



Original Article

Assessing the profitability and problems of langra mango variety marketing in Chapai Nawabganj district of Bangladesh

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ABSTRACT

Article History

Received: 29 November 2020

Revised: 19 December 2020

Accepted: 23 December 2020

Published online: 31 December 2020

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Keywords

Mango production, Market actors,
Marketing cost, Revenue, Marketing margin

This paper attempted to identify the major market actors of mango marketing in Chapai Nawabganj district of Bangladesh. The research also examined the structure of marketing costs and net margin obtained by the mango market actors and highlighted the major problems faced by the traders. Primary data were collected from 40 mango traders by using simple random sampling technique from mid-June to mid-July 2018. A pretested semi-structured interview schedule was used for data collection and descriptive statistics were used to analyze the data. Faria, Bepari, wholesaler, and retailer were the major market actors in the study areas. The average purchase price of mango by Faria was Tk. 33,000.0/ton, Tk. 33,450.0/ton for Bepari, Tk. 35,450.0/ton for wholesaler and Tk. 41,050.0/ton for retailer. Bepari incurred the highest marketing cost (Tk. 4,800.0/ton) due to long-distance coverage followed by the retailer (Tk. 3,190.0/ton), wholesaler (Tk. 3,020.0/ton), and Faria (Tk. 1,410.0/ton). The average selling price of mango was Tk. 53,680.0/ton for the retailer, Tk. 45,200.0/ton for Bepari, Tk. 44,450.0/ton for wholesaler and Tk. 42,270.0/ton for Faria. Retailer received the highest net margin (Tk. 9,117.9/ton) followed by Faria (Tk. 6,887.8/ton), Bepari (Tk. 3,831.2/ton) and wholesaler (Tk. 2,926.3/ton). Market actors mentioned different problems and suggestions for mango marketing in the study area. Lack of capital and unstable price of mango were the important problems of traders. They need available capital with a low interest rate. Government and different organization may establish cold storage in the study area, which may help to stabilize mango price.

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Introduction

Mango (*Mangifera indica*) is a famous fruit all over the world. Mango is not only delicious but also rich in pre-biotic dietary fiber, vitamins, minerals, and polyphenolic flavonoid antioxidant compounds. It also contains sugar, small amount of protein, fats, and other nutrients (Rahman and Khatun, 2018). Mango is effective to prevent prostate and skin cancers (Gopalakrishnan, 2013). Mango is the fifth most widely produced fruit in the world after banana, citrus, grape, and apple (Datarkar *et al.*, 2014). It is believed that mango is originated from South East Asia and more than 1000 varieties have been identified all over the world (Rymbai *et al.*, 2014).

Among different fruits in Bangladesh, mango stands in the top position in terms of area coverage (21.28%) and

production (24.64%) followed by banana (10.91% area and 16.84% production), lime & lemon (14.36% area and 1.35% production) and guava (8.73% area and 4.78% production) (BBS, 2019a). The population of Bangladesh is 164.6 million (BBS, 2019b) and the demand for fruits will increase in the country in the future. Mango is produced all over Bangladesh due to its soil and climatic conditions. The leading mango growing districts of the country are Rajshahi, Chapai Nawabganj and greater Dinajpur (Sultana *et al.*, 2018). Those districts produce over 270 varieties of mangoes (Ahmed *et al.*, 2019). Chapai Nawabganj district is famous for different high quality mango production in Bangladesh. Mango production area was gradually increased from year to year in Bangladesh (Table 1). Total mango production of inside and outside garden was gradually increased from year

to year though there are fluctuations in mango production at national level. On the other hand, mango production area in Chapai Nawabganj district is gradually increased from year to year. Total mango production of inside and outside garden is gradually increased from year to year though there were fluctuations in mango production in Chapai Nawabganj district.

Table 1. Mango production and area in Bangladesh and Chapai Nawabganj district

Years	National level		Chapai Nawabganj district			
	Area under garden (acres)	Total production of inside and outside garden (tons)	Area under garden (acres)	Production of inside garden (tons)	Production of outside garden (tons)	Total production of inside and outside garden (tons)
2014-15	61997.0	1018112.0	4443.0	139062.0	13223.0	152285.0
2015-16	93480.0	1161685.0	44661.0	151732.0	15171.0	166903.0
2016-17	102939.0	1288315.0	44968.0	145990.0	15357.0	161347.0
2017-18	109584.0	1165804.0	50412.0	185604.0	17917.0	203521.0
2018-19	235393.0	1219450.0	62820.0	176109.0	20971.0	197080.0

Source: BBS 2015, BBS 2016, BBS 2017, BBS 2019

There are many mango varieties famous in Bangladesh including Langra, Fajli, Himsagar, Gopalbhogh, Lakshmanbhogh, Chosha, Arshini, Haribhanga, Amropoli, and Khirshapat. Nowadays the Rangpur region is famous for producing Haribhanga and Rangamati, Bandarban and Khagrachori districts are famous for producing Amropoli mango variety. The area and production of mango are increasing in recent years due to increasing demand. In the last couple of years, mango production is increasing due to the introduction of improved varieties and production techniques as well as increased market demand (Miah *et al.*, 2018). High-quality mangoes are produced in few districts of Bangladesh. But demand for high-quality mangoes is high in all over the country. So, mangoes need to be transported to a long distance to reach the ultimate consumers. Mangoes are perishable and bulky in nature. So, mangoes need special attention for transportation and marketing. A huge amount of mangoes are spoiled due to bulkiness, perishability, seasonality, and poor transportation facilities (Miah *et al.*, 2018). In the mango producing season, many market actors are involved in the task of transporting mango in different districts. So it is necessary to investigate the cost and margin of mango marketing as carried out by different actors. There are very few researches investigated marketing of mango in different districts of Bangladesh. Matin *et al.* (2008) found in their study that the mango marketing channel, Farmer – Retailer – Consumer possesses the highest marketing efficiency. They also found that unstable price of mango was the first rank problem for mango marketing in Bangladesh. Akterujjaman and Islam (2010) found in their study that Chapai Nawabganj to Dhaka was the most important route of mango marketing in Bangladesh. Miah *et al.* (2018) found in their study that the prominent mango marketing channel was Mango grower – Bepari – Urban Arathdar – Urban retailer – Urban consumer. They found that among all the intermediaries, Faria received the highest net margin. They also found that delayed sell of mango was the trader's highest reported problem and lack of mango buyer for unstable supply of mango was the second highest reported problem of mango traders. Kansat Bazar of Chapai Nawabganj district is a famous mango trading place in

Bangladesh and very few studies took this bazar as their study area. Moreover Langra mango variety is very famous all over Bangladesh and very few studies selected this variety. Considering this issue, this study was selected Langra mango variety in Kansat Bazar of Chapai Nawabganj district. The study investigated the market actor's marketing cost and margin in relation to mango marketing and identified major marketing problems faced by the market actors and finds out the possible solutions mentioned by the traders. Findings of the study will be helpful for the researcher for further studies and policy maker to formulate appropriate policy to increase mango production in Bangladesh.

Materials and Method

Selection of study area

Mango is growing all over Bangladesh. However, Chapai Nawabganj district is famous for mango production and as such this district was selected for the present study. Kansat Bazar under Shibganj Upazila was purposively selected for this study. Kansat Bazar is a famous mango trading place during mango production season in Bangladesh. This Bazar was selected because of the availability of enough traders and convenience of data collection.

Sampling procedure and sample size

Four different marketing actors namely Faria, Bepari, wholesaler, and retailer were found involved in mobilizing the available mangoes from production centers to the consumers' level. Full list of traders were made before the survey. Total 40 traders were selected for this study by using simple random sampling technique. For the present study, equal number of samples was selected from different traders.

Selection of mango variety

Langra mango variety is very popular all over Bangladesh. The present study selected the Langra mango variety in the study area.

Period of study and data collection instrument

Primary data was used for this study and the data were collected from the traders by using a pre-tested interview schedule from mid-June to mid-July 2018.

Analytical techniques

The collected data were edited, tabulated, and analyzed using Microsoft Excel. Mainly descriptive statistics were employed in analyzing the data. The gross margin and net margin of different market actors were computed by the following equations. These equations were used by Miah *et al.*, (2018) in their study.

$$GM_i = PR_i - PP_i \dots\dots\dots(1)$$

Where,

GM_i = Gross margin (Tk./ton) for ith traders

PR_i = Price received (Tk./ton) for ith traders

PP_i = Price paid (Tk./ton) by ith traders

$$NM_i = GM_i - MC_i - CML_i \dots\dots\dots(2)$$

NM_i = Net margin (Tk./ton) for ith traders

MC_i = Marketing cost incurred (Tk./ton) by ith traders

CML_i = Cost of mango loss (Tk./ton) by ith traders at the time of marketing

Results and Discussion

Key mango market actors in the study area

Four major types of market actors were found in the study area and they were Faria, Bepari, wholesaler, and retailer.

Faria

Faria was a small amount of mango traders and they purchased mango at the village market. They sold their mango to the Bepari, wholesaler, retailers or consumers. They bought a small amount of mango and they usually sell their mango at the same market where they bought the mango. They usually used rickshaw or van to market their mango.

Bepari

Bepari was a large amount of mango traders who purchased mango at the village market and they sold their mango to the urban market. They purchased mango from the Faria or wholesaler through Aratdar. They invested large amount of capital for their business. They usually used trucks to transport mangoes from one place to another place.

Wholesaler

The wholesaler was a professional trader who traded large amount of mango. They bought mangoes from the Faria, and farmers and sold their mango to the Bepari or retailers. They had shops in the village market and they use fixed labor for their business.

Retailer

The retailer was a small amount of mango trader. They bought mango from the wholesaler and they sold the mango to the consumer. They sold a small amount of mango to the consumers and their selling price of mango was relatively high compared to other traders. They used rickshaw or van to transfer their mango from one place to another place.

The present study found that Faria, Bepari, wholesaler, and retailer were the major market actors in the study area. However, Miah *et al.*, (2018) found in their study that Faria, Bepari, and retailer were the market actors in Chapai Nawabganj district of Bangladesh.

Mode of transportation used by the traders

Different intermediaries used different modes of vehicles to transport mango from one place to another place (Table 2). The highest 40.0% of Faria used van, 30.0% of them used rickshaw and 30.0% of them used bicycle. Most of the Bepari (90.0%) used truck and only 10.0% of them used pick up to transport mango. Most of the wholesaler (80.0%) used van and 20.0% of them used pick up to transport mango. The highest percentage of retailer (70.0%) used van to transport mango followed by rickshaw (25.0%) and bicycle (5.0%).

Table 2. Mode of transportation used by the traders

Transportation mode	Market actors (%)			
	Faria	Bepari	Wholesaler	Retailer
Rickshaw	30.0	-	-	25.0
Bicycle	30.0	-	-	5.0
Van	40.0	-	80.0	70.0
Pick up	-	10.0	20.0	-
Truck	-	90.0	-	-

Source: Market survey, 2018

Amount of mango purchased and buying cost of mango by the traders

The total volume of mango purchased and buying cost of mango by the traders in the study area are shown in the Table 3. Faria bought 2.32 tons of mangoes and Bepari bought 3.13 tons of mangoes. On the other hand, the wholesalers bought

17.74 tons of mangoes and retailer bought only 0.59 tons of mangoes in the research period. The average purchase price of mangoes was Tk. 33,000.0/ton for the Faria and Tk. 33,450.0/ton for the Bepari. The average purchase price of mangoes was Tk. 35,450.0/ton for the wholesaler and Tk. 41,050.0/ton for the retailers. It was evident that wholesalers bought the highest amount of mangoes and the retailers bought the lowest amount of mangoes at a time in the study area. Miah *et al.*, (2018) found in their study that the average purchase price of mangoes was Tk. 37,905.75/ton for the Faria, Tk. 38,303.92/ton for the Bepari and Tk. 43,146.83/ton for the retailer.

Table 3. Amount of mango purchased and buying cost of mango by the traders

Intermediaries	Total amount purchased (ton)	Average buying price (Tk./ton)
Faria	2.32	33000.0
Bepari	3.13	33450.0
Wholesaler	17.74	35450.0
Retailer	0.59	41050.0

Source: Market survey, 2018

Note: Tk. means Taka, which is the national currency of Bangladesh.

Marketing cost of mango by the traders

Data in Table 4 show the marketing cost of mangoes by the traders in the study area. Mango traders did various activities and different costs were associated during mango marketing. Among different traders marketing cost was the highest for the Bepari at Tk. 4,800.0/ton followed by the retailer (Tk. 3,190.0/ton), wholesaler (Tk. 3,020.0/ton), and Faria (Tk. 1,410.0/ton). In case of Bepari, the cost was the highest due to transportation cost (Tk. 2,100.0/ton) and the second-highest cost was due to Aratdar commission (Tk. 1,500/ton). In case of Faria, the highest cost was due to transportation (Tk. 580.0/ton) and the second-highest cost was due to market toll (Tk. 180.0/ton). In case of Wholesaler, the highest cost was due to transportation (Tk. 1,430.0/ton) and the second-highest cost was due to shop rent (Tk. 500.0/ton). In case of retailer, the maximum cost was incurred in paying the shop rent (Tk. 1,000.0/ton) and the second-highest cost was due to transportation (Tk. 500.0/ton). Miah *et al.*, (2018) found in their study that mango marketing cost of Faria was Tk. 7,38.2/ton, Tk. 7,337.9/ton for Bepari, and Tk. 1,217.9/ton for retailer.

Table 4. Marketing cost of mango by different traders

Costs	Intermediaries (Tk./ton)			
	Faria	Bepari	Wholesaler	Retailer
Transportation	580.0	2100.0*	1430.0	500.0
Loading	100.0	250.0	100.0	70.0
Unloading	80.0	280.0	80.0	100.0
Labor	70.0	180.0	80.0	100.0
Cleaning and grading	60.0	50.0	50.0	70.0
Packaging	80.0	60.0	150.0	100.0
Storing	130.0	120.0	110.0	50.0
Aratdar commission	-	1500.0	-	-
Market toll	180.0	140.0	140.0	420.0
Weighting	90.0	70.0	50.0	30.0
Shop rent	-	-	500.0	1000.0
Electricity	-	-	250.0	250.0
Others	40.0	50.0	80.0	500.0
Total	1,410.0	4,800.0	3,020.0	3,190.0

* = Transportation cost incurred for mangoes from Chapai Nawabganj to Dhaka for Bepari

Source: Market survey, 2018

Cost due to mango damaged by different intermediaries

Data in Table 5 show cost associated for mango damage by different intermediaries in the study areas. The average damage of mango per ton was the maximum in case of Bepari (0.069 tons) followed by wholesalers (0.0687 tons), Faria (0.023 tons), and retailer (0.006 tons). The average selling price of mango was estimated at Tk. 42270.0/ton for Faria, Tk. 45200.0/ton for Bepari, Tk. 44450.0/ton for wholesaler and Tk. 53680.0/ton for the retailer. The cost due to mango damage was estimated at Tk. 972.2/ton for Faria, Tk. 3118.8/ton for Bepari, Tk. 3053.7/ton for wholesaler and Tk. 322.1/ton for the retailer.

Table 5. Cost of mango damage by different intermediaries

Intermediaries	Damage amount (in a ton)	Average selling price (Tk./ton)	Cost (Tk./ton)
Faria	0.023	42270.0	972.2
Bepari	0.069	45200.0	3118.8
Wholesaler	0.0687	44450.0	3053.7
Retailer	0.006	53680.0	322.1

Source: Market survey, 2018

The profitability of different traders by selling mango

Data in table 6 show the profitability of different traders by selling mango in the study area. Total cost of Faria was estimated at Tk. 35382.2/ton and Tk. 41368.8/ton for Bepari. Total cost of Wholesaler's was estimated at Tk. 41523.7/ton and Tk. 44562.1/ton for the retailers. Gross margin earned by Faria was estimated at Tk. 9270.0/ton and Tk. 11750.0/ton for the Bepari. Gross margin earned by Wholesaler was estimated at Tk. 9000.0/ton and Tk. 12630.0/ton for the retailers. The highest net margin was observed in case of the retailers (Tk. 9117.9/ton) followed by Faria (Tk. 6887.8/ton), Bepari (Tk. 3831.2/ton), and wholesaler (Tk. 2926.3/ton). The highest net revenue of retailers per ton mango was due to the highest selling price of mango and lower level of mango damage at the time of marketing. The lowest net revenue of wholesaler per ton mango was due to the lower selling price of mango and higher mango damage at marketing. Miah *et al.*, (2018) found in their study that Faria's average selling price of mango was Tk. 46867.24/ton, Bepari selling price of mango was Tk. 51853.15/ton, and retailer selling price of mango was Tk. 52124.99/ton. The study also found that Faria's net profit for selling mango was Tk. 8067.76/ton, Bepari net profit was Tk. 5393.47/ton and retailer net profit was Tk. 6601.36/ton. The reason for the highest net profit was due to their lower marketing cost and lower post-harvest losses.

Table 6. The profitability of different traders by selling mango

Intermediaries	Tk./ton							Net margin (Tk./ton)
	Buying price	Marketing cost	Cost of mango damage	Total cost	Selling price	Gross margin		
Faria	33,000.0	1,410.0	972.2	35,382.2	42,270.0	9,270.0	6,887.8	
Bepari	33,450.0	4,800.0	3,118.8	41,368.8	45,200.0	11,750.0	3,831.2	
Wholesaler	35,450.0	3,020.0	3,053.7	41,523.7	44,450.0	9,000.0	2,926.3	
Retailer	41,050.0	3,190.0	322.1	44,562.1	53,680.0	12,630.0	9,117.9	

Source: Market survey, 2018

Problems faced by traders and possible suggestions suggested by traders

The key market actors in the supply chain mentioned different problems during mango marketing in the study area (Table 7). The highest reported problem was the lack of capital (90.0%). The unstable price of mango was the second important problem reported by 87.5% of traders. According to ranked order, other problems were selling mango by credit (75.0%), high transportation cost (72.5%), high marketing cost (67.5%), and lack of information (62.5%). Traders also mentioned different solutions to solve their problems. The

highest reported solution was the availability of capital with a low-interest rate (92.5%). Low transportation cost was suggested by 82.5% of traders. According to ranked order, trader's other suggestions were cash selling (75.0%), stable mango price (75.0%), available marketing facilities (65.0%), and available market information (62.5%). Miah *et al.*, (2018) found in their study that different mango traders encountered various problems at the time of mango marketing. Their problems were delayed sale (57.9%), lack of buyer (47.3%), mango partial rotten (15.8%), and higher level of mango damage (2.6%).

Table 7. Problems faced by traders and possible suggestions suggested by traders

Problems	No. of respondents (n = 40)	Rank order
Unstable price of mango	35 (87.50)	2
Selling mango by credit	30 (75.0)	3
Lack of capital	36 (90.0)	1
High transportation cost	29 (72.5)	4
Lack of information	25 (62.5)	6
High marketing cost	27 (67.5)	5
Possible suggestions		
Low transportation cost	33 (82.5)	2
Cash selling	30 (75.0)	3
Availability of capital with a low-interest rate	37 (92.5)	1
Available marketing facilities	26 (65.0)	4
Available market information	25 (62.5)	5
Stable mango price	30 (75.0)	3

Source: Market survey, 2018

Note: Figure in the parentheses indicate percent of total sample

Conclusions

This study finds out key mango market actors and assesses their marketing costs and revenue in the study area. Four major market actors are identified in the study area and they are Faria, Bepari, wholesaler, and retailer. Wholesalers buy the highest amount of mangoes while retailers buy the lowest amount of mangoes for trading. Different market actors used rickshaw, bicycle, van, pick up and truck to transport mango from one place to another. The study finds that Bepari's marketing cost is highest among all traders and the reason is due to their transportation cost of mango. Retailer's buying and selling price per ton mango are highest than other traders. The analysis revealed that retailer net margin was highest than other traders. The main reason for the retailer's highest net margin is their highest selling price of mango and lower mango damage at marketing. The lowest net margin was estimated for wholesalers and it was due to their lower selling price of mango and higher mango damage at marketing. Mango traders mentioned different problems during mango marketing in the study area. Lack of capital is the highest-ranked order problem of traders and the unstable price of mango is the second highest-ranked problem. Mango traders suggested different solutions to solve their problems. They need capital with a low-interest rate and this was their first choice to solve their capital shortage. Low transportation cost is their second-important suggestion to reduce high marketing costs. Department of Agriculture Extension (DAE) may organize different training about basic marketing tactics, mango storage, and packaging techniques, which will be helpful to reduce mango damage, and enhance mango marketing in the study area. The different organizations may establish mango storage facilities in the study area, which may be helpful to reduce mango spoilage, and stabilize mango price.

Conflicts of Interest

The authors declared that they have no conflict of interest regarding the publication of this paper.

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