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Dairy Industry in Bangladesh and Structures of Milk Vita

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Summary

The present study attempted to examine the role of Milk Vita dairy cooperative in the development of dairy industry in Bangladesh. The specific objectives were to identify the activities and financial performance of Milk Vita. The findings of the study were as follows. First, Milk Vita provides different dairy related services to dairy farmers for increasing milk production and milking cow improvement. Second, the results of financial ratio analysis suggested that the financial condition of Milk Vita is relatively good.

1. Background and Objectives

Bangladesh is one of the poorest countries in the world in respect of supply of food requirements in general and dairy products in particular. Child malnutrition is a serious problem in Bangladesh, nearly, one-half of all children below the age of five years being either underweight or stunted (Deolalikar [6]). Milk is the nature's most perfect food which provides high valuable proteins, necessary amino acids and significant quantities of inorganic salts such as phosphorus and calcium. In this situation, milk can play an important role in the supply of necessary protein and vitamins to the Bangladeshi people to fight against malnutrition and for their social enhancement.

According to the national health strategy, the people of Bangladesh (140 million) should have 240g of milk every day, then the annual national milk demand will be 12.26 million tons (BMPCUL [5]). However, it produced only 2.17 million tons of milk in 2004 which is only 14% of the milk demand in Bangladesh (FAO [7]). To fulfill the extra demand, Bangladesh imports a huge amount of dairy products.

Under these circumstances, to meet up the deficiency of milk and milk products in a shortest possible time, the government and private organizations as well as cooperative are making effort to enhance the milk production in the country. Bangladesh Milk Producers' Cooperative Union Limited (BMPCUL) known as Milk Vita is one of the largest and oldest dairy cooperative in Bangladesh, established by the government for the enhancement of milk production in the country.[1)] It possesses 63% market share of liquid milk, which provides various services to the dairy farmers, like milk collection facilities, veterinary services, artificial insemination services, balance cattle feed, loan for cattle purchase, etc., as a part of their milk production enlargement and milking animal improvement.

Though Milk Vita is an important part of dairy industry in Bangladesh, only a few studies have so far been conducted, there has been no study that investigates the role of Milk Vita in the development of dairy industry in the country.

The purpose of this study is to examine the role of Milk Vita in the development of dairy industry in Bangladesh. In order to establish future plan for the dairy development in the country, it is essential to know details about the Milk Vita and its activities. Thus, the present study was undertaken to identify its contribution to the dairy farmers and whether its financial performance is sound enough for the further growth as well as dairy development in Bangladesh. The specific objectives are to explore

the structural characteristics and dairy services of Milk Vita, to evaluate the financial performance of Milk Vita.

2．Bangladesh and its Dairy Industry

1）Agricultural and Livestock Sector in Bangladesh

About 75% of Bangladeshi lives in rural areas where 51.7 % (BBS [2]) of labor force engaged in agricultural activities. The principal crops in Bangladesh are rice, wheat, tea, jute, potatoes, pulses, oilseeds, sugarcane, tobacco, spices, vegetables, bananas, mangoes, coconut and jackfruit etc.

In 2004, agricultural sector contributes 16.9% to the national GDP (BBS [3]). The agricultural economy is experiencing diversification rapidly. Livestock (especially dairy farming) has been going through a major transformation. Like other countries, the agricultural sector of Bangladesh comprises various sub-sectors such as crop, livestock, fisheries, forestry etc. Livestock sub-sector comes next to the crop sub-sector in order of importance. Table 1 shows the growth of agriculture, fisheries and their sub-sector. As Bangladesh experiences flood every year, thus, the growth of agricultural sector highly depends on the natural condition. Table 2 shows the contribution of agricultural sector to the national GDP as well as sector wise contribution to the agricultural GDP. It is observed from Table 1 and 2 that, though the agricultural sectors are achieving a considerable growth over the 1994-95 to 2004-05, however, the contribution of agricultural sector to the national GDP is on declining trend, because the industrial and service sectors are growing faster than the agricultural sector.

Livestock is an important part of the mixed-crop farming system in Bangladesh (Paul [17]). The sub-sector contributes 2.97% to the national GDP and 17.59% to the agricultural GDP in 2004 (BBS [3]). Crop sector provides feeds and fodder, such as paddy straw, rice bran, wheat bran, pulse bran, oil cake etc., to the livestock sector. On the other hand, livestock supplies necessary drought power to the crop sector for tillage, carrying, and other post harvest operations (Paul [17]). Among the livestock sector, recently dairy farming is gaining popularity. Historically, most of the households in rural area possessed cow for different purposes which resulted in a huge amount of cattle population in Bangladesh. Presently, there are about 24.5

Table 1　Growth of agriculture, fisheries and their sub-sectors (%, Base Year 1995-96)

	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
GDP Growth	4.93	4.62	5.39	5.23	4.87	5.94	5.27	4.42	5.26	6.27	5.38
1. Agriculture	-1.9	2.0	5.6	1.6	3.2	6.9	5.5	-0.6	3.3	4.4	-0.7
(a) Crop	-3.4	1.7	6.4	1.1	3.1	8.1	6.2	-2.4	2.9	4.3	-3.3
(b) Livestock	2.5	2.5	2.6	2.6	2.7	2.7	2.8	4.7	4.5	5.0	7.8
(c) Forestry	2.8	3.5	4.0	4.5	5.2	4.9	4.9	4.9	4.4	4.2	4.3
2. Fisheries	6.8	7.4	7.6	9.0	10.0	8.9	-4.5	2.2	2.3	3.1	4.0

Source: BBS [3].

Table 2　Contribution of agriculture and fisheries sector to national GDP and their sub-sectors to the agricultural GDP (%, Base Year 1995-96)

	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Agriculture	20.81	20.32	20.39	19.67	19.35	19.49	19.51	18.58	18.22	17.97	16.88
(a) Crop	15.43	15.03	15.21	14.59	14.33	14.59	14.70	13.75	13.43	13.23	12.10
	(74.17)	(73.96)	(74.57)	(74.15)	(74.06)	(74.87)	(75.37)	(74.00)	(73.69)	(73.63)	(71.68)
(b) Livestock	3.42	3.36	3.27	3.19	3.12	3.02	2.95	2.96	2.93	2.91	2.97
	(16.45)	(16.53)	(16.06)	(16.22)	(16.13)	(15.50)	(15.10)	(15.90)	(16.09)	(16.19)	(17.59)
(c) Forestry	1.95	1.93	1.91	1.89	1.9	1.88	1.87	1.88	1.86	1.83	1.89
	(9.38)	(9.51)	(9.37)	(9.63)	(9.81)	(9.63)	(9.53)	(10.10)	(10.22)	(10.18)	(10.72)
Fisheries	5.21	5.36	5.48	5.67	5.93	6.09	5.51	5.40	5.25	5.11	5.03

Source: BBS [3].
Note: Data shown in (　) indicate the contribution of sub-sector to agriculture.

0.85 million Buffalo, 34.5 million goats, (FAO [7]) in Bangladesh. Table 3 shows the livestock population over the period of 1974 to 2004. It is seen from the Table 3 that, the cow population did not increase or decrease significantly during the last three decades.

Table 3 Livestock population in Bangladesh (million head)

	1974	1984	1994	2004
Cow	24.95	21.92	23.76	24.50
Buffalo	0.44	0.58	0.87	0.85
Goat	10.60	13.56	28.05	34.50
Sheep	1.00	0.67	1.03	1.26

Source : FAO [7].

2） State of Dairy Industry in Bangladesh

The present milk production (in 2004) of the country is estimated at 2.18 million metric tons. The production of milk is increasing very slowly in the country where it was stagnated around 2 million metric tons for the last 10 years. Table 4 shows the milk production in Bangladesh from 1980-81 to 2004-05.

Considering nutritional demand e.g. by way of providing 240 grams of milk for 140 million people the estimated milk demand and deficit is shown by Fig. 1. Fig. 1 indicates that, there is a shortfall between production and the estimated demand for milk. The real demand for milk would be lower than the estimated demand. This is because, the people of Bangladesh are poor, they do not have enough purchasing ability to support this demand level where milk drinking habits and availability is another reason.

Bangladesh is a net importer of milk and milk products. Fig. 2 shows the milk import trend of recent years. It appears from the Fig. 2 that, the amount of milk imported in Bangladesh is on the decline trend. The quantity of milk produced in the country is not enough for the existing demand. To fulfill the demand, the country has to import milk and milk products.

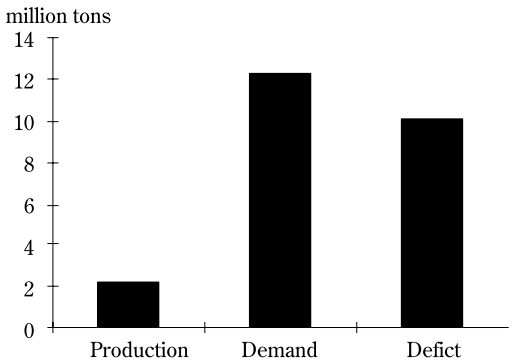

Fig. 1 Production, estimated demand and deficit of milk (million tons)
Source : BMPCUL [5].

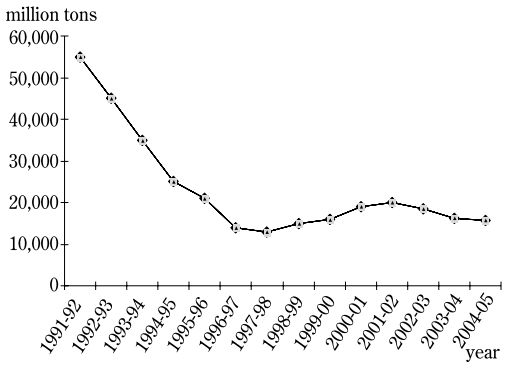

Fig. 2 Milk import
Source : Bangladesh Bank [1].

3） Milk Marketing System in Bangladesh

In Bangladesh, processing and marketing channels for dairy products can be categorized into two types such as formal and informal sector (Hemme, Garcia and Khan [10]). In informal sector, dairy farmers directly sell their produced milk to the consumer at near-by area (rural area) or to the trader (middlemen) in local / rural markets. In the same way, traders sell the milk to the bulk purchasers

Table 4 Milk production in Bangladesh (million metric tons)

	1980-81	1985-86	1990-91	1995-96	2000-01	2001-02	2002-03	2003-04	2004-05
Milk	1.16	1.31	1.59	1.99	2.14	2.15	2.25	2.17	2.18

Source : FAO [7].

like sweetmeats shops (BCAS [4]). It is estimated that, about 3 percent of the milk produced in Bangladesh flows through the formal channel of processing. Remaining 97 percent are informally handled as liquid milk through small traveling traders (Milkman, locally called farias and distributing traders).[2)]

The processing and marketing system of milk are different for formal and informal sectors. In the formal sector, cream is extracted from the raw milk to produce butter and ghee and the creamless milk is used as the main raw material for pasteurized milk. The formal sector comprises public and private sector companies / dairy cooperative such as Milk Vita, Arong, Amomilk, Afteb dairy etc. Generally, the farm gate milk prices in informal markets are lower than the formal marketing channel. Cooperative is the main channel for collecting milk destined to the formal market. Fig. 3 shows the informal sector's milk marketing system in Bangladesh.

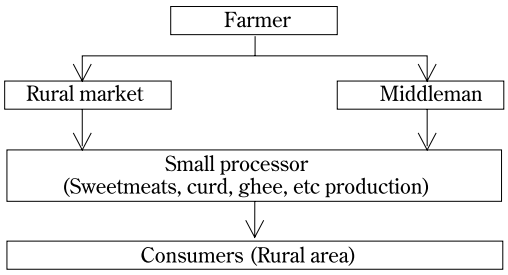

Fig. 3 Milk marketing system of informal sector
Source: Own illustration based on Saadullah [18] and BCAS [4].

It appears from the Fig. 3 that, in terms of informal sector dairy farmers do not have a guaranteed market for their produced milk. After home consumption they sell their produced milk directly to the middlemen or rural markets that did not assured them a reasonable price as well as guaranteed market. Milk is very perishable in nature, therefore, they can not handle their produced milk more than three / four hours have to sell to the middlemen who used to cheat the farmers by offering low price and fraudulent means of weight. That is not all; in bad weather condition usually middlemen do not show up to buy milk in the rural area where seasonal milk price variation is seen. In addition, farmers who do not sell their produced milk to the middlemen have to go to the rural market to sell their products which is really hard for them and time consuming.

In rural market milk price vary every day according to the demand and supply of milk. Thus, sometimes farmers can not sell their milk even at low prices. It also appears from the Fig. 3 that, in informal sector milk produced in rural areas are mostly consumed by the rural consumers.

3. Structural Characteristics and Activities of Milk Vita

1) Background Condition of Milk Vita

Since the independence in 1971, the government of Bangladesh has been trying to enhance the milk production in the country to fight against the malnutrition of Bangladeshi people. Milk Vita was formed under the cooperative fold according to the cooperative ordinance of 1984. It is the apex body (the central organization) of Primary Milk Producers' Cooperative or Primary Cooperative.[3)] To enhance milk production in the country is the main objective of Milk Vita.

To encourage the milk production in the country, government of Bangladesh offered tax holiday to Milk Vita for.[4)] Government's plan for the development of dairy industry is aimed at a reduction of the foreign exchange for purchase of imported dairy products but also to provide the farmers with the opportunity to earn increased and more regular income and generate employment opportunities in farming, milk processing and manufacturing industries. With the continuous support of Bangladesh government and international donors Milk Vita could extend its activities in the milk and milk products market with in a short period of time. The other companies (in Bangladesh) associated with the milk processing and marketing are in private sectors, which are not big enough to compete with

the Milk Vita in the market. Fig. 4 shows the share of milk marketing among the different enterprises. It is appeared from the Fig. 4 that, Milk Vita has the largest share in the market.

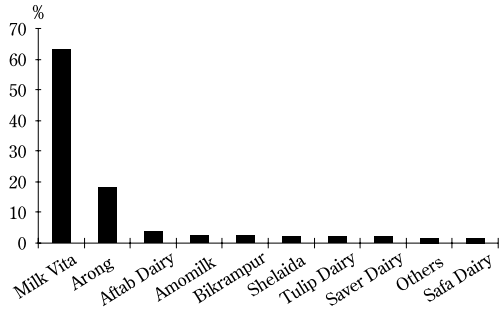

Fig. 4 Market share of liquid milk among the dif ferent enterprises
Source: BMPCUL [5].

Since the establishment of Milk Vita, due to the corruption and nonprofessional managerial body it experienced business loss every year until 1990. In 1990-91, the system of managing committee was changed and direct involvement of farmers in management was introduced.

Milk Vita's managing committee comprises of twelve members of which four members are nominated by the government and the rest eight members including Chairman and Vice-Chairman are elected from the representatives of primary cooperative through democratic election process. This managing committee is responsible for Milk Vita's activities. Duration of this managing committee is two years. The executive head of the organization is General Manager.

The managing committee of a primary cooperative comprises six members including one Chairman, one Vice Chairman and four Directors. Managing committee is selected for three years by the milk producer farmers through the election process. One salaried manager and two assistants are appointed for maintaining the daily activities of primary cooperative.

In the beginning of the 1990, the government started to liberalize its market towards open market economy. Thus, the dairy industry of Bangladesh faces challenges from the international dairy market. One of the challenges is that, Bangladesh as a signatory to the WTO, is obligated to open its milk and milk products markets to international dairy companies.

2) Main Functions of Milk Vita

Milk Vita is a cooperative organization engaged in milk collection from the rural area and after processing sale them to the urban consumers. For this reason, it provides different type of services to the dairy farmers through 'primary cooperative'.

Milk Vita institutes primary cooperative in the village level for collecting milk from the dairy farmers and responsible for its activities. Any farmers can become a member of primary cooperative by buying a share and committing to sell milk. Each primary cooperative has a milk collection centre where members take their produced milk. The main function of primary cooperative are collecting milk from dairy farmers and send them to the Milk Vita's milk processing plant. Milk Vita provides different kinds of services to the farmers through primary cooperative.

Thus, it is a two tier cooperative system, which comprises village level primary cooperative. In 2005, Milk vita is the apex body of 1,053 primary cooperatives. These primary cooperatives are engaged in milk collection from the member dairy farmers. There are 101,000 dairy farmers under these primary cooperatives in 2005. Milk Vita has two milk and milk products processing plants, one milk pasteurization plant and 12 milk chilling plants.

Fig. 5 shows the trend of primary cooperative and its member under Milk Vita. It appears from the Fig. 5 that, the activities of Milk Vita increased rapidly during the year 1973-2004. This suggests member farmers are benefiting from the services provides by Milk Vita.

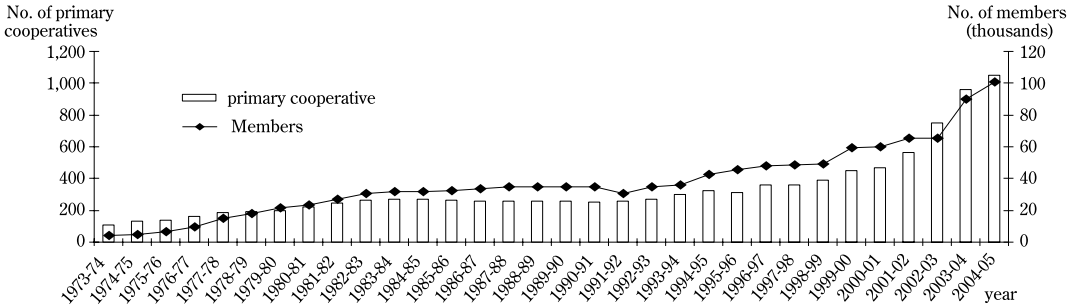

Fig. 5 Number of primary cooperatives and its member under Milk Vita
Source: BMPCUL [5].

3）Services of Milk Vita to the Dairy Farmers

Milk Vita provides rather comprehensive services to the primary cooperative and primary cooperative provides these services to the dairy farmers. Some of the main services provided by Milk Vita to the dairy farmers are shown in fig. 6. The details of the services are explained below

(1) Free Veterinary Services

Primary cooperative provides different types of cattle treatment with the assistance of Milk Vita. Affiliated veterinarian of Milk Vita visits farmers house once a week and check the cattle's health. Cattle treatment is completely free of charge. For the emergency treatment of cattle, there is a mobile clinic. It appears from the Fig. 7 that, the cattle treatment provided by primary cooperative is in rising trend.

The indigenous cow found in Bangladesh is of the small Zebu type. However, their dairy potential is relatively poor. As a result, the low milk yield of indigenous dairy cow has never given a proper motivation to the dairy farmers to produce more milk or increase their farm size in this country.

The introduction of artificial insemination is said to be one of the main contributions of Milk Vita. Substantial cross-breeding programme has been performing since 1987 in the milk shed area under Milk Vita. For this purpose Milk Vita imports high quality semen from Australia and New Zealand that is supplied to the farmers free of charge. It was observed at the time of our field survey that,

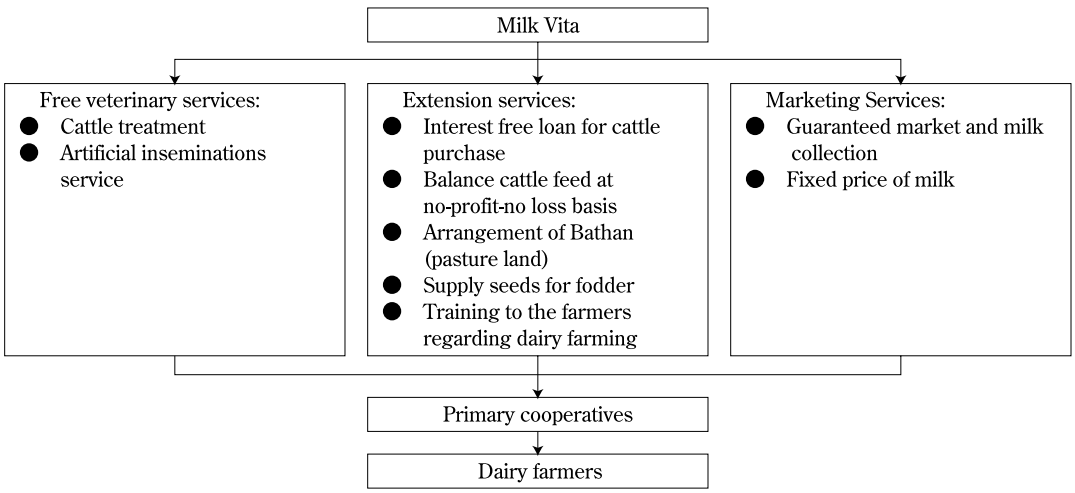

Fig. 6 Flow of main services provided by Milk Vita to the dairy farmers
Source: BMPCUL [5].

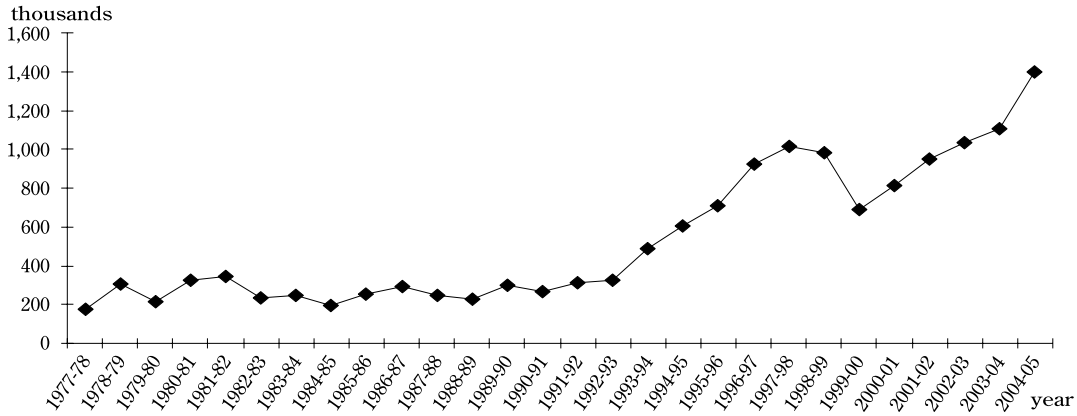

Fig. 7 Cattle treatment services provided by primary cooperatives
Source: BMPCUL [5].

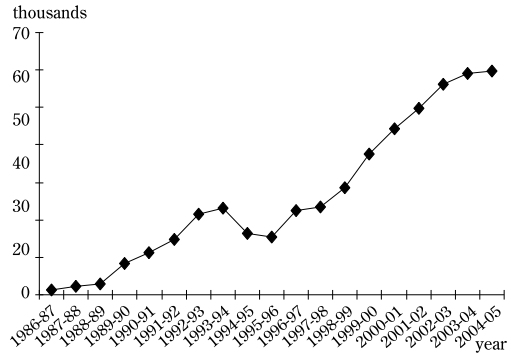

Fig. 8 Artificial insemination services provided by primary cooperatives
Source: BMPCUL [5].

the most of the dairy cows in the present study area were artificially inseminated.

Fig. 8 shows the artificial insemination services provided by primary cooperative. It appears from the Fig. 8 that, artificial insemination services provide by the primary cooperative is growing. However, in the year 1993-94, some artificial insemination cows died by some diseases that created a panic condition among the farmers regarding artificial insemination cows. But the hardest effort of Milk Vita's veterinarian could able to overcome these problems and the artificial insemination services again started to rise from 1995-96 to date.

(2) Extension Services

To attract and encourage the farmers for more milk production, primary cooperative with the assistance of Milk Vita provides loan to the dairy farmers for cattle purchase. Farmers can get Tk 30,000 as loan from Milk Vita and this money is completely interest free and repayment of the installments are made through weekly deduction from the milk bill to ease the financial pressure on the farmers. This has assured 100% recovery of loans without any default. This system seems to encourage the poor farmers to purchase new dairy cow for their farm.

Nutrition of the dairy cow is very important for quality and higher milk production. For this reason, Milk Vita has established some cattle concentrate feed factories. Keeping in mind the types of breed and environment, these factories produce cattle feed. These processed feed are sold to the member farmers at no-profit- no-loss basis.

Milk Vita lease Bathan (pasture land) from the government and cultivate different kind of grasses and seasonal legumes for the dairy farmers. Member dairy Farmers use Bathan for cattle grazing.

Milk Vita trains its dairy farmers regarding modern and efficient dairy farming system. At the Milk Vita training centre, practical and theoretical training is provided to those who wish to join. Normally, once in every month there is a short training for dairy farmers. Milk Vita's training includes; dairy cattle breeding, dairy cattle feeding, forage crop

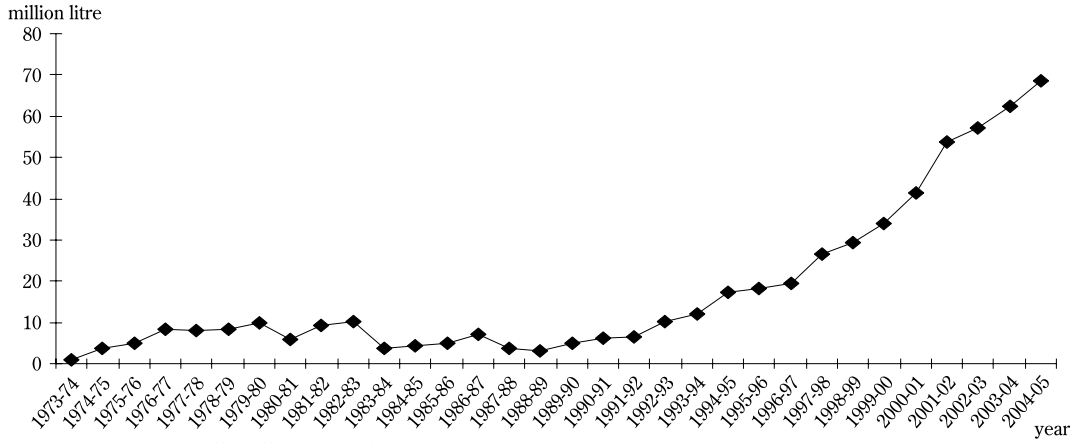

Fig. 9　Volume of milk collected by the primary cooperatives

Source: BMPCUL [5].

production, milking and milk handling, dairy farm management and common diseases of dairy cattle.

(3) Marketing Services

Milk Vita provides guaranteed market to its dairy farmers.[5] In Bangladesh, generally dairy farmers do not have a guaranteed market for their produced milk that did not encourage them to produce more milk for selling commercially. As Milk is the most perishable item among the agricultural products, therefore, without guaranteed market it is very difficult to increase milk production.

Primary cooperative buys all the milk supplied by the farmers regardless of quantity. Thus, farmers do not have to think about the milk marketing and quantity of milk. The dairy farmers under Milk Vita do not need to travel a distance place for selling their produced milk nor need to wait in the market place for the customers. Moreover, they are free from the exploitation of the middlemen, who used to cheat the farmers by offering low price and fraudulent means of weight.

Primary cooperative collects milk from the dairy farmers twice a day. Farmers carry their produced milk to the primary cooperative milk collection centre and sell them. The volume of milk collected by the primary cooperative is shown in Fig. 9. It appears from the Fig. 9 that, milk collected by the primary cooperative increased during the year 1973 to 2004.

The dairy farmers under primary cooperative receives fixed price for their milk that is higher than what they received by the traditional middlemen where there is no seasonal price difference.[6] In order to ensure better price to farmers' level and procurement of quality milk, the system of testing milk is introduced at primary cooperative.

The price of milk supplied by the farmers is paid by the end of the week. 'Litre' is the measuring unit for the milk supplied by the farmers. The quality of the farmers' milk is decided on the basis of fat and SNF percentage. This system encouraged the farmers to produce high quality milk as well as milk yield. This system does not permit to mix water in the milk. Therefore, milk supplied to the primary cooperative is clean and hygienic.

(4) Marketing Activities of Milk Vita

The major products of Milk Vita include: pasteurized liquid milk, butter, full cream milk powder, skimmed milk powder, ice creams, ghee, sweet curd, cream, lollies and sweetened condensed milk.

Fig. 10 shows the milk marketing system of formal sector such as Milk Vita. The flow of milk and milk products is very different than informal sector (see Fig. 3). It is seen from the Fig. 10 that, it collects milk through primary cooperative twice in a day. The dairy farmers under Milk Vita they

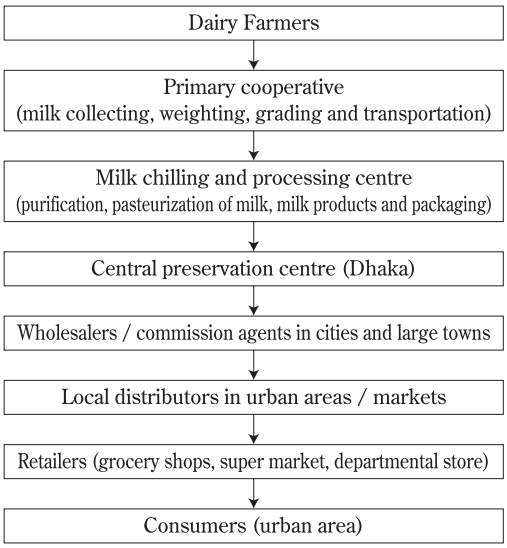

Fig. 10 Milk marketing system of formal sector

Source: Own illustration based on Saadullah [18] and BCAS [4].

directly sell their produced milk to the primary cooperative milk collection centre.

After collecting, grading and weighting of milk primary cooperative send the collected milk to the Milk Vita's milk processing plant for chilling, processing and packaging. In terms of milk processing, at first milk is heated to destroy the bacteria and viruses, then extra fat is taken from milk. According to the Milk Vita's standard the average milk fat is 3.5%. After separating the extra fat from the milk, some portion of milk is processed into powder milk and some portion is processed into pasteurized milk. Packaging process is also done in processing plant.

As milk processing plant does not have preservation facilities for the finished products, thus, all the milk processing plant of Milk Vita send their finished products to the central preservation centre at capital city Dhaka. Wholesalers, local distributor and retailer purchase milk and milk products from the Milk Vita's central preservation centre and sell them to the consumers (mainly in the large city) according to their own marketing style.

4. Financial Performance of Milk Vita

1) Methods

Financial performance of an industry can be evaluated through many dimensions. There is no unique set of dimensions which can be used to evaluate the financial performance of every industry. No single financial indicator will provide enough information to determine a cooperative's financial health. The set of performance dimensions vary from industry to industry. As a result, a full appraisal of the financial performance is very much difficult. Considering the nature of industry as well as data availability ratios are the most widely used tools for financial analysis. Analysts, depending on their needs, may differ in the ratios they find useful when examining a cooperative's financial performance.

Therefore, standard financial ratios were used in this study to evaluate the financial performance of Milk Vita. Financial performance ratios measure

Table 5 Financial ratios of Milk Vita from 2001 to 2004

	June-30-2001	June-30-2002	June-30-2003	June-30-2004
Short-term liquidity ratios				
Current ratio	3.64	3.59	3.72	4.39
Quick ratio	1.54	1.53	1.77	2.67
Long-term solvency ratios				
Debt to asset ratio (%)	30.82	29.50	28.42	39.01
Debt to equity ratio (%)	44.55	41.84	39.70	63.96
Profitability ratios				
Gross profit margin ratio (%)	12.47	10.87	7.63	10.51
Return on asset ratio (%)	6.88	6.96	4.36	6.50

Source: BMPCUL [5].

various levels of cooperative operation and generally have both a financial and operational impact.

2）Results (Table 5)

(1) Short-Term Liquidity Ratios

Liquidity ratios such as current and quick, measure the company/cooperative's ability to meet short-term obligations. They focus on the cooperative's ability to remain solvent. Two frequently used short-term liquidity ratios are current ratio and quick ratio.

Current ratio is current assets divided by current liabilities. If the current assets of a cooperative are mainly cash, they would be much liquid than if comprised of mainly inventory. When the current ratio is less than 1, current liabilities exceed current assets and the cooperative's liquidity is threatened. A high current ratio is a favorable condition financially, because it indicates the ability to pay current liabilities from the conversion of current assets into cash.

Current ratio ranged from 3.59 to 4.39. During this period the total current assets increased 54 % while total current liabilities increased 27 %. The result suggests that, Milk Vita's current ratio is relatively good.

Quick ratio is current assets minus inventories, divided by current liabilities. Financially, a high ratio allows little dependence on the availability of inventory to meet current obligations. Operationally, the results are the same as with current ratio. The quick ratio mimics the movement of the current ratio.

Quick ratio ranged from 1.53 to 2.67. The result suggests that, Milk Vita's quick ratio is also relatively good.

(2) Long Term Solvency Ratios

Long-term solvency ratios measure the ability of a company / cooperative to meet long term obligations. Frequently used long-term solvency ratios are debt to asset ratio and debt to equity ratio.

Debt to asset ratio is defined as total debt divided by total assets. Elements of this ratio include long-term debt plus short-term debt and total assets. Lenders would rather see a low ratio indicating the cooperative's ability to repay the loan. Usually, large cooperative finances more of their assets with debt. A low ratio is more favorable and financially impacts the cooperative through independence on outside sources of funds relative to owners' equity. Operationally, a low ratio tends to reduce interest cost. Generally, any cooperative that has a debt to asset of over 50 to 60 % should be looked at more carefully to make sure there are no liquidity problems.

Debt to asset ratio ranged from 28.42 to 39.01 %. Assets increased by 52 % while debt increased by 92 % during 2001 to 2004. The result suggests that, Milk Vita's debt to asset ratio is relatively good.

Debt to equity ratio is calculated by dividing total debt by owner's equity. This ratio shows the financial flexibility and the long-term capital structure of the cooperative. High ratios indicate inadequate borrowing power of the cooperative. A low ratio is more favorable.

Debt to equity ratio ranged from 39.70 to 63.96 %. This ratio increased, because owner's equity increased by 34 % while debt increased by 92 % during 2001 to 2004. The result suggests that, debt to equity ratio of Milk Vita is relatively good.

(3) Profitability Ratios

Profitability ratios measure the income or operating success of a company / cooperative for a given period of time. Frequently used profitability ratios are gross profit margin and return on asset.

Gross profit margin indicates the efficiency of the cooperative's operations. Gross profit margin is found by subtracting the cost of goods sold from net sales and then divided this amount (gross margin) by net sales. It indicates the cooperative's pricing policy and cost of goods offered for sale.

Gross profit margin ratio ranged from 7.63 to 12.47 %. The result suggests that, Milk Vita's gross profit margin ratio is relatively good.

Return on assets measures the rate of return on total investment. It is calculated by net income by total asset. Operationally, a high ratio tends to reduce interest cost and financially indicates a comparatively high rate of return on assets employed. Although some assets were financed through debt, the ratio measures return to both members and lenders.

Return on asset ratio ranged from 4.36 to 6.96 percent. The result suggests that, Milk Vita's return on asset ratio is also relatively good.

5. Conclusion

The present study examined the role of Milk Vita dairy cooperative in the development of dairy industry in Bangladesh. The specific objectives were to identify the activities and financial performance of Milk Vita.

The findings of the study were as follows. First, Milk Vita provides different dairy related services to the dairy farmers for milk production enlargement and milking cow improvement. Second, the results of financial ratio analysis suggest financial condition of Milk Vita is relatively good.

There are some limitations of the present study. It is important to examine other companies' services and activities towards the dairy farmers. The general milk marketing system of Bangladesh should be more comprehensively addressed. The cause and effects of Milk Vita's services towards dairy farmers should be more concretely examined. The effects of Milk Vita's change of managing body in 1990-91, should be investigated more in detail.

Notes

1) Most of the Bangladeshi people know BMPCUL as Milk Vita; therefore, in this study we will use Milk Vita instead of BMPCUL.
2) It was mentioned by the BCAS [4].
3) Most of the Bangladeshi people know primary milk producers' cooperative as primary cooperative; therefore in this study we will use primary cooperative instead of primary milk producers' cooperative.
4) Tax holiday indicates that Milk Vita does not have to pay tax to the government.
5) Guaranteed market indicates, Milk Vita purchases total amount of raw milk that the dairy farmers want sell.
6) In Bangladesh, most of the raw milk is handled by traditional middlemen. Middlemen used to cheat / deprive the dairy farmers in terms of price and weight where seasonal variations of milk price exist.

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