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Value added of milk and milk by products at Adarsha sadar upazila of Cumilla

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ABSTRACT

The study has been purposed to investigate the utilization of milk for consumption of fluid milk and milk products, the distributive pattern, consumer's preference of Adarsha Sadar, Cumilla in Bangladesh. The study was based on milk and milk by-products and data were collected from dairy farms and sweetmeat shops by direct interview. Herd size of dairy farms were small (33.33%), medium (41.67%), and large (25%). Shopkeepers of different sweetmeat shops received raw milk from dairy farms 57.14%, milk suppliers 42.86% and highest amount of whole milk is required in per unit production of rashmalai 30% and rashgalla 18% and lowest yogurt 9%. Various festivals and other educational results increased the sale of milk and milk products; specially rashmalai and rashgalla. The study revealed that Adarsha SadarUpazilla, Cumilla can be a profitable place for dairy farming and selling their by-products.

Introduction

Bangladesh is mainly an agricultural country; and agriculture continues steering force of the economy. Agriculture plays a presiding role in its economy in terms of sustainable land management food security employment value addition and foreign currencies. Agriculture sector is consisting of four sub sectors. These are crops, livestock, fisheries and forestry. Livestock is an indispensable component of the rural economy and the livelihood development of the substance farmers. The benefaction of livestock sub sectors of the country's economy is 2.27% as against 14.07% of agriculture (DLS, 2011). Livestock sub sector provides full time employment for about 25% and part time employment for 50% of the population. The demand of milk and milk products is increasing because of the rapid increase of population, the spread of education and growing nutrition awareness. Bangladesh is 126ml / person /day, whereas recommended consumption is 250ml/ person/day (Kabir et al., 2018). Among many, the major constraints restricting the expected growth of dairy sub sector is lack of proper information inappropriate breeding, feeding, farm management, diseases control and inefficient marketing.

In Bangladesh there are 64 districts of which Cumilla is one of the biggest districts and it is about 3085.17 square kilometers. There have 109 dairy farms and in Adarsha Sadar Upazilla, Cumilla. Upazilla Veterinary Hospital is an important and reliable place of finding data. Milk consumption pattern is checked based on different milk products like fluid milk, sweetmeat, curd, butter, cheese, ghee etc. Various types of sweetmeat are- rashmalai, rashgalla, kalo jam, dahi, are being produced here mainly in this area. They are very delightful, healthful, refreshing, nutritious and very popular in these area. In this era of industrialization, food habit is common and people altering day by day and increasing consumption pattern of milk products because of rapid growth of population as well as capita. That is why people from different places are there to deal with sweetmeat business by producing of milk and milk by-products. Due to huge production deficiency per consumption requirement in Cumilla the dairy sub sector promotion is one of the most potential areas of intervention for ensuring food security, nutrition and poverty alleviation. Considering the above fact the study was undertaken to take up an in-depth assessment of value chain of milk and milk products marketing through recognizing actors (farmers, operators, facilitators, consumers). It was also necessary to identify challenges and opportunities of this dairy sub sectors in Cummila. The study included to explore the milk production and marketing system (both formal and informal) of milk in Cumilla. Embellishment of current consumption pattern of milk and milk products, especially various types of sweets was also observed.

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Materials and Method

Study area

The study was conducted in Cumilla Sadar Upazilla area during the period of December 2019 to January 2020 for collecting the information of dairy farms of Cumilla.

Data collection

Identifying and collecting secondary documents from different organizations that had direct or indirect stake on milk and milk byproducts value chain in Adarsha Sadar, Cumilla. Primary data were collected in the field through visiting and observations, one-on-one interviews, and telephone interviews. The interviews were carried out with value chain actors in unions, city corporation area of Cumilla.

Data were collected from 24 farms in different areas and 6 sweetmeat shops of Adarsha Sadar, Cumilla. The data from different shopes - small (under 50 liters), medium (under 100 liters), high (above 100 liters) were collected by interview method and questionnaire.

Results and Discussion

In Bangladesh milk is processed by different many milk processing companies. Due to shortage of milk supply as per need per person there is need to analyse the milk supply chain in Bangladesh

The major milk processing companies are listed in table 1 with the capacity to collect milk and their contribution in the market.

Table 1: Milk processed by different companies

Processing companies	Starting year	Average collection ('000 liters/day)	Market share (%)
BMPCUL	1973	200	52.08
BRAC dairy	1988	80	20.83
PRAN dairy	2001	40	10.42
Ultra Shelaida dairy	1998	10	2.60
Aftab dairy	1998	8	2.08
Grammen-Danone	2007	1	0.03
Rangpur dairy	2007	8	2.08
Akij dairy	2007	4	1.04

Source: Adopted from Raha (2009) and other source

Supply chain of dairy industry in Cumilla

In Cumilla majority of dairy farmers those are mainly small holder dairy owners selling their milk by traditional (informal) marketing system. Usually peddler and other milk collectors are involved in this marketing. In this system or marketing channel the milk producers are not getting the expected price. Medium holder dairy owners are selling their milk to consumers and sweetmeat shops. Whereas large sized dairy owners selling their milk to the sweetmeat shops.

Milk products in Cumilla

The sweetmeat shops in Cumilla after collecting the milk they produce various types of milk by-product such as- *Rashogolla, Sponge,Kalo jam, Chamcham, Sandesh, Raskadam, Rasmalai*); *Dahi*, Yogurt etc. According to the shop's owner the highest demand was for *Rashogolla* followed by *Dahi* and yogurt. However Dahi are produced in special shop in Cumilla.

Dairy farms in Cumilla

Table 2: Categories of dairy farms under study

Farm Size	No. of farm	Percentage
i) Small (under 50 liters)	8	33.33
ii) Medium (under 100 liters)	10	41.67
iii) Big (above 100 liters)	6	25.00
Total	24	100.00

In Cumilla there were different sizes of dairy farms (Table 2) of which medium size was highest

(41.67%) followed by small (33.33%) and big farm (25%).

The milk production was varied farm to farm. Highest production was observed with 840 liter per day (Table 3).

Table 3: Production of milk of different farms (liter/day)

Production of milk (liter/day)	Frequency	Percentage (%)
38	2	8.33
41	1	4.17
42	1	4.17
45	1	4.17
47	1	4.17
48	1	4.17
50	1	4.17
51	1	4.17
52	2	8.33
57	1	4.17
60	1	4.17
70	1	4.17
77	1	4.17
78	1	4.17
80	1	4.17
85	1	4.17
220	1	8.33
255	2	4.17
320	1	4.17
380	1	4.17
840	1	4.17
Total	24	100.00

Different selling point of milk were recorded. Among them consumer and sweet shop were the major point for selling milk (Table 4).

Table 4: Selling point of milk.

Selling Point	Frequency	Percentage (%)
Consumers	13	54.17
Sweet shop	11	45.83
Total	24	100.00

Cost-benefit analysis

The cost benefit analysis of small, medium and large dairy farms for only milk was accessed. The cost of milk production was the cumulative cost involve with milk production. Highest cost was involved with feed (258 Tk) followed by labour cost (30 Tk) per day. However the total cost for producing milk 10Kg/day for small sized farm was 324 Tk per day. The calculated return was 600 Tk per day and the benefit was 276 Tk. Per day (Table 5).

Whereas the cost of milk production for medium sized farm at 20Kg/day was 404 Tk and return was 1040-1200 Tk. The benefit was 636 to 796 Tk.

Table 5: Cost of milk production (10Kg/day for small sized farm)

Items	Expenses (Tk)
i) Feed cost	
Roughage	48
Concentrates	210
ii) Labor cost (2 persons)	30
iii) Repair and maintenance	2
iv) Electricity bill	7
v) Medicine + AI cost + Doctor fee	17
vi) Transport cost	3
vii) Tools and equipment cost	2
viii) Other expenses	5
Total (per day)	324
Per month	9720
Per year	116640

Return (Selling only milk/day)

Milk Price (@60.00 taka/Kg)/day	**Taka**
Per month	18000 taka
Per year	216000

Table 6: Cost of milk production (20Kg/day for medium sized farm)

Items	Expenses
i) Feed cost	
Roughage	60
Concentrates	270
ii) Labor cost (2 persons)	35
iii) Repair and maintenance	3
iv) Electricity bill	8
v) Medicine + AI cost + Doctor fee	19
vi) Transport cost	3
vii) Tools and equipment cost	2
viii) Other expenses	4
Total (per day)	404
Per month	12120
Per year	145440

Return (Selling only milk/day)

Milk Price (@60.00 taka/Kg)	1200 taka (per day)	24000 taka (per month)	288000 taka (per year)
Milk Price (@52.00 taka/Kg)	1040 taka (per day)	20800 taka (per month)	249600 (per year)

Table 7: Cost of milk production (30Kg/day for medium sized farm)

Items	Expenses
i) Feed cost	
Roughage	75
Concentrates	290
ii) Labor cost (2 persons)	42
iii) Repair and maintenance	4
iv) Electricity bill	8
v) Medicine + AI cost + Doctor fee	22
vi) Transport cost	4
vii) Tools and equipment cost	3
viii) Other expenses	5
Total (per day)	453
Per month	13590
Per year	163080

Return (Selling only milk/day)

Milk Price (@60.00 taka/Kg)	1200 taka (per day)	36000 taka (per month)	432000 taka (per year)
Milk Price (@52.00 taka/Kg)	1040 taka (per day)	31200 taka (per month)	374400 taka (per year)

Cost-benefit analysis of sweetmeat shop

In sweetmeat shop they collected raw milks from suppliers and milk traders. There were 4 dairy farms from where 57.14% and from milk suppliers 42.86% milk was collected by the sweetmeat shops they collected milk at average 52 taka/Kg only. From the raw milks they got 175gm to 180gm curdle or chana.

Table 8: Availability of different types of sweetmeats at Adarsha Sadar, Cumilla

Sweetmeat name	Available in shops	No. of shops	Availability (%)
Rashmalai	5	7	71.42
Rashgalla	4	7	57.14
Kalo jam	2	7	28.57
Sponge	1	7	14.28
Dahi	4	7	57.14
Yogurt	2	7	28.57

Table 9: Distribution pattern of milk for the preparation of different sweetmeat at Adarsha Sadar, Cumilla

Sweetmeat name	Milk required/day (Litre)	Minimum (Litre)	Maximum (Litre)
Rasogolla	16.42±4.89	10	22
Rashmalai	20.85±6.98	10	28
Kalo jam	12.42±3.30	8	13
Sponge	11.28±2.87	8	16
Dahi	15±6	8	25
Yogurt	9±3.55	5	15

Table10: Daily production of different milk products in different shops at Adarsha Sadar, Cumilla

Sweetmeat name	Produced (kg)	Minimum (Kg)	Maximum (Kg)
Rasogolla	17±4.35	11	23
Rashmalai	18.85±7.24	8	26
Kalo jam	14.24±3.77	10	19
Sponge	11.57±1.90	10	15
Dahi	13.85±6.61	7	25
Yogurt	9±3.55	5	15

Table 11: Production cost and return of rashgalla (10Kg).

Item	Expenses (Taka)
Milk cost (@52 taka/Kg)	520
Sugar cost (@48 taka/Kg)	480
Labor cost	400
Tools and equipment cost	80
Management and repair	60
Electricity Bill	33
Other Expenses	20
Total	1593

Return.

Rashgalla (@240 taka/Kg)	2400

Net return: 2400-1593=807 Tk/10 Kg

Table 12: Production cost and return of Kalo Jam (10Kg).

Item	Expenses (Taka)
Milk cost (@52 taka/Kg)	468
Sugar cost (@48 taka/Kg)	480
Labor cost	380
Tools and equipment cost	80
Management and repair	60
Electricity Bill	33
Other Expenses	20
Total	1521

Return.

Kalo Jam (@220 taka/Kg)	2200

Net return = 2200-1521= 679 Tk/10 Kg

Table 13: Production cost and return of Rashmalai (10Kg).

Item	Expenses (Taka)
Milk cost (@52 taka/Kg)	624
Sugar cost (@48 taka/Kg)	480
Labor cost	420
Tools and equipment cost	80
Management and repair	60
Electricity Bill	33
Other Expenses	20
Total	1717

Return.

Rashmalai (@260 taka/Kg)	2600

Net return= 2600-1717= 883 Tk/10 Kg

Table 14: Production cost and return of sponge (10Kg).

Item	Expenses (Taka)
Milk cost (@52 taka/Kg)	572
Sugar cost (@48 taka/Kg)	480
Labor cost	400
Tools and equipment cost	80
Management and repair	60
Electricity Bill	33
Other Expenses	20
Total	1645

Return.

Rashgalla (@240 taka/Kg)	2400

Net return= 2400-1645 = 755 Tk per 10 Kg

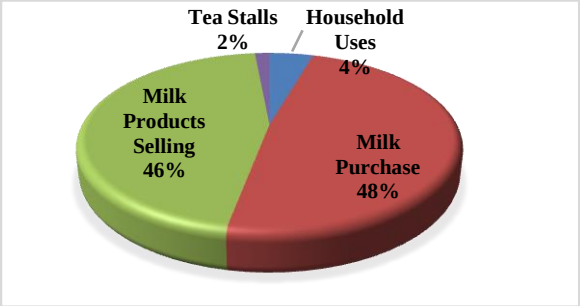

Figure 1: Uses of milk per day in Cumilla

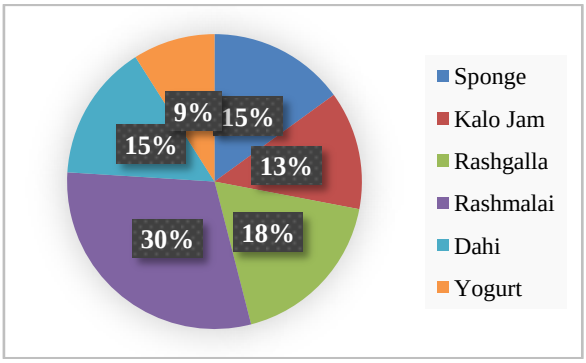

Figure 2: Utilization of milk for different products in the study area.

In our country about 50% raw milk is deposed off to various agencies and private companies which is very closed to Babu and Verma, (2010). Production cost may gradually decrease with increase in size of unit Singh *et al.*, (2012).

Highest net return was observed for Rashmalai was 883 Tk/10 Kg followed by Rahgalla 807, sponge sweet 755 and Kalo Jam 679 Tk/10 Kg.

In general the milk is used for different purpose were classified as milk purpose (48%), milk product selling purpose (46%), household purpose (4%) and tea stall (2%) (Figure 1).

Milk is utilized for different sweetmeat production in Cumilla (Figure 2). Among them highest utilization was observed for Rashmalai (30%) followed by Rahgalla (18%), Sponge and Dahi (15% and lowest utilization was observed for Yogurt (9%). The study is in agreement with the study of Ahmed *et al.*, (2016).

Conclusion

During evaluate dairy sub-sector as source of enrollment and a business opportunity for reduction poverty and contribution of livestock production to employment and earning source for smallholder farms through the production of more value products analyze to most crops. The study revealed that Adarsha SadarUpazilla, Cumilla can be a profitable place to dairy farming and selling their by-products.

The study found the opportunities in dairy sub-sector in Cumilla due to strong and faithful network among milk traders, good transport facilities, and better consumption rate of milk in the communities. Online or IT based marketing are extending day by day, financial organization supporting the milk by-product marketing and involvement of women in milk and milk products marketing are the factors for prospect of dairy sector in Cumilla.

However, financial support, lack of cooperative society and value added methods are major constrain to promote the sector in this area. Government and non government organization should address the issue to improve the livelihood development in this area.

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