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

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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 Gangacharapazilla 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 a 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.

1. 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 a large number of cattle available in the country, the contribution of the livestock sub-sector to the national economy is low.

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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 a 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 Prothomalo 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; Uzaet *al.*, 1999 and Maikasuwaet *al.* 2012). 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. 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 Kurban (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 (Sujanet. *al.*, 2011). So, the demand for cattle especially beef cattle increases several times higher during the holy Eidul-Azha festival. Cattle farming is a way of rearing cattle for profitable production of meat. Cattle fattening package is a four-step rearing program 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. So far we are aware a few pieces of 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 fatteners in the study area.

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

1. To determine profitability of beef cattle fatteners 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 fatteners in the study area.

2. MATERIALS AND METHODS

Study area

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

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 both upazilla.

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 an accurate answer. Eventually, it was finalized according to the experience gathered in the preliminary field survey.

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.

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.

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.

3. RESULTS AND DISCUSSION

Socio economics characteristics of the farmers

The socio-economic characteristics included age, sex, occupation, and educational qualification of the fatteners, duration of fattening by respondents, farming system and a 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. Among the farmers, 73.08% were female and 26.92 % were male. Respondent fatteners 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. About 26.15% of the respondents had primary education, 3.85% of 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.

Profitability analysis for beef cattle fattening

The result of the farm budgeting analysis revealed that the cost of cattle constitute two main components, as a variable and fixed cost. The 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 managers, spade, shade, and bucket. Table 2 reveals that purchase value of animals 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. 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. The common drugs/medicine that were administered to animals during the fattening program include deworming bolas, 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. 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, managers, spade and buckets. In the study, total fixed cost was BDT 575.05 which was lower than the variable cost. Net margin earned by the farmer was BDT 15947.56 per cattle. The benefit-cost ratio of the cattle fatteners 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

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 is 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 an 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 ($P < 0.05$).

Problems faced by the respondents and their suggestions

(a) Identified problems faced by beef fatteners:

The problems faced by the fatteners 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 is a threat to the business due to cross border cattle trade without a veterinary check-up in our country weak enforcement of policies, laws, regulations and standards has led to the 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 the 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 the case of marketing highest 16.73% reported unfair price from dalal as a factor that affects the profitability of the fatteners 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.

b) Suggestions on fattening and marketing for cattle fattening

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.

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. 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 faces certain problems relating to high feed cost (15.53%) which ranks highest. This implies that the small-scale cattle fatteners in the study area lack any access to formal credit facilities. Inadequate credit facilities(14.60%) rank second, followed by a 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 fatteners. On the other hand in case of cattle marketing unfair prices from dalal (16.73), price fluctuation (15.80%) and higher transportation cost covered the major problems reported by the fatteners 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 a housewife.
2. There was no competition between the cattle fattening activity and major crop production in using family labour and land resources.
3. Cattle fattening entrepreneurs should be enlightened 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 a low interest rate, information on fattening technology and suitable breed to char dweller for improving beef cattle productivity, especially in charareas of northwestern Bangladesh.
6. Beef fattening in char areas will be more profitable when meat processing enterprise will link with the areas.To develop farmer association in the study areas for participatory beef cattle agribusiness through better utilization of their land, labour, and capital.

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

District	Upazilla	Union	Village	No. of beef fatteners/Village	No. of beef fatteners/Upazilla	Total No. of beef fatteners
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		

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

2

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

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			

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

2 *Indicates significant at $p < 0.05$

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
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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



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