fluctuation	85	15.80
Higher transportation cost	83	15.43
Lack of place in the market	75	13.94
No market regulation	80	14.87
No grading system of cattle	65	12.08
Unclean & Unhygienic condition of market place	60	11.15

(b) Suggestions on fattening and marketing for cattle fattening

Table 6. Suggestions on fattening and marketing

Suggestions	No. of respondents (n=390)	Percentage (%)
Fattening		
Lowering the feed cost	95	24.36
Control river erosion	90	23.08
Providing bank loan facilities	85	21.79
Cattle feed should be made available	70	17.95
Training facilities to the people	50	12.82
Suggestions	No. of respondents (n=335)	Percentage (%)
Marketing		
Stopped smuggling of cattle from India	90	26.87
Construction of road in char areas	80	23.88
Improvement of market facilities	70	20.89
Control Dalal	55	16.42
Government legislation on market price	40	11.94

In case of beef fattening, lowering the feed cost, controlling river erosion, providing bank loan facilities, training facilities to the people and cattle feed should be made available were the most important suggestions and put forward by 24.36%, 23.08%, 21.79%, 17.95% and 12.82% of the respondents respectively.

In case of beef marketing, stopped smuggling of cattle from India, construction of road in char areas, improvement of market facilities, government legislation on market price were the most important suggestions and put forward by 26.87%, 23.88%, 20.89%, 16.42% and 11.94% of the respondents respectively.

4.5 Photo Gallery



Photo 1: Information taking from farmers by the researcher



Photo 2: Information taking on training spot by the researcher



(a) Concentrate feed



(b) Roughage (Chopped)



(c)



(d)

Photo 3: Feeding management practiced by the farmers in the char areas



Photo 4: Fodder cultivation on rising plinth of char farmers



Photo 5: Collection of fodder by a farmer in the Hazirpara Village under Gangachara Upazila



(a) Showing double manger commonly used by the farmer



(b) Showing Roof made by Jute stick

Photo 6: Housing management practiced by the farmers in the study areas



(a) Starting stage



(b) Middle stage



(c) Just before result demonstration

Photo 7: Beef fattening in Tapur Char Village



(a) Starting stage



(b) Middle stage



(c) Just before result demonstration

Photo 8: Beef fattening in Char Dhusmara Village



Photo 9: Researcher on result demonstration of cattle fattening in the Char Chatura Village under Kaunia Upazila

CHAPTER V

SUMMARY AND CONCLUSION

Beef cattle fattening is a potential and effective option for poor and extreme poor gained prominence as an important agribusiness sector in Bangladesh. It gives the farmer year round work and provides them with extra income. From the findings of this study, net profit is BDT 15947.56 per fattened cattle for the average duration of four months. This implies that the cattle fattening business is profitable and worth venturing as a source of year round income and play a vital role in poverty reduction, creation of self employment opportunities in char areas and animal protein supply. A Beef cattle farming contributes directly to the increase in the domestic beef meat production and indirectly to the decrease in the beef cattle imports (smuggling), and also to the improvement in the farmers' income, especially in the char areas in Rangpur district. There is no doubt the livestock sub-sector face certain problems relating to high feed cost (15.53%) which ranks highest. This implies that the small-scale cattle farmers in the study area lack any access to formal credit facilities. Inadequate credit facilities(14.60%) rank second, followed by high chance of natural disasters (13.60%), disease attack (13.20%) and lack of sufficient green grass supply (11.70%) were the more important problems reported by the farmers. On other hand in case of cattle marketing unfair price from dalal (16.73), price fluctuation (15.80%) and higher transportation cost covered the major problems reported by the farmers that affecting profitability of cattle fattening. The major findings and recommendation of the study could be summarized and presented as follow-

1. Cattle fattening was able to additional income and create employment for farm household members, especially the unemployed family members like housewife.
2. There were no competition between the cattle fattening activity and major crop production in using family labour and land resources.
3. Cattle fattening entrepreneur should be enlighten on how to access credit in order to increase their capital base to expand their scale of production.
4. Government should take initiative to build infrastructure for controlling river erosion and expansion of livestock extension services for delivery of new technologies to increase the level of profitability from the cattle fattening in the study area.
5. NGOs and other private sectors can provide training on beef fattening, seasonal credit support with low interest rate, information on fattening technology and suitable breed to char dweller for improving beef cattle productivity, especially in char areas of north western Bangladesh.
6. Beef fattening in char areas will be more profitable when meat processing enterprise will link with the areas.
7. To develop farmer association in the study areas for participatory beef cattle agribusiness through better utilization their land, labour, and capital.

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APPENDICES

**AN ECONOMIC ANALYSIS OF SMALL SCALE BEEF CATTLE
FATTENING IN CHAR AREAS OF NORTH
WESTERN PART OF BANGLADESH**

1. Name:
2. Address:
3. Age:
4. Education:
5. Occupation:
6. Have own land -Y/N
7. If there any training upon cattle fattening -Y/N.
8. Have any written documents -Y/N
9. Any support from Govt. Livestock office -Y/N
10. Source of capital for this business-
a. Bank loan b. Own capital c. NGO loan d. Lending.
11. How many cattle are purchased at a time?
12. Type of facilities for keeping purchased cattle-
a. At an own place b. At a hired place
13. Does feeds are available of feed -Y/N.

14. Dose cost of feed is fluctuate? -Y/N.
15. Market facilities- available/unavailable
16. Duration of the program- 3 month/6 month/If other specify
17. Housing facilities for rearing cattle-
- a. Existing traditional cattle shed b. Shed built for keeping a batch
18. Have you won fodder plot? -Y/N.
19. Type of feed (kg/day or g/day) used during periodical keeping of purchased cattle-
- 1) Roughage- a. Straw b. Green grass ... c. Tree leaves
- 2) Concentrates- a. ready feed ... b. Oil cake ... c. Rice bran ... d. Other
20. Measure taken for fattening cattle-
- a. Urea Molasses Block (UMB) block b. Urea Molasses Straw (UMS)
- c. Cattle fattening tables d. No measure at all.
21. Mention the cost of the followings-
- a. Purchased cattle b. Feeding c. Shed making
- d. Manger cost e. Bucket cost f. Spade cost
22. Mention deworming status of your cattle - Y/N
23. Do you apply vaccine? - Y/N
24. If treatment is provided to sick animals - Y/N

25. Transport facilities for carrying cattle to the market

- a. Sufficient
- b. insufficient.

26. Problems faced in cattle fattening-

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27. Suggestions to improve cattle fattening-

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Thanks