Study on Consumers' Behavior on *Buffen* (Buffalo meat): Marketing Perspective

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Abstract

The study was undertaken to examine the socioeconomic profile of buffalo farmers and to assess the marketing and consumers preference on *buffen* (buffalo meat) in the selected areas. Twelve districts namely: Mymensingh, Jamalpur, Moulovibazar, Bhola, Bagerhat, Feni, Potuakhali, Noakhali, Laxmipur, Chittagong, Tangail and Sirajgong were selected purposively. A total of 1400 buffalo farmers were interviewed following simple random sampling technique. Data were collected during June 2011 to April 2016 and analyzed data using SPSS software. Study revealed that the highest per cent of farmers were in age group 31-45 years indicating that farmers were mature enough to give more labour to their farming activities. On average, 88 per cent buffalo farmers were engaged purely in agriculture followed by business and service as primary occupation. The highest numbers of farmers were illiterate followed by primary education, SSC, HSC and Degree. About 49 per cent buffalo farmers had above 15 years of farming experience of rearing buffalo. Average farm size was estimated 0.95 hectare indicating small and medium category farm and average family size was calculated 6 persons per family which is higher than national average 4.9. Dependency ratio was also estimated to 0.94. The study showed that *buffen* contributes 7.16 per cent of total red meat production and 6.19 per cent of total meat production in Bangladesh and about 50 percent farmers reported that they did fattening before selling of buffalo. About 48 per cent consumers reported that they prefer *buffen* most among different kinds of meats. In view point of butcher, about 46 percent consumer preferred *buffen* than beef.

Keywords: Buffen, marketing, consumption and buffalo

1. Introduction

Bangladesh is an agrarian country having small territory and large number of population. Its economy is primarily depending on production of crop, livestock and fisheries. The livestock sub-sector contributes 1.78% to the GDP (DLS, 2015), contributes 16.71% to the agricultural GDP, generates 20% of country's employment directly and 40% indirectly, contributes 4.31% to country's total export earning, provides 25% of households energy supply, produces 125 MMT of organic manure utilized for crop production (AIS, 2014). In financial year 2015-16, the livestock population is 542.27 lakh (ruminant) whereas the buffalo is 14.69 lakh in Bangladesh (BER, 2016). The buffalo population has been gradually increasing. The global buffalo population is 194.29 million and buffalo in Asia dominate the world population, representing 92.52% (179.75 million) of the total buffalo population (FAO, 2012; Chakravarty, 2013).

Buffalo is a multipurpose domestic animal that helps the livelihood of people by providing high quality milk and meat, dung as fuel and organic fertilizer; mechanical or draft power and hides and skins as raw material for industry (Irshad, A., Tariq, M. M., Bajwa, M. A., Abbas, F., Isani, G. B., Soomro, G. H., Waheed, and Khan, K. U., 2011). As a result of observation on buffalo numbers of Bangladesh of last ten (10) years from 2003-04 to 2012-13, average growth rate reached at 1.0355 percent. Based on the growth rate, projected number of buffalo in 2019-20 is 18.51 lakh and in 2029-30 is 26.23 lakh. Indigenous buffaloes are three times heavier than cattle and produce two times more milk than cattle (Rahman, S. M. A., Begum, J., Sayeed, M. A., Hossain, M., and Alam, J., 2008). The average milk production per buffalo per lactation is estimated to be 504 kg against 157 kg

for cow. Buffalo milk is popular and has a high nutritive value and is excellent for the preparation of dairy products.

Buffalo meat called *buffen* is similar to beef in basic properties, structure, chemical composition, nutritive value and palatability. Compared to beef, *buffen* has a lighter flavor, tastes slightly sweet and is deliciously tender. It is naturally lower in fat and also has more protein, more iron and more polyunsaturated fatty acids (such as the healthy omega-3 and omega-6 fatty acids) than beef (Consumers detect little difference between cooked joints of buffalo meat and beef derived from animals kept under the same conditions and slaughtered at the same age and stage of fattening (Rahman, S. M. A. , Sayeed, M. A., Yasmin, F., Begum, J.,2006).

In Bangladesh, there are four main types of ruminants as Cattle, Buffalo, Goat and Sheep. Dressing percentage of Cattle, Buffalo, Goat and Sheep of our country is 48.99 ±4.84 (Ali, M. M., Hossain, M. M., Akhter, S., Islam, M.S., Hashem, M. A., 2013), 44% (Hamid, M.A., Ahmed, S., Rahman, M.A. and Hossain, K.M., 2016), 37.22% and 39.85%, respectively. Total red meat production in Bangladesh is 3.912 Million MT where total meat production is 4.52 Million MT. Beef contributes 88.19 per cent of total red meat production and 76.32 per cent of total meat production. *Buffen* contributes 7.16 per cent of total red meat production and 6.19 per cent of total meat production. Chevon (Goat meat) and mutton (sheep meat) contributes 3.88 per cent and 0.77 per cent of total red meat production and 3.36 per cent and 0.66 per cent of total meat production respectively (Field survey 2017 and author's calculation). *Buffen* is the healthiest meat among red meats and economical also. *Buffen* is becoming more popular worldwide because of its some inherent properties over cattle meat with respect to attributes such as lower intra muscular fat, cholesterol and high calories and units of essential amino acids, biological value and iron content. Sound knowledge about the procedure of buffalo and *buffen* marketing is essential to increase the publicity of such kind of healthy meat. Increased consumption of *buffen* can fulfill the growing demand of protein of growing population.

Though the buffalo is an important part of livestock, there were hardly very few research accomplished so far that investigated marketing and consumers' preference on *buffen* in Bangladesh. So, the study had an attempt to examine the different socioeconomic factors related with buffalo production and to investigate the marketing system of *buffen*.

Objectives of the study

The overall objective of the study was to explore the existing socioeconomic status and consumers' preference on *buffen*. Moreover, the specific objectives of the study are as follows:

- To examine the socioeconomic profile of buffalo farmers; and
- To assess the market and consumers' preference on *buffen*.

2. Methodology

The methodology was followed for the study as: twelve districts namely: Mymensingh, Bagerhat, Moulvibazar, Potuakhali, Laxmipur, Jamalpur, Noakhali, Bhola, Feni, Chittangong, Tangail and Sirajgonj were selected purposively on the basis of buffalo population density. Field survey method was followed to collect primary data. A total of 1400 buffalo farmers were interviewed following simple random sampling technique (Table 1).

Table 1. Sample distribution in the study areas

Sl. No.	Districts	Upazilas	Sample size
1.	Mymensingh	Trishal, Fulbaria, Haluaghat	170
2.	Moulvi Bazar	Borolekha, Kamalganj, Rajnagar	170
3.	Potuakhali	Potuakhali sadar, Kalapara, Galachipa	170
4.	Laxmipur	Laxmipur sadar, Kamalnagar, Ramgati	170
5.	Bagerhat	Morolgong, Kachua, Rampal	180
6.	Jamalpur	Bakshiganj, Madargong	110
7.	Noakhali	Subarnachar, Hatia	110
8.	Bhola	Manpura, Charfashan	110
9.	Feni	Sonagaji	60
10	Chittagong	Swandip	50
11	Tangail	Shakhipur	50
12	Sirajgonj	Ullahpara	50
Total			1400

To collect the necessary data, an interview schedule was prepared in accordance with the objectives set for the study. The prepared interview schedule then pre-tested in the field among some buffalo keepers before final data collection. After pre-testing, the interview schedule was finalized after making required corrections, modifications and adjustment in the light of the experience gained from the field. The survey method was direct interview. Secondary data and information were also collected as required. Beside quantitative survey, qualitative tools such as Focus Group Discussion (FGD) and KII (Key Informant Interview) were carried out on buffalo farmers, veterinary technicians, vaccination service providers and Upazila livestock officers to have better understanding on existing constraints, challenges and opportunities of buffalo keeping. The data collected in the mentioned regions during the month of June 2011 to April 2016. In order to obtain reliable data, cross check was made. Data were analyzed using Statistical Package for Social Sciences (SPSS) software. Tabular analysis was used to find out simple statistical measures like average, percentage, ratios etc.

3. Result and Discussion

Socioeconomic Profile of the Buffalo Farmers

Socioeconomic parameters such as age, education, occupation, experiences of buffalo rearing, farm size, family size and dependency ratio were studied to know the buffalo farmers` socioeconomic condition.

Age: The classified age groups were up to 30 years, 31-45 years, 46-60 and above 60 years. The highest per cent (41%) of farmers were in age group of 31-45 years indicating that farmers were mature enough for taking household decisions properly & timely and also strong enough to give more labour to their farming activities followed by age group 46-60 years, up to 30 years, and above 60 years, respectively (Table 2).

Table 2. Farmers' age

Areas	Age range (Years)			
	Up to 30	31 to 45	46 to 60	Above 60
Mymensingh	33 (20)	75 (44)	45 (26)	17 (10)
Moulvibazar	41 (24)	71 (42)	43 (25)	15 (9)
Patuakhali	33 (19)	69 (41)	51 (30)	17 (10)
Laxmipur	43 (25)	68 (40)	47 (28)	12 (7)
Bagerhat	39 (22)	78 (43)	50 (28)	13 (7)
Jamalpur	37 (34)	41 (37)	23 (21)	9 (8)
Noakhali	25 (23)	43 (39)	35 (32)	7 (6)
Bhola	28 (25)	45 (41)	27 (25)	10 (9)
Feni	10 (17)	22 (37)	20 (33)	8 (13)
Chittagong	7 (14)	20 (40)	20 (40)	3 (6)
Tangail	8 (16)	17 (34)	19 (38)	6 (12)
Sirajgonj	6 (12)	29 (58)	13 (26)	2 (4)
All areas	**310 (22)**	**578 (41)**	**393 (28)**	**119 (9)**

Source: Field survey 2012, 2014, 2016. (Value in the parentheses indicates percentage).

Occupation: Most of the farmers were engaged with agriculture as income generating activity. On an average, 88 percent buffalo farmers were engaged full time on agriculture as primary occupation. Besides, 11 percent farmers had business and only 1 percent engaged with service (Table 3).

Table 3. Occupation

Areas	Occupation		
	Agriculture	Business	Service
Mymensingh	158 (93)	12 (7)	-
Moulvibazar	161 (95)	6 (3)	3 (2)
Patuakhali	139 (82)	28 (16)	3 (2)
Laxmipur	144 (85)	22 (13)	4 (2)
Bagerhat	162 (90)	18 (10)	-
Jamalpur	102 (93)	8 (7)	-
Noakhali	88 (80)	19 (17)	3 (3)
Bhola	83 (76)	20 (18)	7 (6)
Feni	51 (85)	9 (15)	-
Chittagong	47 (94)	3 (6)	-
Tangail	49 (98)	-	1 (2)
Sirajgonj	47 (94)	3 (6)	-
All average	**1231 (88)**	**148 (11)**	**21 (1)**

Source: Field survey 2012, 2014, 2016. (Value in the parentheses indicates percentage).

Education: Education contributes to economic, social, environmental and ethical development. It plays a pivotal and significant role in adoption of new and innovative technology and agricultural modernization especially in rearing buffalo. It makes a man more capable of managing scarce resources and maximizing profit. Table 4 showed the education level of the buffalo farmers in the study areas. It is evident that highest percent (48%) of buffalo farmers were illiterate and 38 percent farmers were in primary level education followed by SSC, HSC and Degree.

Table 4. Education

Areas	Education				
	Illiterate	Primary	SSC	HSC	Degree & Up
Mymensingh	70 (41)	78 (46)	13 (8)	8 (4)	1 (1)
Moulvibazar	78 (46)	54 (32)	24 (14)	10 (6)	4 (2)
Patuakhali	84 (49)	56 (33)	19 (11)	8 (5)	3 (2)
Laxmipur	86 (50)	63 (37)	10 (6)	10 (6)	1 (1)
Bagerhat	90 (50)	62 (34)	14 (8)	11 (6)	3 (2)
Jamalpur	64 (58)	32 (29)	9 (8)	4 (4)	1 (1)
Noakhali	53 (48)	38 (35)	10 (9)	6 (5)	3 (3)
Bhola	39 (35)	64 (58)	4 (4)	2 (2)	1 (1)
Feni	33 (55)	20 (33)	4 (7)	2 (3)	1 (2)
Chittagong	10 (20)	36 (72)	3 (6)	1 (2)	-
Tangail	27 (54)	20 (40)	2 (4)	1 (2)	-
Sirajgonj	38 (76)	12 (24)	-	-	-
All areas	**672 (48)**	**535 (38)**	**112 (8)**	**63 (5)**	**18 (1)**

Source: Field survey 2012, 2014, 2016. (Value in the parentheses indicates percentage).

Experience: It was found that 49 per cent buffalo farmers had above 15 years of experience followed by 18 per cent 6-10 years, 22 per cent 11-15 years and 11 per cent up to 5 years of rearing buffalo (Table 5).

Table 5. Experience

| Areas	Range (Years)			
	Up to 5	6 to 10	11 to 15	Above 15
Mymensingh	7 (4)	29 (17)	47 (28)	87 (51)
Moulvibazar	10 (6)	35 (21)	43 (25)	82 (48)
Patuakhali	20 (12)	47 (28)	50 (29)	53 (31)
Laxmipur	11 (6)	26 (15)	35 (21)	98 (58)
Bagerhat	15 (8)	30 (17)	35 (19)	100 (56)
Jamalpur	11 (10)	17 (15)	24 (22)	58 (53)
Noakhali	6 (6)	24 (21)	34 (31)	46 (42)
Bhola	17 (15)	8 (7)	14 (13)	71 (65)
Feni	20 (33)	12 (20)	8 (14)	20 (33)
Chittagong	6 (12)	4 (8)	9 (18)	31 (62)
Tangail	18 (36)	10 (20)	3 (6)	19 (38)
Sirajgonj	13 (26)	15 (30)	4 (8)	18 (36)
All areas	**154 (11)**	**257 (18)**	**306 (22)**	**683 (49)**

Source: Field survey 2012, 2014, 2016. (Value in the parentheses indicates percentage).

Family size: It is also revealed that average farm size was 0.95 hectare. The average family size in the study area was 6 persons per family which was slightly higher than the national average. Average Active members and dependency ratio were calculated 3.18 persons per family and 0.94 respectively (Table 6).

Table 6. Family size

| Areas	Farm size (ha)	Family size	Active members	Dependency ratio
Mymensingh	1.14	5.77	3.52	0.64
Moulvibazar	1.06	6.61	4.12	0.60
Patuakhali	1.04	6.16	2.92	1.11
Laxmipur	0.96	5.71	2.46	1.32
Bagerhat	0.98	6.26	3.12	1.00
Jamalpur	0.11	5.59	2.20	1.54
Noakhali	1.37	6.62	3.86	0.71
Bhola	1.61	5.84	2.92	1.00
Feni	0.79	6.35	3.25	0.95
Chittagong	0.54	6.06	3.18	0.95
Tangail	1.25	4.82	3.46	0.46
Sirajgonj	0.52	6.10	3.14	1.00
All areas	**0.95**	**6.00**	**3.18**	**0.94**

Source: Field survey 2012, 2014, 2016. (Value in the parentheses indicates percentage).

Buffalo Marketing: Number of buffalo sold by farmer per farm in last five years in specific locations was observed to understand the marketing pattern of buffalo. In 2012, highest (10.4) number of buffalo were sold in Noakhali and lowest (2.0) in Chittagong, in 2013 highest (11.25) was in Bhola and lowest (1.0) in Tangail. In 2016, highest (13.3) number was found in Noakhali and lowest (1.25) in Tangail. Highest Average (11.22) number of buffalo sold in Noakhali and lowest average (2.17) was found in Tangail (Table 7 and Figure 1).

Table 7. Number of buffalo sold by the farmer per farm in different Location & years

Year	Tangail	Feni	Chittagong	Bhola	Noakhali
2012	5	6.3	2	4.67	10.4
2013	1	6.9	2.8	11.25	9.6
2014	2	7	2.7	14	12.2
2015	1.6	7.7	4.1	7.25	10.6
2016	1.25	8.1	2.28	10.8	13.3
Average	**2.17**	**7.2**	**2.76**	**9.46**	**11.22**

Source: Field survey 2017 and author's calculation.

2016

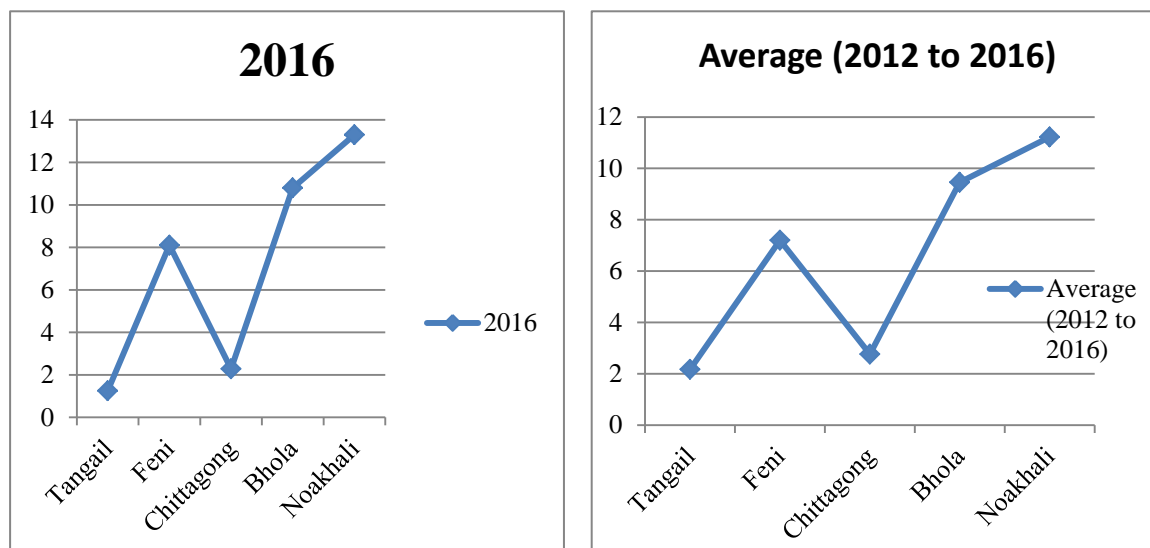

Average (2012 to 2016)
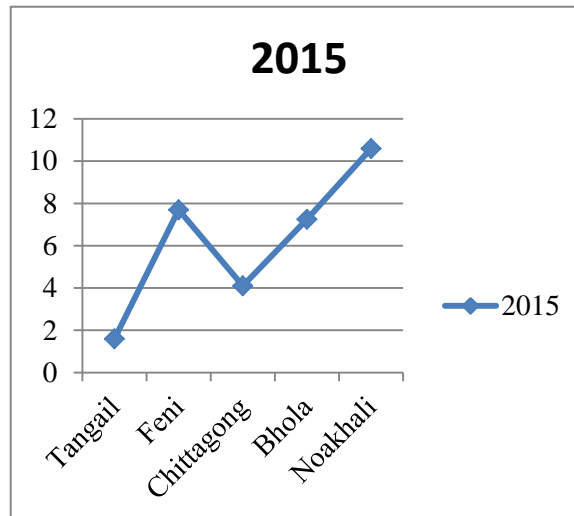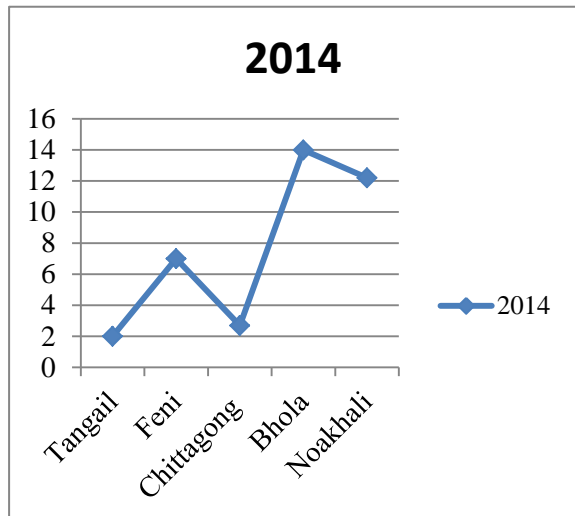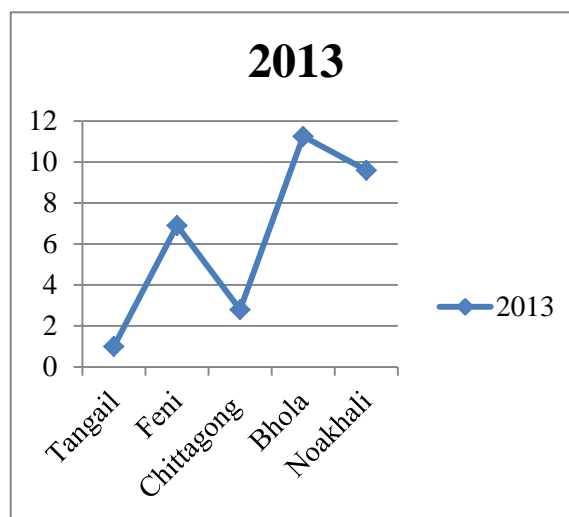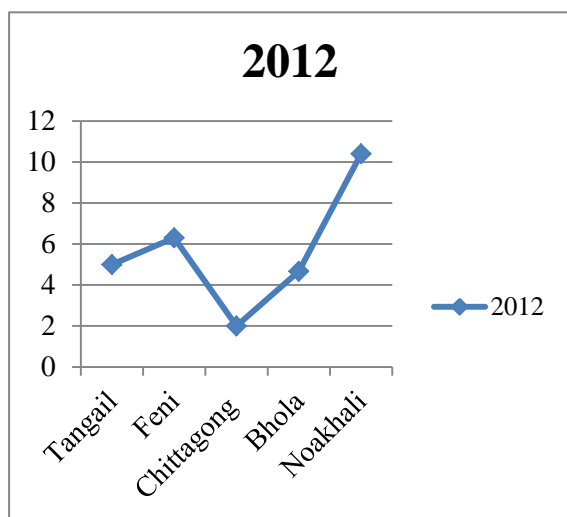
Figure 1. Per Household Buffalo Selling Trend in the selected areas in different years

Buffalo Fattening: According to market concepts, four categories were selected to whom the farmers sell their buffalo i.e. General buyer means another farmer who buy buffalo for further rearing, Wholesaler who buy buffalo from the farmer and rears one or two months and then sell to butcher. Some farmers reported that they sell their buffalo to both general buyer and wholesaler included in other category. The study revealed that 46.67 percent farmers sold their buffalo to general buyer and 62.5 percent to wholesaler. About 15 percent farmers sold their buffalo to butcher. Almost 44 percent farmer sold their buffalo from their own farm and about 13 percent taking their buffalo at village *hut* (market). Sixty percent farmers sold both from own farm and at *hut*. About 50 percent farmers reported that they do fattening before selling (Table 8).

Table 8. Buffalo sale & Fattening

Location (n=10)	Sell to whom (%)				Where to sell (%)			Buffalo fattening
	General Buyer	Wholesaler	Butcher	Others	Own farm	Market (*hut*)	Both	
Tangail	70	30	-	-	80	20	-	40
Feni	-	90	10	-	10	-	-	50
Chittagong	30	-	20	50	30	10	60	100
Bhola	40	40	-	20	90	10	-	-
Noakhali	-	90	-	10	100	-	-	10
All areas	**46.67**	**62.5**	**15**	**26.67**	**44**	**13.33**	**60**	**50**

Source: Field survey 2017 and author's calculation.

Meat preference & Consumption: Forty eight percent consumer reported that they preferred *buffen* most among red meats and 65 percent preferred beef indicating that still *buffen* is not as much acceptable as beef in our country. It was showed that average number of days of meat consumption per month was about 5 days. In average, they consumed *buffen* 1.67 days/month, 1.86 days/month consumed beef, 1.49 days/month consumed chicken and 1.0 day/month consumed mutton. Average consumption amount of *buffen*, beef, chicken and mutton was 2 kg/month, 2.28 kg/month, 2.37 kg/month and 1 kg/month respectively (Table 9).

Table 9. Meat preference & Consumption

Areas (n=10)	*Buffen* pref. (%)	Beef pref. (%)	Average days per month	*Buffen*		Beef		Chicken		Mutton	
				Avg. days	Am.(kg)	Avg. days	Am. (kg)	Avg. days	Am.(kg)	Avg. days	Amt. (kg)
Tangail	10	90	5.3	1.33	1.33	2.0	2.78	1.11	2.22	-	-
Feni	30	70	4.8	1.67	1.67	2.6	2.8	2.2	3.4	-	-
C.gong	80	20	4.4	2.1	2.4	1.0	1.12	1.0	1.1	1.0	1.0
Bhola	20	80	5.3	1.23	1.23	2.5	3.5	1.67	2.83	-	-
Noakhali	100	-	4.6	2.0	3.37	1.21	1.22	1.48	2.3	1.0	1.0
All areas	**48**	**65**	**4.88**	**1.67**	**2.0**	**1.86**	**2.28**	**1.49**	**2.37**	**1.0**	**1.0**

Source: Field survey 2017 and author's calculation.

Consumer's preference on meat in view point of butcher: In view point of butcher, about 46 percent consumer preferred *buffen* as they buy more *buffen* than beef and 54 percent liked beef. Average price of *buffen* was Tk. 430 in the selected regions (Table 10).

Table 10. Consumer's preference on meat in view point of butcher

Areas (n=10)	Meat preference		Buffalo meat price (average)
	Buffen (%)	Beef (%)	
Tangail	-	100	387
Feni	10	90	434
Chittagong	100	-	450
Bhola	20	80	430
Noakhali	100	-	450
All areas	**46**	**54**	**430**

Source: Field survey 2017 and author's calculation.

4. Conclusion and Recommendations

The study was undertaken to identify the socioeconomic profile of buffalo keeping farmers, to determine financial profitability of buffalo rearing and to estimate the marketing procedure of *buffen*. The study revealed that the benefit cost ratio (BCR) from buffalo rearing was 1.31 which indicated that buffalo rearing is a profitable venture. The study exposed that 31% annual household income generated from buffalo, 5% from livestock except buffalo, 12% from crop, 23% from business and 27% from service sector. The study Researchers found some important issues as recommendations for the improvement of the buffalo farmers from this study, such as:

- Government should provide feed support to the flood affected areas also should provide subsidies for feed and forage production.
- Good medical facilities should be provided by the veterinary workers.
- Government should provide good quality seed and develop public-private partnerships in diversified vaccine production.
- Security of the buffaloes should be ensured by the ULO Officers.
- Government should provide financial support to buffalo keeping farmers as they can afford treatment of their buffaloes & also can afford high quality breed.

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