

**VALUE CHAIN ANALYSIS OF BANANA
IN SOME AREAS OF NARSINGDI DISTRICT**

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IN SOME AREAS OF NARSINGDI DISTRICT**

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CERTIFICATE

This is to certify that thesis entitled, “**VALUE CHAIN ANALYSIS OF BANANA IN SOME AREAS OF NARSINGDI DISTRICT**” submitted to the faculty of Agribusiness Management, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE IN AGRIBUSINESS & MARKETING**, embodies the result of a piece of *bona fide* research work carried out by **FARZANA AHMED MUKTA** bearing Registration No. **12-05154** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

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DEDICATION

This thesis is dedicated to my parents and Husband



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ABSTRACT

The present study was designed to measure value chain analysis of Banana in selected area of Narsingdi District. Primary data were collected from the Banana growing area of Shibpur and Manohordi under Narsingdi district. Thirty farmers and thirty traders were selected through convenience sampling procedure. Simple descriptive methods were used to analyze the data. Among many cultivars Champa (Apple Banana) had been selected for this research work. The major findings of the study revealed that Banana production was profitable. In the production and marketing system of Banana, many value chain actors were involved such as *Faria*, *Bepari*, *Arathdar*, wholesaler and retailer. Demographic characteristics of Banana farmers were categorized into age, education, farming experience, farm size and family size. In this study, it was found that young and illiterate farmers were mostly engaged in Banana cultivation. Farming experience of Banana farmers ranged from 2 to above 20 years. Farm gate price of banana received by farmers per Bunch was Tk. 450 and purchase price per Bunch of banana paid by retailers was Tk. 680. Average sales price per Bunch of banana as received by retailer was Tk. 720. The total marketing cost was estimated at Tk. 184 per Bunch of banana. Among all intermediaries wholesalers' cost were highest and the lowest for *Arathdar*. The net marketing margin of per Bunch banana of Farmer, *Faria*, *Bepari*, *Arathder*, Wholesalers and Retailers were Tk. 33, 20, 7, 2, 10 and 14 respectively. The value addition of banana in value chain for Farmers, *Faria*, *Bepari*, *Arathder*, Wholesalers and Retailers were respectively 11.11, 10.00, 9.09, 2.5, 10.57 and 5.88 percent for per Bunch of banana. The study identified some major problems faced by the actors in the banana value chain. The major problems faced by them included lack of capital, lack of good quality sucker, lack of subsidy, lack of availability of adequate input, lower price of banana, transportation problem, shortage of market and storage facilities and dominance of value chain actors. Some recommendations are given to solve the constraints. The Government should provide credit facilities through Bangladesh Krishi Bank (BKB) and other commercial banks. Adequate amount of inputs including HYV suckers should be supplied by the government at subsidized prices in the Banana producing areas. Transportation facilities should be improved in the study areas. Low cost storage facilities should be developed at the primary and secondary markets by the local Government authority.

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ABBREVIATIONS

AEZ	Agro-ecological Zone
BAU	Bangladesh Agricultural University
BCR	Benefit-Cost Ratio
BBS	Bangladesh Bureau of Statistics.
BOS	Bangladesh Orthonoitik Samikkha.
BVC	Banana Value Chain.
EU	European Union
EPB	Export Promotion Bureau
FC	Fixed Cost
GDP	Gross Domestic Product.
GR	Gross Return
HYV	High Yield Variety
HA	Hector
NBR	National Board of Revenue.
NGO	Non-Government Organization
%	Percentage
NM	Net Marketing Margin.
PM	Average Price of Product.
QM	Quantity of Product.
Tk	Taka
TFC	Total Fixed Cost
TVC	Total Variable Cost

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Bangladesh is primarily an agricultural country dominated by crop production. As a developing country, it has been striving for rapid development of its economy. The economic development is inextricably linked with the performance of this sector. The performance of this sector has an overwhelming impact on major macroeconomic objectives like employment generation, poverty alleviation, human resources development and food security. The overall performance of the economy is, therefore, yet inextricably linked to the performance of the agricultural sector. In order to ensure long-term food security for the people, a profitable, sustainable and environment-friendly agricultural system is critical.

Agricultural sector plays an important role in overall economic development of Bangladesh. The agricultural sector (crops, animal farming, forests and fishing) contributes 14.74 percent to the country's GDP, provides employment about 41 percent of the labor force according to Quarterly Labor Force Survey 2015-16 (BER, 2017). Moreover, agriculture is the source of wide range of consumer demanded agricultural commodity markets, especially in rural areas. The country has a vast delta with a population of 166.36 million encompassing an area of 147570 sq. km (BER, 2017). Agriculture occupies a key position in the overall economic sphere of the country in terms of its contribution to Gross Domestic Product (GDP). Figure 1.1 represents the sectorial share of GDP at constant prices (Base Year: 2005-06). Broad agriculture sector which includes crops, livestock, fisheries and forestry contributes 16.33 percent to the gross domestic product (GDP) as a whole in the FY 2013-14 (BER, 2015).

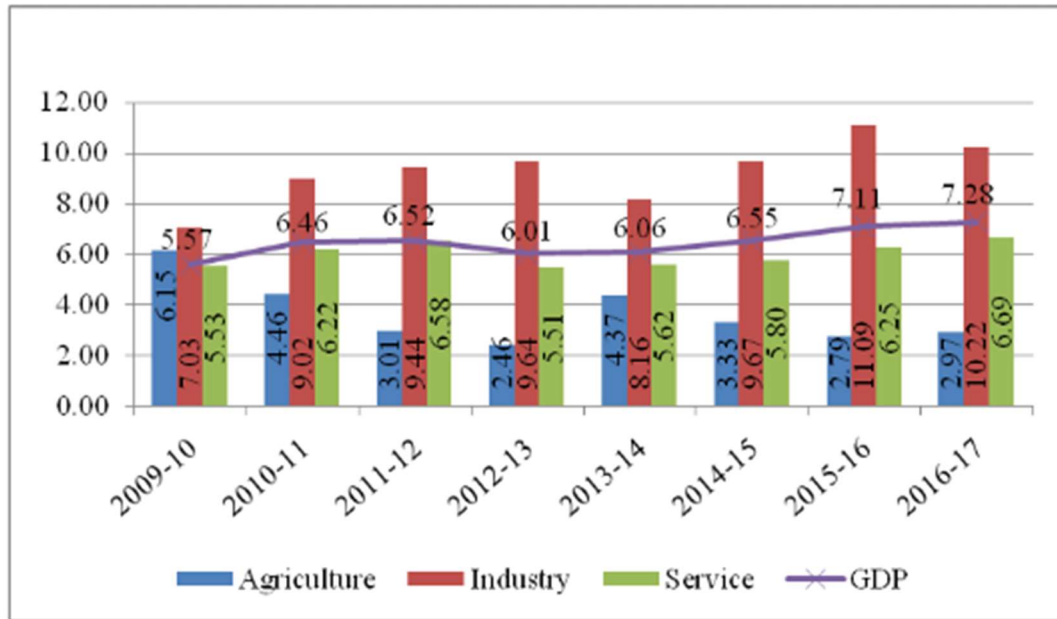


Fig 1.1: Sectoral Share of GDP at Constant Prices

Source: BER, 2017

Bangladesh is agricultural country. Most of the people are depends on agriculture directly or indirectly. Agriculture has a great contribution to the Gross Domestic Product (GDP) of the country. About 14.75% of GDP is derived from agriculture in the year 2017-18 (BBS, 2018). Banana is one of the major fruits of Bangladesh. It occupies an important position among the fruits of the country not only for its highest production among the fruits but also for its increasing popularity too many farmers as an economic crop and to many people as a nutritious fruit. Musa spp., banana and plantain, constitute the fourth most important staple food commodity of the world, after rice, wheat and maize (Islam et al., 2016). Banana is one of the most important commercial tropical fruits traded.

1.2 Present Status of Banana in Bangladesh

Bangladesh is an agricultural country and most of the inhabitants are involved in agriculture directly or indirectly for their livelihood. The country possesses very fertile land in which diversified crops grow very easily. Among more than 118 minor crops in Bangladesh, banana is one of the top listed fruit crops, which is available throughout the year and consumption rate is higher than any other fruits. It has great economic importance as well as nutritional value.

In Bangladesh, total Cropped Area is 36669 acres and cropping intensity is 190 %. Agro ecology of the country is divided in 30 AEZs. The total cultivated area of horticultural crops is about 0.69 million hectare which is about 5% of the total cropped area. Total banana production is 774286 metric tons and total area is 119325 acres. Total production of green banana (as vegetable) is 144135 metric tons and total area is 25479 acres (BBS, 2013). Bangladesh exports Champa kola (English name- Apple Banana, scientific name- *Musa sapientum*) throughout year (Hortex Foundation, 2013). Major Districts of cultivated Banana are Narsingdi, Gazipur, Rangpur, Bogra, Nator, Pabna, Noakhali, Faridpur, Khulna in our country. Districts of wild grown Banana are Sylhet, Moulvibazar, Netrokona, Rangamati, Khagrachhari, Bandarban. Generally banana plants are found throughout the country in most of the rural homesteads. There are a number of banana cultivars in Bangladesh. Among them, BARI Kola-1, Amritsagar, Sabri, Champa and Kabri are the commercial cultivars. The other cultivars are Mehersagar, Dudsagar, Agniswar, Genasundari, Kanaibanshi, Basrai, Binisuta, etc. (Mukul *et al.*2013).

It is very important to produce banana more which helps growers to create profitability because banana is year round crop and it has many nutrients. In earlier period banana production was high and it had great market value, but it is now losing concern. It is necessary to keep attention to the banana production and have to try to hold our traditional significance. Banana is high valued crops, for that reason it is also a positive side to investigate banana cultivation and profitability.

1.3 Export growth of fresh fruits and vegetables in Bangladesh

Table-1.1 reveals that export quantity and value of fresh fruits and vegetables are in decreasing trend from FY2014-2015 due to restriction in EU countries on some fruits and vegetables including self-ban by the Government of Bangladesh. The major causes of restrictions are-

- (i) Not complying with the phytosanitary requirement of importing countries,
- (ii) Presence of quarantine harmful organisms in fruits, vegetables, betel leaves,
- (iii) Presence of brown rot bacterial agent (*Ralstonia solanacearum* (Smith) Yabuuchi et al.) and potato tuber moth in potato;
- (iv) Absence of product integrity,

(v) Documentary reasons i.e. modification of Phytosanitary Certificate (PC) and, sometimes absence of PC during export from Bangladesh.

Table 1.1 Export growth of fresh fruits and vegetables in Bangladesh

Fiscal Year	Quantity Exported (MT)	Export Value (in Million US\$)	Export Growth (%)
2008-09	24670	50.71	
2009-10	29370	64.21	(+) 26.62
2009-10	29370	64.21	(+) 26.62
2010-11	48428	109.41	(+) 70.39
2011-12	59573*	134.59	(+) 23.01
2012-13	80660*	182.23	(+) 35.39
2013-14	92679*	209.38	(+) 14.89
2014-15	62730*	141.72	(-) 32.31
2015-16	55138*	124.57	(-) 12.10

Source: NBR, Export Promotion Bureau (EPB), 2016 and Data Analysis by Hortex Foundation, 2016

Note: *Export quantity of fresh fruits & vegetables estimated by Hortex Foundation as per average export value of fruits and vegetables @2259.23 US\$/MT in FY2010-11 due to export quantity data is not available since FY2011-12 from EPB.

1.4 Origin and Status of Banana

Bananas (including plantains) are one of the most important and oldest food crops of humankind with evidence of cultivation dating to 4000 BCE in New Guinea (Denham *et al.* 2003, 2004). Bananas are broadly classified into dessert and cooking types. Dessert types are eaten raw when ripe, while cooking (starchy) bananas are boiled, fried, brewed, powdered, or roasted before consumption. Plantains are the best known among the cooking bananas and form about one-third of total banana production. There is no clear demarcation between the banana and plantain, either botanically or genetically, although plantains usually contain more dry matter than banana. Several of the plantain and banana cultivars are used in various countries for both dessert and/or cooking use. In this review, the term banana will include plantains unless otherwise stated. Bananas are grown in more than 150 countries, and 105 million tons of fruit are produced each year. Bananas which are grown for local consumption are generally grown in traditional, extensive systems. The Dessert banana, like the Cavendish variety, are of huge economic

importance to many countries in the Global South, and these account for 43 million tons and the Plantain account for 45 million tons. Locally consumed bananas are a staple food in many tropical countries and play a major role in terms of food security. In 2017, world production of bananas was 113918763 tons (FAOSTAT).

Table 1.2 Area and Production of Banana at Dhaka Division from 2014-15 to 2016-17.

Region	2014-15		2015-16		2016-17	
	Area (ha)	Prod. (mt)	Area (ha)	Prod. (mt)	Area (ha)	Prod. (mt)
Dhaka	493	3458	508	3498	549	3837
Faridpur	1559	16018	1391	14674	1435	15756
Gazipur	1009	6329	1040	6426	1042	6452
Gopalganj	887	5503	961	5756	959	5712
Kishorganj	1455	10974	1477	11016	1492	11219
Madaripur	1527	11135	1348	10703	1375	10793
Manikganj	551	1372	550	1342	554	1332
Munshiganj	122	436	133	494	142	504
Narayanganj	205	1016	211	1066	217	1109
Narsingdi	4180	26791	4229	33094	3806	26992
Rajbari	963	6459	1000	6467	808	5379
Shariatpur	310	541	391	1481	430	1642
Tangail	11797	95281	11599	90548	11669	92888

Source: Statistical Yearbook, 2017

1.5 Nutritive, Medical Value of Banana

Bananas are a rich source of carbohydrates, mainly starch in unripe bananas and sugars in ripe bananas. The carbohydrate composition of bananas changes drastically during ripening. The main component of unripe bananas is starch. Green bananas contain up to 70-80% starch, on a dry weight basis. During ripening, the starch is converted into sugars and ends up being less than 1% when the banana is fully ripe. The most common types of sugar found in ripe bananas are sucrose, fructose and glucose. In ripe bananas, the total

content of sugars can reach more than 16% of the fresh weight. Bananas have a glycemic index of 42-58, depending on their ripeness, which is relatively low. This is a measure of how quickly the carbs in a food enter the bloodstream. The low glycemic index of bananas is explained by their high content of resistant starch and fiber, which mitigates the blood sugar rise after a meal.

A high proportion of starch in unripe bananas is resistant starch, which, as the name suggests, is resistant to digestion and is therefore a type of fiber. Resistant starch passes down to the large intestine where it is fermented by bacteria in a process that forms butyrate, a short-chain fatty acid that appears to have beneficial effects on intestinal health. Bananas are also a good source of other types of fiber, such as pectin. Some of the pectin in bananas is water-soluble. When bananas ripen, the proportion of water-soluble pectin increases, which is one of the main reasons why bananas turn softer as they age. Both pectin and resistant starch moderate the rise in blood sugar after a meal. Bananas are a significant source of several vitamins and minerals, especially potassium, vitamin B6, and vitamin C. Bananas are a good source of potassium. A diet high in potassium can lower blood pressure in people with high blood pressure and has positive effects on cardiovascular health. Bananas are high in vitamin B6. One medium-size banana can provide up to 33% of the recommended daily intake of vitamin B6. Like most fruit, bananas are a good source of vitamin C. Fruits and vegetables contain numerous types of bioactive plant compounds, and bananas are no exception.

Although it is an important neurotransmitter in the brain, dopamine from bananas doesn't cross the blood-brain barrier to affect mood, but rather acts as a potent antioxidant. Several antioxidant flavonoids are found in bananas, most notably catechins. They have been linked to various health benefits, including a reduced risk of cardiovascular disease. Heart disease is the world's most common cause of premature death. Bananas are high in potassium, a mineral that promotes heart health and normal blood pressure. One medium-sized banana contains around 0.4 grams of this heart-healthy mineral.

1.6 Nutrient content of Banana

Table 1.3 Biochemical Substances of Banana (Value Per 100 gm)

Name of substances	Quantities
Calories	89
Water	75 %
Protein	1.1 g
Carbs	22.8 g
Sugar	12.2 g
Fiber	2.6 g
Fat	0.3 g
Saturated	0.11 g
Monounsaturated	0.03 g
Polyunsaturated	0.07 g
Omega-3	0.03 g
Omega-6	0.05 g
Trans fat	0 g

Source: USDA, 2017

1.7 Objectives of the Study

The specific objectives of the study are as follows:

- i. To determine the socio-demographic characteristics of producers and other value chain actors;
- ii. To identify the actors involved in value chain and their function in Banana marketing;
- iii. To calculate profitability of banana producers and value chain actors;
- iv. To identify the constraints of Banana marketing and suggested measure for the improvement of Banana marketing in the selected area.

1.8 Justification of the Study

The economic growth of an agro-based country like Bangladesh mainly depends on the development of agriculture sector. The agro-climatic conditions of Bangladesh are suitable for the cultivation of a wide variety of crops but 80% of the gross cropped areas are at present confined to the production of cereal crops mainly rice.

Bangladesh ranks 14th among the top 20 banana producing countries in the world. The country produces nearly 1.00 million tons of bananas annually (Hossain, 2016). It is also a nutritious fruit crop in the world and grown in many tropical areas where they are used both as a staple food and dietary supplements. Each year about 35,000 children become blind due to lack of Vitamin-A. The common deficient nutrients of Bangladesh are Vitamin-A and Vitamin-C, riboflavin, folic acid etc. Banana provides those nutrients. Banana is one of the high-calorie fruits and 100 grams of its flesh carries 90 calories. Besides, it contains a good amount of health benefiting fiber, anti-oxidants, minerals, and vitamins (Retrieved from <https://www.nutrition-and-you.com>). In Bangladesh, banana is the only fruit crop, which is available throughout the year and consumption rate is also higher than any other fruits.

The total cultivated area of horticultural crops is about 0.69 million hectare which is about 5% of the total cropped area. Total banana production is 774286 metric tons and total area is 119325 acres. Total production of green banana (as vegetable) is 144135 metric tons and total area is 25479 acres (BBS, 2013). It is very important to produce banana more which helps growers to create profitability because banana is year round crop and it has many nutrients. In earlier period banana production was high and it had great market value, but it is now losing concern. It is necessary to keep attention to the banana production and have to try to hold our traditional significance. Banana is high valued crops, for that reason it is also a positive side to investigate banana cultivation and profitability.

The value chain was described and popularized by Michael Porter in his 1985 Best-Seller, *Competitive Advantage: Creating and Sustaining Superior Performance*. The value chain can be a very useful conceptual tool when trying to understand the factors that impact the long-term profitability of business and when developing a successful strategic plan for business.

The value chain can be thought of as a set of activities, services, and products that lead to a product or service that reaches the final consumer.

The study is necessary for the following aspects-

- This research would give considerable significant as a source of information about banana production and profitability and its value chain.
- It would help in providing new idea and knowledge in the field of production and profitability of banana and be helpful to the farmers, researchers, government policy makers and others concerned.
- It would give particular emphasis on production and profitability of banana which could help to find out the ways for improving the efficiency in production.

1.9 Outline of the Study

The study consists of 8 chapters. Chapter 1 explained introduction of the study. Relevant review of literature is briefly described in chapter 2. Methodology of the study is presented in chapter 3. A brief description of the study area is presented in chapter 4. Chapter 5 is presented socio-economic characteristics of banana farmers. Value addition of banana evaluated in chapter 6. Chapter 7 determined constraints and opportunities faced by the different actors of banana value chain. Finally, Chapter 8 deals with summary, conclusions and some policy recommendations.

CHAPTER-2

REVIEW OF LITERATURE

2.1 Introduction

The main purpose of this chapter is to review the available studies related to present research. In any research review of literature is essential; because it provides a scope for reviewing the stock of knowledge and information relevant to the proposed research. In the business literature of Bangladesh, there is little information on Banana value chain. The studies in Bangladesh and different countries of the world which have relevance to the present study, are reviewed here in brief.

2.2 Studies Conducted on Banana

Bairagi (1980) conducted a study to determine the profitability of banana production in Jhenaidah District of Bangladesh. He found that per hector costs and returns on banana production were taka 53714.50 and 116674.84 respectively.

Hoque (1983) conducted a research on some technological aspects for the commercial production of banana during the period from 1981 to 1983 at Bangladesh Agricultural University (BAU), Mymensingh, he reported that the best period of banana plantation was September to November.

Rahman and Akbar (1989) conducted a study on Banana marketing in Narsingdi District. They reported that the farmer's share of the consumer's taka spent on bananas varied between 42 to 62%. The intermediaries appropriated a marketing margin of 38 to 56% from marketing cost and profit.

Roy (1996) conducted a study that comparative economic analysis of banana and their crops production in Mymensingh district to determine the cost and return as well as the relative profitability of banana growers. He observed per hectare gross expense of banana production was taka 65583.13, while per hectare gross return, net return above gross expenses is stood at taka 111191297.24 and 12514.11 respectively.

Nargis (1997) conducted a study on comparative economic analysis of growing banana and banana with other vegetables in some selected area of Muktagacha Thana. The major findings of the study were that per hectare costs of production of sole banana were taka 121438 and taka 92011, respectively considering full cost and cash cost.

Kamal (1996) conducted a survey in some selected areas of Jaypurhat and found that banana production was profitable. Per hectare net returns of banana was taka 67650.10.

Hoque (1998) conducted a research Bangladesh Agricultural University (BAU), Mymensingh during October 1987 to November, 1988. He examined the economic performance of banana production. He found that per hector cost and net return of banana production were taka 103, 614.88 and 1, 61, 386.12 respectively.

Octavio Damiani (2001) investigated that organic production of banana had great positive impacts on the incomes and quality of life of small farmers in Talamanca.

Mudyazvivi and Maunze (2007) was conducted to evaluate the banana industry in Zimbabwe focusing on postharvest losses along the value chain (VC). Total postharvest losses for 2011-2012 were estimated to be 24-27 per cent of total production with a minimum economic loss of USD 69,983/annum/firm, and a total loss of more than USD 500,000/annum between the VCs analyzed. The bulk of the losses occurred at farm level during handling and transportation. The major factors contributing to banana postharvest losses were: unreliable transport, poor communication and coordination between producers and processors; lack of or inefficient temperature management and poor sanitation.

Hanumantharaya et al. (2009) conducted a study based on data collected from 80 farmers in 12 villages of two taluks in Tungabhadra and Malaprabha command areas of Karnataka. Results of the study revealed that, in crop-I, per ha production cost of sucker banana was Rs. 82,298 and tissue culture banana was Rs. 1,17,563. The gross returns obtained were Rs. 1,60,113,81 and Rs. 1,97,295.94, respectively. The net returns

obtained were Rs. 77,815.81 and Rs. 79,732.94, respectively. In crop-II, production cost of sucker banana was Rs. 55,073 and tissue culture banana was Rs. 57,561.30. The gross returns realised were Rs. 1,70,596.56 and Rs. 1,85,953.07, respectively and the net returns were Rs. 1,15,523.56 and Rs.1,28,391.77, respectively. In sucker banana cultivation, regression coefficient of plant nutrients (0.35) was significant at five per cent and that of plant protection chemicals and bullock labor were non-significant.

Ouma and Jagwe (2010) was investigated that Smallholder farmers in developing countries need to improve their position in food value chains in order to improve their margins and as a strategy for coping with agricultural food price volatility through innovations within the chains. Value chain mappings and gross margin analysis were employed to assess constraints and opportunities for existing value chains for bananas in Central Africa using market survey data. The results showed weak linkages within the banana value chains with poor integration of value chain actors and minimal involvement with regional markets and high-value domestic chains such as supermarkets. Value addition in terms of agro processing was carried out at small scale levels using rudimentary techniques limiting the final product to low value markets. Transaction costs comprising transport, handling and storage comprised a high proportion of cost items in the value chain. Generally, the findings suggest that efforts aimed at strengthening linkages within the value chains, collective marketing, penetration into high-value chains and improved processing techniques may provide a potential avenue for enhancing banana value chains in Central Africa.

Barmon et al. (2012) was conducted to estimate profit, benefit cost ratio (BCR) and household income of mushroom production and also to explore the problems of producing mushroom and its marketing channels in Bangladesh. Mushroom was found to be a profitable agricultural enterprise (22,888 taka per farm). The benefit cost ratio (BCR) was 1.55. The average family household income was about Tk. 43,731. Usually, three intermediaries (mushroom office, wholesalers and retailers) are involved in the marketing channels of mushroom. The marketing margin of mushroom for farm gate to wholesalers and wholesalers to retailers were taka 50 and 70 per kg, respectively.

Rietveld *et al.*, (2013) investigated a study that Beer banana farming systems in central Uganda are important for the livelihoods of smallholder farmers, especially for those that process the bananas into beer and spirits, but also for rural retailers that sell the products. It was an exploratory study focusing on the different actors involved in the beer banana value chain, on its importance for those actors and on the dynamics within the chain. The value chain of banana beer and spirit is short and local, with most of these products being consumed in the locality. Only small amounts of banana beer and spirit from central Uganda find their way to urban centers such as Kampala. The bacterial disease *Xanthomonas* wilt has greatly affected the production of beer bananas, and we report production declines of 65% in two of the study sites. Improved linkages between non-brewers and brewers and between brewers and markets could assure supply and increase prices, giving an incentive for both brewers and non-brewers to invest more in disease control and in quality production.

Ann & Ajjan (2014) conducted a study and it reveals that two banana value chains (BVC), are illustrated based on research conducted in South India in 2014. BVC1 is the traditional value chain that sources bananas from small farmers for distribution through nearby destination markets in South India. BVC2 - the state-of- art value chain that includes farmers supplying to both major and independent retailers in South India, through a wholesale agencies with some farmer ownership. Farmers in both chains live in relative isolation from the main markets for their bananas. Prices for their bananas depend on the market prices in the city, upon which they have little control. This research paper focuses on how farmers are distanced from key markets; deal with buyers to receive fair prices. In both chains, most cash dealings between farmers and their buyers were completed through a relative/fixed pricing system with little bargaining effort from the farmers. Because of their relative seclusion, farmers relied on the buyers to offer them fair prices that reflect market movements in the city. Farmers in BVC1 based their trust on traditional ethical values to secure banana supply in the villages. In BVC2, farmers' trust in their intermediary developed over time in their relationships and by making

comparisons between the prices farmers received for their bananas and the market information they have.

Alex et al. (2015) investigated that Smallholder banana farmers depend almost entirely on fresh banana for their livelihoods in Uganda. Similarly, other banana value chain (BVC) actors specialize in the trade of the fresh fruit for income and employment. Therefore, improving the efficiency of market access options in Uganda's banana sub-sector is one way that banana value chain actors can benefit through the sale of their banana products. In order to achieve this, the actors need to be innovative; departing from dependence on the same product and traditional markets/approaches that limit available benefits. This paper is aimed at identifying innovative market access options among the banana value chain actors in Uganda as a basis for projecting the potential. Cross-sectional research design incorporating 240 value chain actors was employed for the study. The major innovative market access options assessed during the study were collective marketing, contract farming, mobile phone platforms, value addition options and supermarkets. The study discovered that innovative market access options such as farmer associations/collective marketing groups, use of mobile phone tools and value addition among banana actors were vital in improving market access but were underutilized. As such, there was need to develop a specific banana value chain development strategic framework in order to tap up innovations among the value chain actors and promote their diffusion across key banana growing districts in Uganda.

Gebre (2016) assesses the sustainability performance of the banana value chain by comparing and discussing 25 attributes owing to different sustainability dimensions. The paper identified critical aspects and provides a qualitative assessment of the sustainability performances of banana chains at the local level. The study found economic, social, and environmental indicators have moderate sustainability performance in the Arba Minch, Ethiopia. The chain had an advantage in terms of profitability, employment, and emission of air pollutants; and constraints in terms of coordination, value share, profit margins, market diversity, product and market information, transportation, waste management, and safety and hygiene.

Tadesse & Temesgen (2019) was conducted a study and its aimed was to analyze the value chain of banana in Mizan-Aman town, Bench Maji zone with specific objectives of describing important marketing channels and actors involved on banana value chain, dealing the determinant of supply of banana and identify constraints in value chain of the banana. The data were collected from both primary and secondary sources. The primary data for this study were collected through application of appropriate statistical procedures. The data were analyzed by using both descriptive and Econometric models. Accordingly, the value chain activities in the survey period were production, marketing and consumption. To identify factors affecting farm level marketable supply of banana, OLS regression analysis was employed. About 10 variables were hypothesized to affect farm level of marketable supply of banana in the study area. Age of respondent, experience, family size, education level of the household head, market information and distance to the market affects farm level marketable supply of banana positively and negatively. The study result exhibited also that banana producers are faced lack market, lack of cooperatives and low price of banana. The result revealed that banana passes through several intermediaries with little value being added before reaching the end users. Therefore, farmers are forced to capture a lower share of profit margin. The highest marketing cost is incurred by wholesalers and the highest market profit is shared by retailers. The value chain analysis revealed that the major actors in the area are producers, local collectors, wholesalers, retailers and consumers. The study showed that Input Suppliers, Improved infrastructure and strengthening the linkage/interaction among value chain actors is necessary for good marketing of banana.

2.3 Concluding Remarks

The above review indicates that a few studies have been conducted on banana production, economic efficiency, technical efficiency, comparative profitability and many other terms. The result of these studies varies widely in different reasons. Most of the studies deal with production and value chain of Banana. Although these studies are important from the marketing point of view but the study on supply chain is also of great importance for market participants and policy makers. Results of the study can help to identify the stakeholders of the Banana chain and their role in the marketing system,

estimate the value addition of Banana at different stages and examine the post-harvest loss and its impact on farmer's net price. Considering the above perspective, the present study has been undertaken. It is expected that the present study will serve as the base for further studies in this almost untapped but profitable and potential area of the business. Moreover, it will contribute to the stock of existing knowledge, especially in the field of Value chain of Banana and value addition at different levels.

CHAPTER 3

METHODOLOGY

3.1 Introduction

Methodology is the systemic steps of action which involves collection of reliable data from the selected sample farmers as per objectives of the research. It is an indispensable and integral part of any research. The reliability of any scientific research depends on a great extent on the appropriate methodology. The researcher gave a careful consideration in following a scientific and logical methodology. The study was based on the survey methodology. The word survey refers to a method of study in which an overall picture of a given universe is obtained by a systematic collection of all available data on the subject (Efferson, 1963). The design of the survey for the present study involved is obtained given universe of a study involved picture some necessary steps, which are presented in the following section.

3.2 Selection of the Study Area

Selection of the study area is an important step for conducting any research because it indicates a premise from where required data would be collected in accordance with the objectives. On the basis of high concentration of Banana cultivation and production, Narsingdi district is considered as one of the leading banana producing zones in Bangladesh. Two upazilas namely Shibpur and Manohordi of Narsingdi district were selected.

The main considerations behind the selection of above upazilas as study are as follows:

- A large number of banana growers are available and banana grows well and farmers use a good portion of their land for producing banana in these study areas.
- These villages had some identical characteristics like topography, soil and climatic conditions for producing banana.
- There was high expectation to get cooperation from the farmers and intermediaries.
- Easy accessibility and good communication facilities in these villages.

It was a bare necessity to select an area, which would provide maximum information regarding banana marketing in Bangladesh. Dhaka city was selected as the study area because it would provide maximum information about banana marketing in Bangladesh.

3.3 Selection of Banana

Banana is an important fruit of Bangladesh widely grown. Many types of bananas are commercially produced by the farmers in the study area. These are BARI Kola-1, Amritsagar, Sabri, Champa and Kabri are the commercial cultivars. The other cultivars are Mehersagar, Dudsagar, Agniswar, Genasundari, Kanaibanshi, Basrai, Binisuta, etc. Among these cultivars Champa (Apple Banana) has been selected for this research work.

3.4 Selection of Samples and Sample Technique

The population for this research is defined as those persons involved in value chain of Banana such as *Farmers, Farias, Beparis, Aratdars*, Wholesalers, Retailers, and final users or customers in Narsingdi district. Convenience sampling technique was selected in order to meet the objectives. Thirty Banana growers, thirty others value chain actors (*Faria, Bepari, Aratdars*, wholesaler and retailer) were selected from the study area in the following manner. Thus total sample size was 60.

Table 3.1 Different Actors and Size of Sample

Value chain actors	Sample size
Farmer	30
<i>Faria</i>	06
<i>Bepari</i>	06
<i>Arathdar</i>	06
Wholesaler	06
Retailer	06
Total	60

3.5 Preparation of Survey Schedule

For collecting data through survey method preparation of interview schedule is of crucial need. According to the objectives of the study two sets of interview schedules were

prepared one for farmers and others for the banana traders. The data regarding volume of sales, place of sales and purchase, production cost, marketing cost and sales prices and purchase price, whom to buy and whom to sell and volume of post-harvest loss of the farmers and intermediaries, problems faced by the stakeholders in the value chain and their possible recommendation would be faced by the stakeholders in the value chain and their possible recommendation would be collected through the interview schedule. All the schedules were pre-tested and finalized after necessary correction, modification and adjustment.

3.6 Study Period

Data would be collected by survey method with the help of pre-designed and pretested interview schedule during November 2017 to February 2018. The collected data will be edited, summarized, tabulated, and analyzed to fulfill the objectives of the study. For collecting supplementary data, the author personally visited the area several times.

3.7 Method of Data Collection

Generally, most of the farmers did not keep their written records. So it was very difficult to collect data from the farmers. Primary data from respondents were collected through face to face contact. During data collection the objectives of the study were clearly explained to the respondents. At the time of interview, the researcher asked questions systematically and explained the questions whenever necessary. Farmers were requested to provide correct information as far as possible. For the research purpose secondary data would also be collected from different sources like books, journals, newspaper, and document of BBS.

3.8 Tabulation and Analysis of Data

After collecting information, the filled up schedule were scrutinized and checked to avoid irrelevant information. The collected data were edited, coded and finally tabulated according to objectives of the study. In order to minimize error data were collected in local unit (e.g. acre) and later it was converted into standard unit. Finally, tabulated data are analyzed and condensed by using average, percentage and ratio. A list of relevant tables was prepared to obtain the result.

3.9 Analytical Techniques of the Study

Whether a farm was performing well or not, could be judged by the analytical technique. The data may be adequate, valid and reliable to any extent, it does not serve any worthwhile purpose unless it is carefully edited, systematically classified and tabulated, scientifically analyzed, intelligently interpreted and rationally concluded (Gupta and Kapur, 1994). Data were analyzed with the purpose of achieving the objectives of the study. In the present study following analytical technique were used:

3.9.1 Tabular Analysis

Tabular analysis was mainly used to analyze the data and derived meaningful findings by using simple statistical measures like sum, percentage, average and ratios.

3.9.2 Cost and Return analysis

Gross Return

Gross return was calculated by multiplying the total volume of output of an enterprise by the average price in the harvesting period (Dillon and Hardaker, 1993). It consisted of sum of the volume of main product and by product. The following equation was used to estimate gross return

$$GR = \sum QM \cdot PM$$

Where:

GR= Gross return from product,

QM = Quantity of product

PM =Avg. price of product

Net Return

Net return was calculated by deducting all costs (variable and fixed) from gross return. To determine the net return of banana production the following equation was used in the recent study:

$$NR = \text{Gross return} - (\text{Variable cost} + \text{fixed cost})$$

Here, NR= Profit per cycle

Gross return = Total production X per unit price of banana

Variable Costs

- Production cost of Banana

Fixed Costs

- Land use cost
- Interest on operating capital

Marketing Cost of Banana

- Transportation
- Market toll
- Personal expenses
- Storage cost
- Wastage
- Grading
- Loading and unloading
- Salary & wages
- Packaging
- *Arathdari* commission
- Tips and donation
- Rent
- Tax
- Entertainment
- License fee
- Miscellaneous

Gross Margin

The following equation was used to assess the gross margin.

$$GM = GR - VC$$

Where,

GM= Gross Margin

GR= Gross Return

VC= Variable Cost

Net Marketing Margin

Net margin was calculated by deducting all cost (total production cost and total marketing cost) from gross return.

$$NM = GM - (\text{Production \& Marketing cost})$$

Value Edition by Traders

$$\text{Value Addition (\%)} = \frac{(\text{Sales Price} - \text{Purchase Price})}{\text{Purchase Price}} \times 100$$

Benefit Cost Ratio (BCR)

The BCR is a relative measure, which is used to compare benefits per unit of cost. The BCR estimated as a ratio of total return and total costs.

$$BCR = \frac{\text{Total Return (Gross Return)}}{\text{Total Cost}}$$

3.10 Problems Faced in Data Collection

The researcher had to face certain problems during data collection, which are as follows

- The researcher had to spend a lot of time for describing the purpose and objective of the study to the respondents. Some of the respondents felt disturbed to answer the questions since they thought that might researcher uses this information against their interest.
- Due to limited resources data were collected within shortest possible time.
- Since the nature of the study was exploratory and most of the data were collected through personal interviews, respondents from all categories were often unable to recall the exact information. Reliability of data posed some confusion.
- The traders did not accurately provide data on profit margin, total cost etc. which were highly confidential to them, and as a result, the authenticity of such data hampered to some extent.

- Most of the selected respondents initially hesitated to answer to the question since the researcher was unknown to them.
- The concerned persons were not always available at home or shop. Moreover, they were very busy. For this reason, frequent visits had been made to collect information from them.

In spite of the entire problem, this study has thrown light on some important issues of value chain of banana.

CHAPTER 4

DESCRIPTION OF THE STUDY AREA

4.1 Introduction

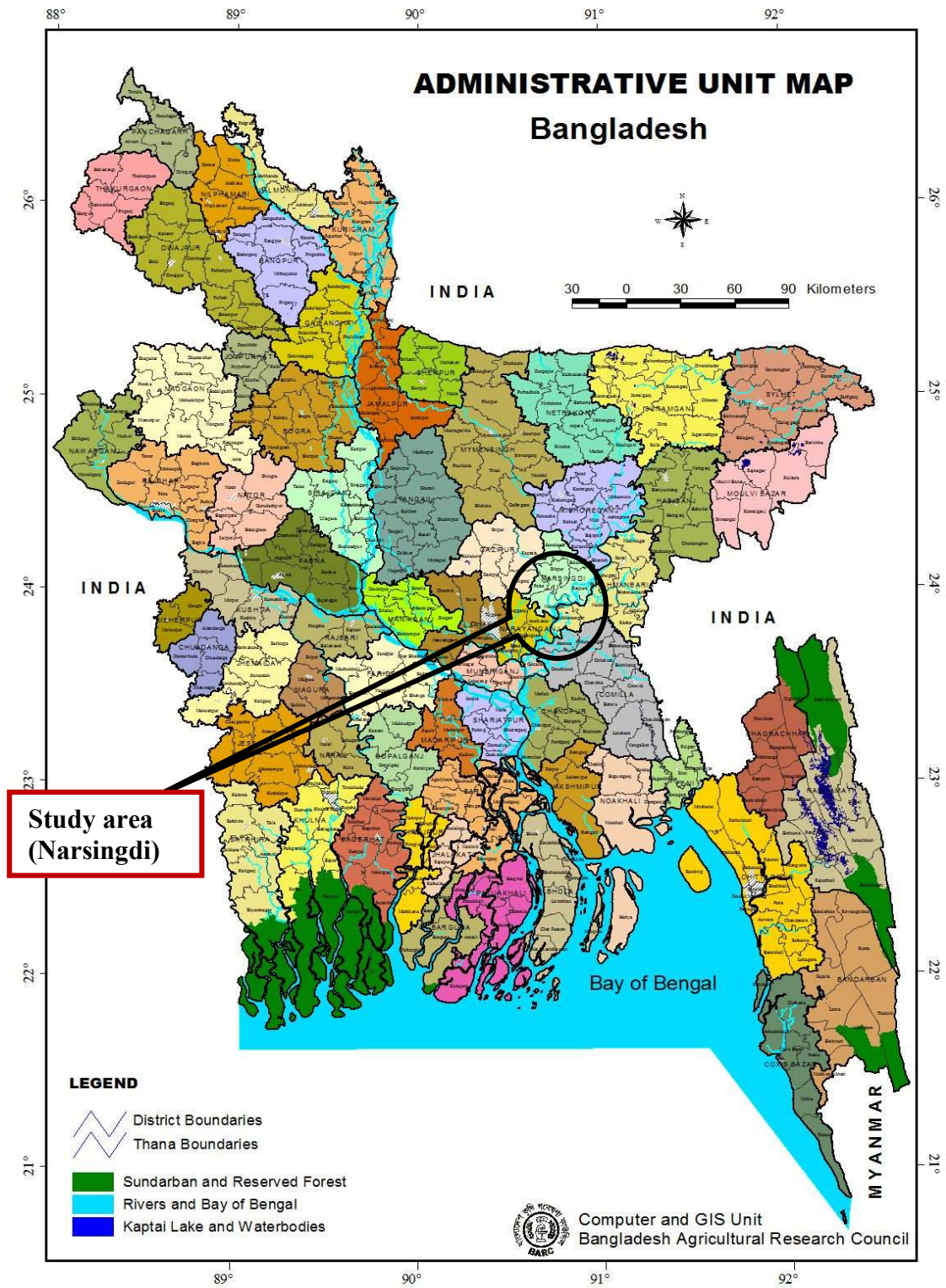
A short description has been presented in this chapter to know the overall features of the study area. It is essential to know the agricultural activities, possible development opportunities and potentials of the study area. Location, area, population, monthly average temperature and rainfall, agriculture, occupation, cropping patterns, communication and marketing facilities of the study area are discussed in this chapter. However, for the production of banana, it is very essential to know the climate and topography of the study areas.

4.2 Location

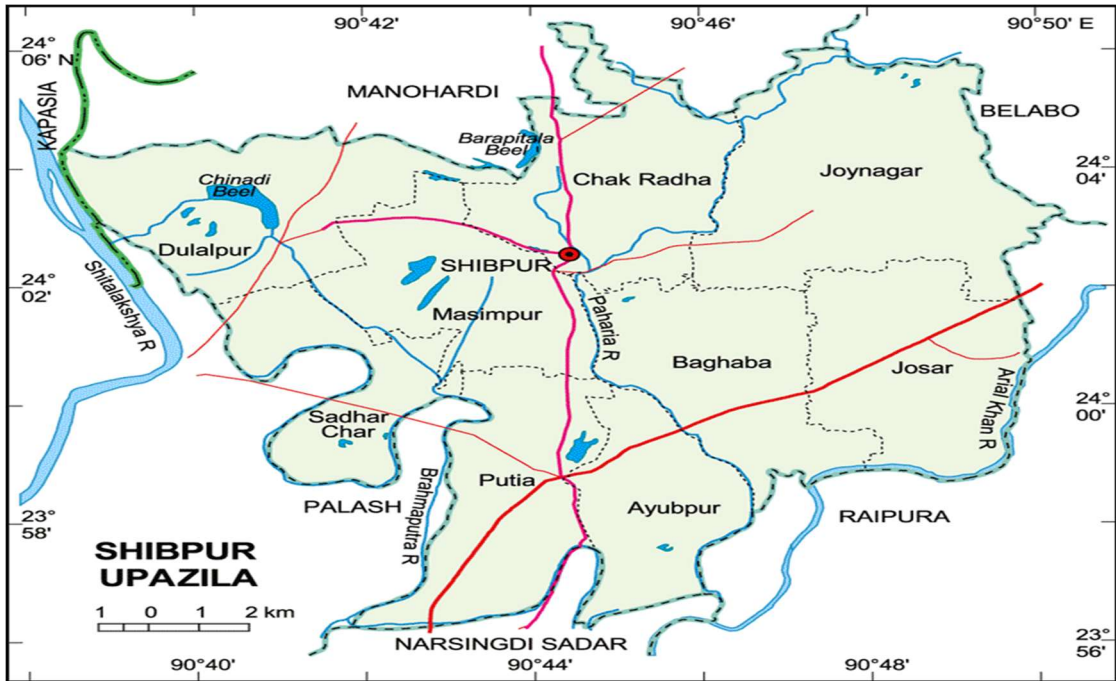
Narsingdi District was previously a sub-division of Dhaka District. It was upgraded to a district in 1984. The popular view on the origin of Narsingdi district name is that about 110 years ago there was lived an influential Zaminadar named Narsingha Paul who was well known to the people for his benevolent activities. The district might have derived its name after the name of that Zamindar. The district is bounded on the north by Kishoreganj District, on the east by Kishoreganj and Brahmanbaria Districts, on the south by Brahmanbaria and Narayanganj Districts and on the west by the Gazipur District. It lies between 23°29' and 23°45' north latitudes and 90°10' and 90°43' east longitudes. The total area of the district is 1150.13 sq. km.

The selected sample farmers are located in eight villages namely Chalak Char, Lebutala, Kanchikata, Shukundi, Dulalpur, Sadhar Char, Putia, Josar under Narsingdi district is considered as one of the leading banana producing zones in Bangladesh. Two upazilas namely shibpur and Manohordi of Narsingdi district were selected respectively. The locations of the upazila are presented in the **Map 4.2 and 4.3** respectively.

Narsingdi district was selected as the study area because it would provide maximum information about banana marketing in Bangladesh. The selected samples such as *Arathdar*, wholesaler and retailer are located in shibpur bazar, Itakhola bazar and jiniardi bazar. The locations of the area are presented in the **Map 4.4**.



Map 4.1: Map of Bangladesh



Map 4.2: Map of SHIBPUR Upazila of Narsingdi District



Map 4.3: Map of MANOHARDI Upazila of Narsingdi District



Map 4.4: Map of Narsingdi District

4.3 Climate, Topography and Soil Condition

The climate of the district is relatively mild both in the summer and the winter. The maximum and minimum mean temperatures during the winter vary from 19°C to 23.7°C. During the summer maximum and minimum mean temperatures vary from 28°C to 30°C. The dry winter season starts from November and continues up to the end of February. Summer comes from mid of March and continues up to the mid of June. The rainfall is generally heavy during July and August. Heavy rainfall occurs during the monsoon. Annual average rainfall of this district 2376 millimeters.

The soil of the district is mainly formed with recent and sub recent alluvial sediments of lower parts of the old Brahmaputra floodplain and the new Brahmaputra floodplain. Tract upland soil mixed with the old Brahmaputra floodplain is found in the north eastern part of the District. The central part is formed with the ridges and basins of the Brahmaputra floodplain having grey-clay loam. The soil of the southern part of the District is formed by grey salty complex clay for the young Brahmaputra floodplain. The soil condition of the district is very favorable for producing different types of vegetables and high yielding varieties of crops. Paddy, jute, wheat, sugarcane, vegetables etc. are main crops of this district. Banana, jackfruit, mango, papaya, pineapple, black berry, guava, olive, lotcon, lichi etc. are main fruits of this district.

4.4 Area and Population

The total area, population and density of population of the selected upazilas are presented in **Table 4.1**.

Table 4.1 Population Size of Upazila as under the Study Areas

Upazila	Households	Population(000)			Sex ratio (M/F)	Average size of household	Density per sq. Km
		Male	Female	Both Sex			
Shibpur	65094	148429	155384	303813	96	4.64	1395
Manohordi	63385	131316	143796	275112	91	4.30	1419

Source: District Statistics BBS, 2017.

4.5 Agriculture holding

An agriculture holding is a techno-economic unit of agricultural production under single management comprising all livestock kept and all land used wholly or partly for agricultural production purposes without regard to title, legal form or size. Single management may be exercised by either an individual holder or jointly by two or more individuals or holders or by a judicial person such as a corporation, co-operative or government agency. A holding may consist of one or more parcels (fragments of land) located in one or more areas or mauzas or in more than one administrative unit or division provided that all separate parcels of fragments form parts of same technical unit under operational control of same management. The definition covers practically all holdings/households engaged in agricultural production of both crops and livestock. Some agriculture holdings may have no significant agricultural land, e.g. holdings keeping livestock, poultry and hatcheries for which land is not an indispensable input for production.

4.6 Farm holding

A farm holding is defined as being an agricultural production unit having cultivated land equal to or more than 0.05 acres. Farm holdings are classified into following three broad groups:

(a) Small: Farm holdings having minimum cultivated land 0.05 acre but operated land more than this minimum but up to 2.49 acres.

(b) Medium: Farm holdings having operated land in between 2.50 to 7.49 acres.

(c) Large: Farm holdings having operated land 7.50 acres and above.

Small cultivated land 0.04 acre or less is generally used for kitchen garden growing mainly vegetables. Often seeds of white gourd, water gourd, pumpkin and other strains are shown on households; but these creepers spread out around house roofs and other structures. As such, the minimum cultivated land considered for qualifying to be a farm holding is 0.05 acres.

4.7 Non-farm holdings

A non-farm holding is defined as being the one which has neither cultivated non operated land or has cultivated land less than 0.05 acre. Tenancy owner holdings are those having and operating their owned land and who may or may not be leasing out land.

Tenant holdings are those having no owned land but operating land taken from others on share cropping basis or on other terms. Owner-cum-tenant holdings are those having owned land and who may or may not be leasing out their own land to others and who may be taking land from others on share cropping basis or on other terms.

4.8 Agriculture work

Agriculture work signifies all activities of holder and his/her labor force doing planning, management, and operation of a holding. It includes land preparation, sowing, weeding, harvesting, feeding and tending livestock & poultry, kitchen gardening, supervising agricultural workers, keeping farm records & accounts, preparing agriculture products for marketing (including packaging), repairing farm equipment, constructing farm buildings & fences, and engaging in land reclamation and improvement and other related activities. It excludes home and other family domestic chores.

4.9 Area under temporary crops

It is the land area planted to crops having growing cycle or length of life less than one year. These are the temporary crops such as paddy, wheat, jute, cotton, tobacco, sugarcane, pulses, oil seeds, potato, vegetables and other seasonal crops. The minimum area recorded for a temporary crop was 0.01 acre. Area under temporary crops and temporary-crops net area were equivalents.

4.10 Area under permanent crops

It is the land area planted to crops which remain standing for a long period of time and do not need to be replanted after a seasonal harvest. Mango, jackfruit, coconut, guava, lemon, and other fruit varieties are all permanent crops.

4.10.1 Current fallow

It is land brought into cultivation but left out uncultivated in census year for fertility regaining and improvement or for other reasons.

4.10.2 Net cultivated area

This is land area actually cropped during the census year regardless of number of crops grown plus current fallow. It includes areas under temporary and permanent crops and also current fallow.

4.10.3 Permanent fallow

It is land not available for cultivation due to coming into residence and commercial & other uses. Playground, graveyard, wild shrubs and jungles, marshy land, and the like fall in this category.

Table 4.2 Number of agriculture holding by tenure (Land area in acre & production in metric ton)

Upazila	Total Farm Holding	Owner Holding	Owner Cum Tenant	Tenant Holding
Manohardi	41361	39376	18616	557
Shibpur	37669	43748	14004	2066

Source: District Statistics BBS, 2017.

The table 4.2 illustrates the number of different farm holdings in two upazilas of Narsingdi name respectively Manohordi, Shibpur in the year 2017. Total farm holding was slightly over 41 thousand in Manohordi upazila almost 500 more than Shibpur upazila. On the other hand the number of owner holding of Shibpur was more than Manohordi upazila.

Table 4.3 Land area based on utilization (Land area in acre & production in metric ton)

Upazila	Operated area	Permanent Cropped area	Temporary Cropped area	Others
Manohardi	41099	1645	30683	189
Shibpur	43712	6160	26471	464

Source: District Statistics BBS, 2017.

The table 4.3 shows the total area of operation in two upazilas in the form of permanent and temporary cropped area in 2017. It is prominent that higher land was operated in Shibpur than Manohordin on the basis of permanent crop.

Table 4.4 Land area based on cultivation (Land area in acre & production in metric ton)

Upazila	Current fallow	Temporary cropped area					Productivity of Crop
		Single	Double	Triple	Net	Gross	
Manohardi	259	30683	54565	178	259	30683	54565
Shibpur	300	26471	43334	164	300	26471	43334

Source: District Statistics BBS, 2017.

The table 4.4 elaborates the size of cropping area, un-operated and the productivity of crop in two upazilas of narsingdi in 2017. It is clear that the productivity of crop was higher for Manohordi upazila than Shibpur. Double cropping pattern was dominant in both upazilas.

Table 4.5 Cropped area (permanent + temporary) sprayed with plant protection measures (Land area in acre)

Upazila	Total Farm Holding				Reporting Area Sprayed
	Number	Cropped Area	Number	Cropped Area	
Manohardi	41361	30683	38491	30683	30371
Shibpur	41361	30683	38491	30683	30371

Source: District Statistics BBS, 2017.

The table 4.5 shows the number of farm holdings use crop protection in both cropping area permanent and temporary. It is clear that the area of spraying in both was equal (30371).

4.11 Livestock

Livestock is an integral component of the complex farming system in Bangladesh as it not only a source of meat protein but also a major source of farm power services as well as employment. The livestock sub-sector provides full time employment for 20% of the total population and part-time employment for another 50%. The poultry meat alone contributes a substantial 37% of the total meat production in Bangladesh. The farmers of the study area raise Cows & Buffalo, Goat, and Sheep etc. The **table 4.6** shows the number of livestock species in two upazilas. It is prominent that the number livestock of was higher in Manohordi upazila than Shibpur.

Table 4.6 Number of holding reporting selected livestock species

Upazila	Cows & Buffalo		Goat		Sheep	
	Holding/ farm number	Animal Number	Holding/ farm number	Goat Number	Holding/ farm number	Sheep Number
Manohardi	58549	94840	6175	133780	315	23780
Shibpur	20968	44496	10021	21404	532	1348

Source: District Statistics BBS, 2017.

4.12 Poultry

The economic system of Bangladesh is mostly dependent on agriculture and agricultural related production. Poultry products like meat and eggs are the main source of animal protein for Bangladeshi people. Chickens are the common and mostly raised poultry birds of Bangladesh. Along with chickens, raising some other poultry birds like quails, turkeys, ducks, pigeons, peacocks etc. are raised by most of the farmers of the study area. The **table 4.7** shows the number of poultry species in two upazilas. It is prominent that the number of poultry was higher in Shibpur upazila than Manohordi.

Table 4.7 Number of Selected Poultry/Bird

Upazila	Hen and cocks		Ducks		Others	
	Holding/ farm number	Total Number	Holding/ farm number	Total Number	Holding/ farm number	Total Number
Manohardi	10550	173450	2058	30120	0	0
Shibpur	25875	162088	11142	46134	1742	8856

Source: District Statistics BBS, 2017

Table 4.8 Area and production of jackfruit, banana and pineapple (Area in acre and production in metric ton)

Upazila	Jackfruits		Banana		Pineapple	
	Area	Production	Area	Production	Area	Production
Manohardi	92	656	1590	8109	82	
Shibpur	2795	14497	1023	14374	64	

Source: District Statistics BBS, 2017.

The **table 4.8** shows the area of land production of major fruits in two upazilas. It shows that the area of fruits and productivity of fruits was higher in Shibpur than Manohardi upazila.

Table 4.9 Literacy (7+) rate of 2001 & 2011

Upazila	2001			2011		
	Male	Female	Both	Male	Female	Both
Manohardi	44.6	40.9	42.7	49.7	50.2	49.9
Shibpur	51.1	47.6	49.3	55.9	55.5	55.7

Source: District Statistics BBS, 2017.

The **table 4.9** illustrates the literacy rate of two upozilas in 2017. It is clear that the literacy rate was higher in Shibpur upazila than Manohardi.

4.13 Occupations

The major occupations of the peoples under study areas are agriculture, non-agricultural laborer, wage laborer, industrial laborer, service holder and others. Average wage rate of agricultural labor varies in different areas. Day labors were charged with high wage rate and they became scarce during harvesting period.

4.14 Transportation, Communication and Marketing Facilities

Transportation and communication is the pre-condition for the development of a particular region or a country. The selected areas for the study are well communicated with the different places of Bangladesh. The road network of this area facilitates the local people to market their agricultural as well as other products to the nearby and distance market places. Most of the roads in the study areas are concreted and some of the roads are muddy. Due to well communication with the different markets, usually farmers do not deceive from having good prices of their produced commodities. The modes of transportation of this area are rickshaw, van, bullock carts, truck, by-cycle, motorcars and boats. There are many hats, which are sit on more than one day in a week and the local bazars are held on every morning and afternoon.

4.15 Concluding Remarks

From the above discussions it is clear that there are some variations in different characteristics between the banana farmers and traders of two upazilas of Narsingdi district. But the magnitude of the variations was not large. There are substantial indications suggesting that banana farmers of both areas were progressive.

CHAPTER 5

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF BANANA FARMERS

5.1 Introduction

The socio-demographic background and characteristics of the farmer's influences the productions to a great extend. So, a description of the characteristics of farmer is necessary for analyzing the main objective of the present study. Socio-demographic characteristics of the farmer's included their age, family size, educational status, farm size, farming experience of the respondent. These are described below:

Table 5.1: Distribution of the Banana farmers according to their age

Age Categories	Banana Farmers	
	Number	%
Young (20-35 Years)	16	53.3
Middle (35-50 Years)	7	23.3
Old (Above 50 Years)	7	23.3
Total	30	100

Source: Field survey, 2018

Table 5.1 shows that age of the Banana farmers ranged from 20 to above 50 years. Banana farmers were classified into three categories on the basis of their age. Young farmers were mostly engaged in Banana cultivation.

Table 5.2 shows that maximum farmers (53.3 %) are illiterate while primary & higher secondary have same (16.7 %). Farmers having secondary education are (13.3%). Banana farmers were classified into four categories on the basis of their education. Illiterate farmers were mostly engaged in Banana cultivation.

Table 5.2: Distribution of the Banana farmers according to their education

Education Categories	Banana Farmers	
	Number	%
Illiterate	16	53.3
Primary	5	16.7
Secondary	4	13.3
Higher Secondary	5	16.7
Total	30	100

Source: Field survey, 2018

Table 5.3 shows that Family size of the Banana farmers of the study ranged from 1 to above 7 persons. Banana farmers were classified into three categories on the basis of their family size. Banana farmers having medium family size (43.3%) were interest in Banana cultivation.

Table 5. 3: Distribution of the Banana farmers according to their Family size

Family Size	Banana Farmers	
	Number	%
Small (1-4)	8	26.7
Medium (5-6)	13	43.3
Large (Above 7)	9	30
Total	30	100

Source: Field survey, 2018

Table 5. 4: Distribution of the Banana farmers according to their Farm size

Family Size	Banana Farmers	
	Number	%
Small(0.01-0.33 Acre)	10	33.33
Medium(0.34-1.0 Acre)	10	33.33
Large (Above 7 Acre)	10	33.33
Total	30	100

Source: Field survey, 2018

Table 5.4 shows that Banana farmer were classified into three categories on the basis of their farm size. All Banana farmers were belonging to same percentage (33.33%).

Table 5.5: Distribution of the Banana farmers according to their Farming experience

Faming Experience	Banana Farmers	
	Number	%
1 – 10 Years	16	53.3
10 - 20 Years	12	40
Above 20 Years	2	6.7
Total	30	100

Source: Field survey, 2018

In Table 5.5 farming experience of a respondent was determined on the basis of involvement in the farming activities related to agriculture. Banana farmers ranged from 2 to above 20 years. Banana farmers were classified into three categories on the basis of their Farming experience. Highest portion of the Banana farmers (53.3 %) had low farming experience (1 - 10) years.

CHAPTER 6

VALUE ADDITION OF BANANA

6.1 Introduction

This chapter is concerned with the assessment of value addition by banana farmers, *Faria*, *Bepari*, *Arathdar*, wholesalers and retailers for banana. Value addition is mainly interpreted as the difference between the total expenses involved in making or buying of a commodity and the total revenue accruing from its sales. Value addition activities are mainly concerned with the changes of utilities. For those reasons this chapter goes through the cost and return at different levels that are incurred and obtained by banana farmers, *Faria*, *Bepari*, *Arathdar*, wholesalers, retailers and finally estimation of value addition at different levels.

In production, cost plays a dominant role in farmer's decision making. Considering its importance, the present study placed emphasis on different cost items of bananas. In banana production various inputs like human labor, power tiller, sucker, manure, fertilizer, insecticides, pesticides, irrigation, operating capital and land are required. These items that go into the cost of production are both variable costs and fixed costs. Variable costs are those which changes as the size of operation changes and fixed cost remain the same regardless of the volume of output. The cost and return of farmer and cost and margin of intermediaries were estimated per bunch of banana basis. We also estimated the marketing cost of banana at different stages of the value chain.

6.2 Total Costs of Banana Farmers

The cost refers to the total amount of funds used in banana production in this study. Total cost of banana is the sum of production costs and marketing cost.

6.2.1 Production Cost

This section aims at identifying and quantifying production cost of banana per bunch incurred by the farmers in the production process. Cost of production here means the expenses incurred per unit of output. These expenses are always calculated with relation to a particular amount of product and in particular time period. In this study cost of production of bananas are estimated per bunch for one year. Hence variable and fixed costs were calculated separately.

6.2.1.1 Variable Cost

The variable costs are the costs of using the variable inputs. These costs vary with the levels of production. In this study, variable cost items were labor cost, cultivation cost, sucker cost, manure and fertilizer cost, insecticide/pesticide cost and irrigation cost. These cost items are discussed below:

Human Labor Cost

Human labor was considered as one of the important costs in banana production. There were mainly two categories of human labor: family labor and hired labor. Family labors included the operator/ farmer himself and other adult working members of his family. Hired labor included permanently hired labor and labor employed on monthly or daily basis. The prevailing wage rate in the market for hired labor was considered as the opportunity cost of family supplied labor and in the study area wage rate was TK. 500 per man-day. The average human labor cost was estimated Tk. 18000 per acre of banana production. These are depicted in **Table 6.1**.

Land Preparation Cost

Power tiller is the time and labor saving modern technology. In the study area, power tiller was mainly used in banana cultivation. The average cost of land preparation was found Tk. 6000 for banana production per acre.

Cost of Sucker

Sucker is the main input without which agriculture cannot imagine. Sucker was used for cultivation of banana. The sucker cost of banana was found Tk. 9000 per acre of banana production.

Cost of Cow dung and Fertilizer (Urea, T.S.P, MoP)

Application of recommended doses of fertilizer is a major requirement of banana cultivation. In the study area farmer used Cow dung and Fertilizer (Urea, T.S.P, MoP) for banana production and costs were estimated at the rate of prevailing market price and were found Tk. 5000 and Tk. 8000 per acre of banana production respectively.

Cost of Irrigation

Irrigation to banana field is important. Total cost of irrigation per acre of banana production per year was found Tk. 6000.

Cost of Insecticides/Pesticides

Insecticides/pesticides are important for banana production because banana is attacked by pest and diseases which may hamper the production and quality of banana. Insecticides/pesticides for banana were found Tk. 1000 per acre of banana production.

Table 6.1: Production Cost of Banana Per Acre

Items of Cost	Cost (Tk.)
Land preparation	6000
Human labor	18000
Sucker	9000
Cowdung	5000
Fertilizer (Urea/TSP/MOP)	8000
Cost of Insecticides/Pesticides	1000
Cost of Irrigation	6000
A. Total Variable Cost (TVC)	53000
Interest on operating capital @ of 12% for 12 months	6360
Rental value of land	45000
B. Total Fixed Cost (TFC)	51360
C. Total Production cost (A+B)	98000
Amount Bunch per Acre (Nos)	850
Selling Price of Per Bunch at farm yard	450
D. Total Revenue	382500
Net Profit margin(D-C)	284500
Benefit Cost Ratio (BCR)	3.90

Source: Field Survey, 2018

6.2.1.2 Fixed Cost

Fixed costs are those which do not change in magnitude as the amount of output of the production process changes and are incurred even when production is not undertaken (Johl and Kapur, 1979, p. 95). Fixed cost includes land use cost and

interest on operating capital.

Land Use Cost

Land use cost was calculated by considering rental value of land. Land use cost was estimated for the cropping period covering almost 12 month period as per the prevailing rate in the study area. In the study area the land use cost per acre was Tk. 45000 for banana production.

Interest on Operating Capital

Interest on operating capital was computed by taking all variable cost incurred for all the field operation. Table 6.1 shows the estimated cost for banana production was Tk. 6360. The cost on operating capital was calculated at the rate of 12 per cent per annum.

6.2.2 Marketing Costs of Farmer

The cost of marketing represents the cost of performing the various marketing functions. It also said about operations by various agencies involved in the marketing process. In other words, the cost, which incurred to move the product from producers to consumers are generally known as marketing cost. Marketing cost of banana at the actors, at intermediaries' level includes the expenses incurred by different actors for movement of the product through the value chain. Major items of marketing cost of farmer were transportation, storage, wastage, grading, market toll, and personal expenses. It was estimated per bunch of banana Tk. 17.

Table 6.2: Marketing Costs of Farmer

Cost items	Cost (Tk./ Bunch)	Percentage
Transportation	10	58.82
Marker toll	1	5.88
Personal expense	1	5.88
Storage	0	0
Wastage	5	29.41
Total	17	100.00

Source: Field Survey, 2018

Gross return was calculated by multiplying the total amounts of products by sales price. It was seen that gross return per bunch of banana was Tk. 450. Variable cost per bunch of banana was Tk. 62.35. Total cost per bunch of banana cultivation (with marketing) was Tk. 115.29. Gross margin was obtained by deducting total variable cost from gross return. Gross margin per bunch of banana was Tk. 387.65. Net return was estimated by subtracting total cost from gross return. Net return per bunch of banana was Tk. 334.65. The undiscounted benefit cost ratio (BCR) was found 3.90 (Table 6.3).

Table 6.3: Profitability of Banana Farmer

Particulars	Tk. Per bunch
i. Gross return	450
ii. Variable cost	62.35
iii. Total cost	115.29
iv. Gross margin (i-ii)	387.65
v. Net return (i-iii)	334.65
vi. BCR (i/iii)	3.90

Source: Field Survey, 2018

Farm gate price is that price which farmer gets through selling their produce at the farm yard. The average farm gate price of banana was Tk. 450 per bunch. Market price per bunch of banana was Tk. 500. The estimated average marketing cost per bunch of banana incurred by the farmers was Tk. 17. Marketing margin per bunch of banana was Tk. 50. Among the value addition farmers covered the 11.11 percent of total value addition (Table 6.4).

Table 6.4: Value Addition of Banana Farmer When Sell to Faria

Sales price to Faria (Tk. Per Bunch)	Farm gate Sales Price (Tk. Per Bunch)	Average marketing cost (Tk. Per Bunch)	Net Margin (Tk. Per Bunch)	Value Addition %
500	450	17	33	11.11

Source: Field Survey, 2018

6.3 Cost and Margin Analysis of *Faria*

Faria mainly sold banana to the *Bepari* or *arathdar*. After collecting banana from the growers from the market they sold it directly to the end *Bepari* or *arathdar*. The estimated average marketing cost per bunch of banana incurred by the *Faria* was Tk. 30. Among the cost items transportation cost covered the highest cost representing 40.00 percent of total cost. The second highest cost item was wastage costs which was 33.33 percent of total cost. Among other cost items, loading and unloading was 13.33 and both market toll as well as personal expense cost were 6.67 percent (Table 6.5).

Table 6.5: Marketing Cost Incurred by *Faria*

Cost items	Cost (Tk./ Bunch)	Percentage
Transportation	12	40.00
Loading and unloading	4	13.33
Wastage	10	33.33
Market toll	2	6.67
Personal expense	2	6.67
Total	30	100.00

Source: Field Survey, 2018

The average purchase price per bunch of banana was Tk. 500 and sales price was Tk. 550 respectively. The amount of marketing margin per bunch of banana was Tk. 50. Among the value addition, *Faria* covered the 10.00 per cent of total value addition. The average marketing cost per bunch of banana was Tk. 30 (Table 6.6).

Table 6.6: Value Addition and Marketing Margin of Banana Incurred by *Faria*

Particulars	Tk. Per Bunch
i. Purchase Price	500
ii. Sales Price	550
iii. Marketing Margin (ii-i)	50
iv. Marketing Cost	30
v. Net Marketing Margin (iii-iv)	20
vi. Value addition (%)	10.00

Source: Field Survey, 2018

6.4 Cost and Margin Analysis of *Bepari*

Bepari mainly sold banana to the *Arathdar* and wholesale market. After collecting banana from the growers and *Faria*, they sold it directly to the *Arathdar*. The estimated marketing cost per bunch of banana incurred by the *Bepari* was Tk.43. Among the cost items transportation covered the highest cost representing 23.26 percent of total cost. The second highest cost item was wastage of banana which was 18.60 percent of total cost. Among other cost items, loading and unloading, salary & wages, *Arathdari* commission and storage cost were 11.63 percent, personal expense as well as tips and donation both were 4.65 percent and market toll was 2.32 percent (Table 6.7).

Table 6.7: Marketing Cost Incurred by *Bepari*

Cost item	Tk. Per Bunch	Percentage
Transportation	10	23.26
Loading and unloading	5	11.63
Wastage	8	18.60
Salary and wages	5	11.63
Market toll	1	2.32
Personal expense	2	4.65
<i>Arathdari</i> commission	5	11.63
Tips and donation	2	4.65

Storage cost	5	11.63
Total	43	100

Source: Field Survey, 2018

The average purchase price per bunch of banana was Tk. 550 and sales price was Tk. 600. The amount of marketing margin per bunch of banana was Tk. 50. Among the value addition, *Bepari* covered the 9.09 per cent of total value addition. The average market cost per bunch of banana was Tk. 43 (**Table 6.8**).

Table 6.8: Value Addition and Marketing Margin of Banana Incurred by *Bepari*

Items	Tk. Per Bunch
i. Purchase price	550
ii. Sales Price	600
iii. Marketing Margin (ii-i)	50
iv. Marketing Cost	43
v. Net Marketing Margin (iii-iv)	7
vi. Value addition (%)	9.09

Source: Field Survey, 2018

6.5 Cost and Margin Analysis of *Arathdar*

Arathdar mainly sold banana to the local market wholesalers and district wholesale market. After collecting banana from the *Faria* and *Bepari*, they sold it directly to the end wholesaler. The estimated marketing cost per bunch of banana incurred by the *Arathdar* was Tk. 13. Among the cost items, Rent for storing covered the highest cost representing 30.77 percent of total cost. The second highest cost item was salary and wages of banana which was 23.08 percent of total cost. Among other cost items, personal expenses, Tax and miscellaneous cost represent 15.38 percent of total cost (**Table 6.9**).

Table 6.9: Marketing Cost Incurred by *Arathdar*

Cost items	Cost(Tk./Bunch)	Percentage
Salary and Wages	3	23.08
Personal expense	2	15.38
Rent	4	30.77
Tax	2	15.38
Miscellaneous	2	15.38
Total	13	100.00

Source: Field Survey, 2018

The purchase price per bunch of banana was Tk. 600 and sales price was Tk. 615. The amount of marketing margin per bunch of banana was Tk. 15. Among the value addition, *Arathdar* covered the about 2.5 percent of total value addition. The marketing cost per bunch of banana was Tk. 13 (**Table 6.10**).

Table 6.10: Value Addition and Marketing Margin of Banana Incurred by *Arathdar*

Particulars	Tk. Per Bunch
i. Purchase Price	600
ii. Sales Price	615
iii. Marketing Margin (ii-i)	15
iv. Marketing Cost	13
v. Net Marketing Margin (iii-iv)	2
vi. Value addition (%)	2.5

Source: Field Survey, 2018

6.6 Cost and Margin Analysis of Wholesaler

Wholesaler mainly sold banana to the distance wholesaler and retailers. After collecting banana from the *Faria*, *Bepari* and *Arathdar* sold it directly to the distances wholesale markets (Dhaka, Chittagong etc.) and retailers. The estimated marketing

cost per bunch of banana incurred by the wholesaler was Tk.55. Among the cost items transportation covered the highest cost representing 27.27 percent of total marketing cost. The second highest cost item was wastage cost which was 21.82 percent of total marketing cost. Among other cost items, loading and unloading was 11 percent, personal expenses as well as salary and wages were 7.27, market toll as well as tips and donation were 1.82 percent, storage cost was 18.18 percent and tax was 3.64 percent (**Table 6.11**).

Table 6.11: Marketing Cost Incurred by Wholesaler

Cost item	Cost(Tk./ Bunch)	Percentage
Transportation	15	27.27
Loading and unloading	6	11
Salary and Wages	4	7.27
Market toll	1	1.82
Tips and donation	1	1.82
Storage	10	18.18
Wastage	12	21.82
Personal expense	4	7.27
Tax	2	3.64
Total	55	100.00

Source: Field Survey, 2018

The purchase price per bunch of banana was Tk. 615 and sales price was Tk.680. The amount of marketing margin per bunch of banana was Tk.65. Among the value addition, wholesaler covered the 10.57 per cent of total value addition. The marketing cost per bunch of banana was Tk. 55 (**Table 6.12**).

Table 6.12: Value Addition and Marketing Margin of Banana Incurred by Wholesaler

Particulars	Tk. Per Bunch
i. Purchase Price	615
ii. Sales Price	680
iii. Marketing Margin (ii-i)	65
iv. Marketing Cost	55
v. Net Marketing Margin (iii-iv)	10
vi. Value addition (%)	10.57

Source: Field Survey, 2018

6.7 Cost and Margin Analysis of Retailer

Retailers mainly sold banana to the ultimate consumers. After collecting banana from the district wholesale market and they sold it directly to the end users. The estimated marketing cost per bunch of banana incurred by the retailers was Tk. 26. Among the cost items transportation and wastage covered the highest cost representing 38.46 percent of total marketing cost. The second highest cost item was personal expenses which accounted for 11.54 percent of total marketing cost. Among other cost items tax, market toll, tips & donation were 3.84 percent respectively (**Table 6.13**).

Table 6.13: Marketing Cost Incurred by Retailer

Cost items	Cost (Tk./ Bunch)	Percentage
Transportation	10	38.46
Market toll	1	3.84
Wastage	10	38.46
Personal expense	3	11.54
Tax	1	3.84
Tips and Donation	1	3.84
Total	26	100.00

Source: Field Survey, 2018

The purchase price per bunch of banana was Tk. 680 and sales price was Tk. 720. The amount of marketing margin per bunch of banana was Tk.40. Among the value

addition, retailer covered the 5.88 percent of total value addition. The marketing cost per bunch of banana was Tk. 26 (Table 6.14).

Table 6.14: Value Addition and Marketing Margin of Banana Incurred by Retailer

Particulars	Tk. Per Bunch
i. Purchase price	680
ii. Sales price	720
iii. Marketing Margin (ii-i)	40
iv. Marketing cost	26
v. Net marketing margin (iii-iv)	14
vi. Value addition (%)	5.88

Source: Field Survey, 2018

6.8 Share of Different Actors in Value Addition, Marketing Cost and Net Marketing Margin of Banana

Table 6.15 described about the share of different actors in value addition, marketing cost and net marketing margin of banana marketing. According to the table, it is clear that farmers had the highest portion of value addition in the marketing chain of banana which was about 11.11 percent followed by *wholesaler* 10.57 percent of total value addition. The lowest portion of value addition was occurred by *Arathdar* which was about 2.5 percent of total value addition. In case of marketing cost, the highest proportion was incurred by *wholesaler* which was about 29.89 percent followed by *Bepari* 23.37 percent. In contrast, the lowest portion of marketing cost was incurred by *Arathdar* which was 7.07 percent of total marketing cost. Although farmers had the second lowest marketing cost of Banana, they had the highest proportion of net marketing margin which was about 38.37 percent of total net marketing margin. *Faria* had the second highest portion of net marketing margin of banana. On the contrary, *Arathdar*, incurring lowest marketing cost, had the lowest net marketing margin of banana which was only 2.33 percent of total net marketing margin of banana.

Table: 6.15: Value Addition, Marketing Cost and Net Marketing Margin of Different Market Actors of Banana

Actors	Value addition	Marketing cost		Net Marketing Margin	
	Percentage per Bunch	Tk. per Bunch	Percentage	Tk. per Bunch	Percentage
Farmer	11.11	17	9.24	33	38.37
<i>Faria</i>	10.00	30	16.30	20	23.26
<i>Bepari</i>	9.09	43	23.37	7	8.14
<i>Arathdar</i>	2.5	13	7.07	2	2.33
Wholesaler	10.57	55	29.89	10	11.63
Retailer	5.88	26	14.13	14	16.28
Total	49.15	184	100	86	100

Source: Field Survey, 2018

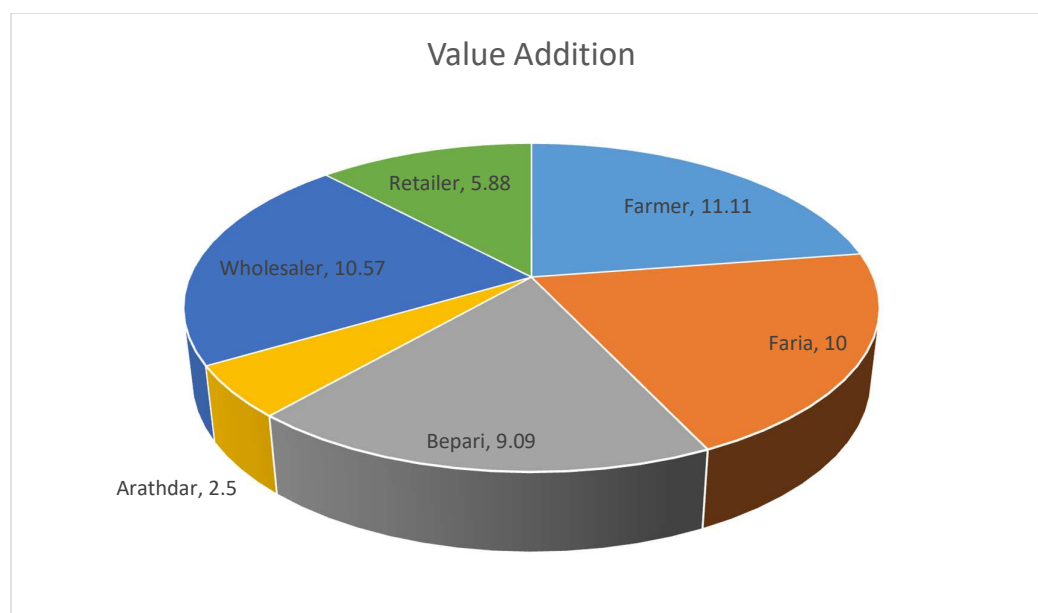


Figure 6.1: Share of Different Actors in Value Addition of Banana

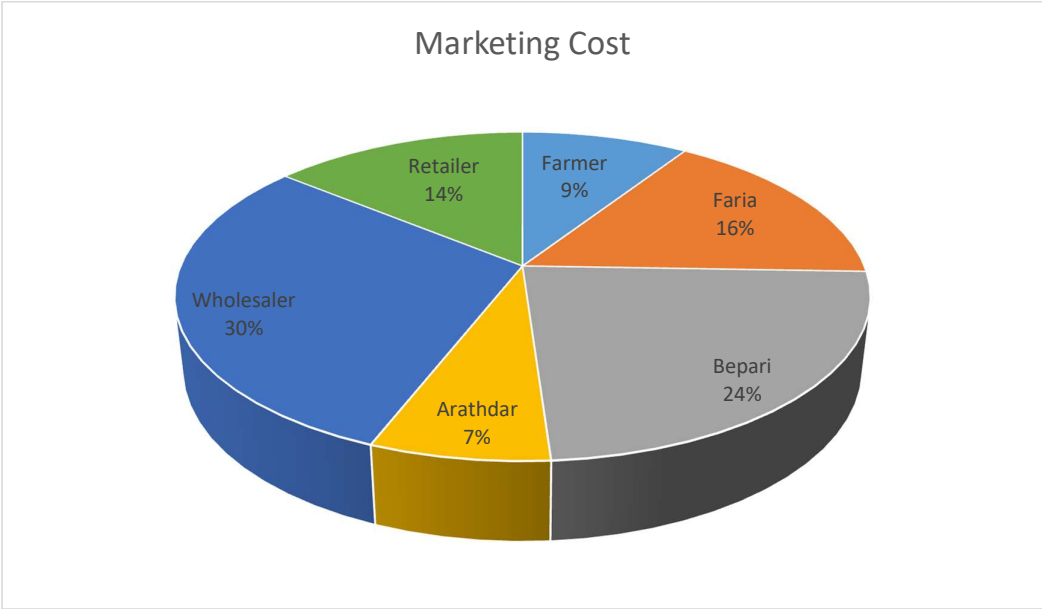


Figure 6.2: Share of Different Actors in Marketing Cost of Banana

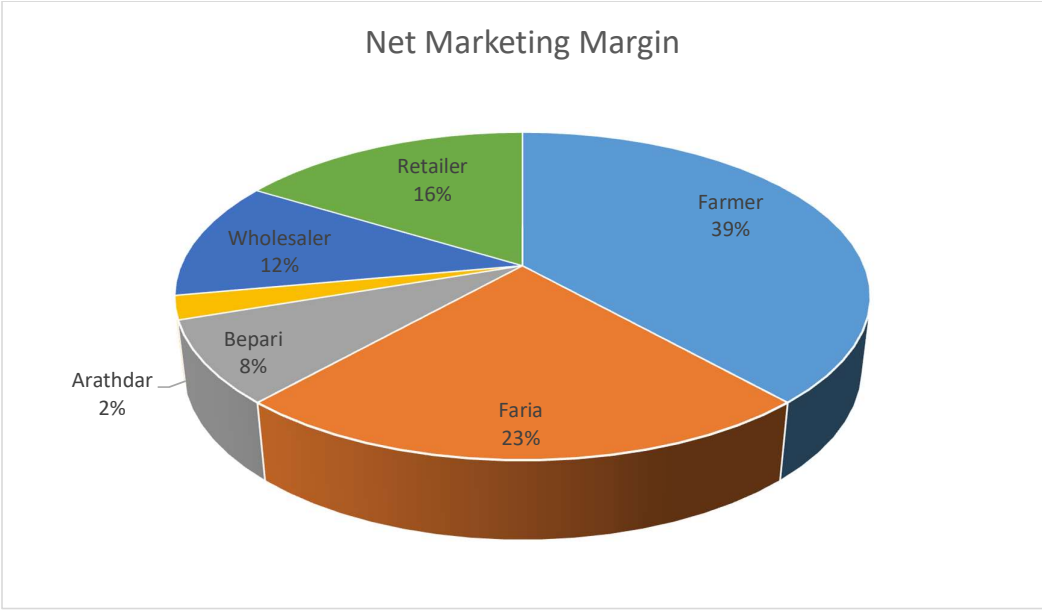


Figure 6.3: Share of Different Actors in Net Marketing Margin of Banana

6.9 Conclusion

Among the different actors, *Wholesaler* incurred highest percentage of marketing cost and earned third lowest net marketing margin; on the other hand, *Arathdar* earned lowest net marketing margin, although incurring lowest marketing cost.

CHAPTER 7

THE CONSTRAINTS AND OPPORTUNITIES OF BANANA VALUE CHAIN

7.1 Introduction

The focus of this chapter is to identify the extent of problems encountered by the Banana farmers and the different value chain actors. The problems and constraints faced by the respondent farmers and intermediaries in marketing of Banana and solutions to those problems as suggested by them are discussed. However, researcher identified some opportunities along with some constraints to improve the Banana value chain. Constraints and opportunities are discussed below.

7.2 Problems Faced by Producers

The Banana producers in the study areas were facing various problems which are broadly classified into production problems and marketing problems. Some of the production problems were inadequate capital, Lack of subsidy, lack of quality sucker, lack of availability of adequate inputs and higher cost of inputs. Marketing problems were related to transportation cost, lower price of Banana, shortage of marketing facilities and dominance of value chain actors etc.

7.3 Production Problems

There were some major production problems faced by farmer identified according to opinion given by them. Those were as follows:

7.3.1 Lack of Availability of Adequate Inputs

In the study areas producers also reported that lack of availability of adequate input was a major problem for Banana cultivation. **Table 7.1** indicates that about 94 percent producers (out of 30 farmers) faced this problem. This problem is faced by most of the farmer and it's identified as the top ranked problem.

7.3.2 Higher Inputs Cost

In the study area, high cost of inputs was one of the most important problems faced by the producers in their Banana cultivation. **Table 7.1** indicates that about 91 percent

producers faced this problem. This problem is marked as the rank-2 within all the production problem faced by the farmer.

7.3.3 Lack of subsidy

The growers of Banana were also deprived from getting subsidy. From **Table 7.1** it was observed that about 87 percent producers (out of 30 farmers) were adversely affected in their Banana cultivation due to lack of subsidy.

7.3.4 Inadequate Capital

The farmers of the study area had capital constraints. For cultivation of Banana, a huge amount of cash money was needed to purchase various inputs like, human labor, sucker, fertilizers, pesticides, etc. The production cost of Banana was high since input requirements were high. It was difficult to manage required capital on the part of the producers. The **Table 7.1** shows that about 80 percent producers (out of 30 farmers) were faced inadequate of capital as a production problem.

7.3.5 Lack of Quality Sucker

Lack of quality sucker was one of the most important limitations of producing Banana in the study area. Farmers of study area told that they were cheated by buying so called hybrid suckers from the local markets and from the sucker dealers. As a result, they received low yield of Banana. **Table 7.1** shows that about 75 percent producers (out of 30 farmers) complained that good quality sucker was not available in the market during Banana planting time.

Table 7.1 Production Problem Faced by Farmers in Production of Banana

Problem faced by producers	Percent	Rank
Lack of availability of adequate inputs	94%	1
Higher input cost	91%	2
Lack of subsidy	87%	3
Inadequate capital	80%	4
Lack of quality sucker	75%	5

Source: Field Survey, 2018

Table 7.2 Marketing Problem Faced by Farmers in Production of Banana

Problem faced by producers	Percent Rank	
Lower market price of Banana	97%	1
Higher transportation cost	72%	2
Lack of market facilities	68%	3
Dominance of value chain actors	54%	4
Inadequate storage facilities	46%	5

Source: Field Survey, 2018

7.4 Marketing Problems

There are various marketing problem faced by value chain actors. Some major problems are discussed below.

7.4.1 Lower Market Price of Banana

All the sample farmers reported that low price was a major problem in Banana marketing. **Table 7.2** shows about 97 percent producers (out of 30 farmers) faced this problem. This is the top ranked marketing problem which is faced by the farmers.

7.4.2 Higher Transportation Cost

Transportation cost was very high in the study area. The primary and secondary markets were not connected to the villages. Due to high transportation cost and poor communication facilities, the farmers were bound to sell Banana in local markets at low prices. About 72 percent of producers stated that high transportation cost and inadequate communication facility were problem in transporting their produce to the markets (**Table 7.2**).

7.4.3 Lack of Market Facilities

In the study areas, there was no shed to protect the producers and their Banana from rain or sunshine and the producers had to sell their produce standing in the open place. So, lack of market facilities was mentioned as a problem by 68 percent producers (out of 30 farmers) (**Table 7.2**).

7.4.4 Dominance of value Chain Actors

Value chain actors in the study area were small in number but they were well organized. Whereas the farmers were scattered but in large number. The value chain actors always dominated the marketing system and they were in better position in setting the prices of Banana. More than 54 per cent producers (out of 30 farmers) reported this as a problem.

7.4.5 Inadequate Storage Facilities

Farmer complained that huge amount of Banana was spoiled due to lack of proper storage facilities. **Table 7.2** shows that about 46 percent (out of 30 producer) producer reported absence of storage facilities as problem they faced in Banana business.

7.5 Measures Suggested Solving for the Problems

The measures suggested by the producers for solving the above mentioned problems are as follows:

Farmers' organization may be established which might improve the bargaining power of the farmers and enable them to face the value chain actors and ensure better return for Bananas.

Transportation facilities should be improved in the study areas. It would also help in reducing the transportation cost. Local Government administration may develop such facilities.

Adequate amount of inputs including HYV suckers should be supplied by the government at subsidized prices in the Banana producing areas.

Institutional credit facilities should be made available to the Banana farmers for increasing the volume of production. The Government should provide this facility through Bangladesh Krishi Bank (BKB) and other commercial banks.

Low cost storage facilities should be developed at the primary and secondary markets by the local Government authority to provide storage facilities to the farmers.

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7.6 Problems Faced by value Chain Actors

In the study area the value chain actors were asked to mention the problems they faced in Banana business. **Table 7.2** the problems reported by actors are presented below:

Table 7.3 Problems Faced By Actors in Value Chain

Problem faced by actors	Percent	Rank
Inadequate good transport	80%	1
Inadequate marketing information	72%	2
Inadequate capital	68%	3
Inadequate market facilities	65%	4
Inadequate storage facilities	56%	5

Source: Field Survey, 2015

7.6.1 Inadequate Good Transport

A large amount of marketing cost was incurred by traders while carrying their Banana to the desired places due to poor communication and transportation facilities. **Table 7.3** shows that about 80 percent (out of 6 traders) value chain actors reported poor communication and transportation facilities as a marketing problem of Banana.

7.6.2 Inadequate capital

Traders had to borrow money from the non-institutional sources at high interest rate in some special moment. **Table 7.3** indicates that about 72 percent (out of 6 traders) value chain actors reported inadequate of capital as a major marketing problem.

7.6.3 Inadequate Storage Facilities

Value chain actors complained that huge amount of purchased Banana was spoiled due to lack of proper storage facilities. **Table 7.3** shows that about 68 percent (out of 6 traders) value chain actors reported absence of storage facilities as problem they faced in Banana business.

7.6.4 Inadequate Marketing Facilities

They mentioned that there was no specific market place for Banana marketing, not to speak of shed and other market facilities. **Table 7.3** further shows that inadequate marketing facilities were considered as a problem reported by 65 percent (out of 6 traders) value chain actors.

7.6.5 Inadequate Market Information

Market information played an important role in Banana trading. There was inadequate market information in Banana business in the study area. About 56 percent (out of 6 traders) of intermediaries reported lack of market information as one of the major problems they faced in Banana business (**Table 7.3**).

7.7 Measures Suggested For Improving Marketing of Banana

The value chain actors, who identified their problems, also provided some suggestions for improving the existing Banana marketing system. The problems stated in **Table 7.3** always hampered the sound marketing of Banana.

High rate of transportation cost was a serious problem for Banana business. So, the value chain actors suggested that reasonably low rate of commission and tax should be charged for marketing their Banana.

The value chain actors suggested especially for the improvement of transportation as well as communication system in the study area.

The value chain actors needed much more cash money for conducting their businesses. They suggested that provision should be made by the Government for adequate and easy loan from institutional sources against the security of their produce.

The price of Banana in different terminal markets should be disseminated through radio, television and newspapers which could reduce the uncertainty of price. Necessary effort should be taken to reduce marketing cost.

Other remedial measures which would greatly facilitate the marketing operation in the study areas including building cemented floor in the market place, electric connection to the market places, and dissemination of market information were also suggested by the value chain actors.

7.8 Opportunities of Banana Value Chain

Some opportunities were also identified. If the value chain actors were well financed they could store their product for better price in future. Storing Banana could ensure availability of Banana and reduce price risk.

Modern technologies could reduce the cost of production thus; marketing margin would increase, so transportation system has to be improved to reduce transportation cost. This would reduce the marketing cost which in turn would reduce consumer's prices. But it has been seen that in the study areas road and infrastructure were being developed gradually by government.

By discussing with the actors it was found that value chain would increase the volume of business in the study area. Because value chain always mobilize business activities in the form of various marketing functions.

Farmers would have concerned about better price of better quality of Banana. Good quality sucker requirement would increase due to increase in demand for better yield and price also. Moreover some other farmers would try to store Banana for better price in off season. Thus a balance would make in demand and value that would stabilize the market price.

Other actor including *Bepari*, *Arathdar*, and Wholesaler would increase their volume of business if they got their required Banana in the local area. Thus all the actors involved in the value chain would ensure better income with stabilized, fare and riskless price. Ultimate consumer would get Banana in reasonable price as increase in volume of business would decrease marketing costs of the value chain actors.

So market information should be made available so that the traders can make decision when and from where to buy and sell. Above all value chain concept should make more clear and familiar to all the actors involved with Banana value chain.

7.9 Concluding Remarks

The above mentioned discussions as well as the results presented in **Table 7.1**, **Table 7.2** and **Table 7.3** indicates that Banana producer and value chain actors in the study area

have currently been facing some major problems in conducting their Banana production and business respectively. These are the major constraints for the producers and traders of Banana in the study area. Public and private initiatives should be taken to reduce or eliminate these problems for the sake of better production and business of Banana.

CHAPTER 8

SUMMARY, RECOMMENDATIONS AND CONCLUSION

8.1 Introduction

This chapter focuses on the summary in the light of the discussions made in the earlier chapters. Conclusion has been made on the basis of empirical result. Policy recommendations are drawn for improvement of the existing inefficiency of banana production in Bangladesh. Section 8.2 presents a summary of the major findings of the study, conclusion, policy recommendations, limitation of the study and scope for further study are given in Section 8.3, 8.4, 8.5 and 8.6, respectively.

8.2 Summary

Banana is one of the world's most important crops grown by small- and large-scale producers alike, with production occurring in more than 130 countries. Agriculture is the backbone of Bangladeshi economy. It accounts for 14.74% of total Bangladeshi GDP and contributes 36% of domestic market share. This survey focuses on banana, one of the most important and popular fruits of the country and analyzes the complete value chain (VC) functions, profitability per acre and relationships, targeting the producers, intermediaries and consumers. Bangladesh exports Champa kola (English name- Apple Banana, scientific name-*Musa sapientum*) throughout year (Hortex Foundation, 2013). Bangladesh has the potentials to become producer, marketer and exporter of premium quality bananas.

A large number of people are involved in the production and marketing of the banana. The performance of this sector has an overwhelming impact on major macroeconomic objectives like employment generation, poverty alleviation, human resources development and food security. Actors played an important role in moving banana to the consumers but at cost sharper the present study investigate different value chain in which the actors acted as intermediate with their cost and margins.

The study caused lights on the following specific objectives.

- To determine the socio-demographic characteristics of producers and other value chain actors;
- To identify the actors involved in value chain and their function in Banana marketing;
- To measure production profitability per acre and value addition in every stage of channels;
- To identify the constraints of Banana marketing and suggested measure for the improvement of Banana marketing in the selected area.

The study was confined to a particular area where banana production was concentrated. The study was confined to two upazila of Narsingdi district. It was a bare necessity to select an area, which would provide maximum information regarding banana marketing in Bangladesh. Narsingdi city was selected as the study area because it would provide maximum information about banana production in Bangladesh.

The villages were purposively selected for collecting data from the banana farmers. For convenience, the sample size of farmers was fixed at 30 from two upazilas. Data were also collected from some actors who worked in the valuation of marketing of banana in study areas. The actors involved in the marketing of banana included *Faria*, *Bepari*, *Arathdar*, wholesalers and retailers. A total of 30 actors including 6 *Faria*, 6 *Bepari*, 6 *Arathdar*, 6 wholesalers and 6 retailers were selected purposively for the study. Primary data were collected from the respondent farmers and different actors by using separate interview schedules. Secondary data were collected from various books, Journals, different organization like Department of Agricultural Marketing of Bangladesh, website searching and government publications. Both the tabular and descriptive techniques were used for analyzing data. Considering that banana is an important fruits in Bangladesh, the product moved from the sellers to consumers through several changes i.e. through some market actors such as *Faria*, *Bepari*, *Arathder*, wholesalers and retailers, since banana needs to move a long distance from the point of production to the consumers.

Banana farmers were classified into three categories on the basis of their age. Young farmers are mostly engaged in Banana cultivation. Banana farmers were classified into four categories on the basis of their education. Illiterate farmers are mostly engaged in Banana cultivation.

Banana farmers were classified into three categories on the basis of their family size. Banana farmers having medium family size (43.3%) are interest in Banana cultivation.

Banana farmer were classified into three categories on the basis of their farm size. All Banana farmers are belonging to same percentage (33.33%).

Farming experience of a respondent was determined on the basis of involvement in the farming activities related to agriculture. Banana farmers ranged from 2 to above 20 years. Banana farmers were classified into three categories on the basis of their Farming experience. Highest portion of the Banana farmers (53.3 %) had low farming experience (1 - 10) years.

Farm gate price of banana received by farmers per Bunch was Tk. 450 and purchase price per Bunch of banana paid by retailers was Tk. 680. Average sales price per Bunch of banana as received by retailer was Tk. 720.

The total marketing cost was estimated at Tk. 184 per Bunch of banana. Among all intermediaries *wholesaler* cost were highest and the lowest for *Arathdar*.

The net marketing margin of per Bunch banana of Farmers, *Faria*, *Bepari*, *Arathdar*, Wholesalers and Retailers were Tk. 33, 20, 7,2 , 10 and 14 respectively.

The value addition of banana in value chain for Farmers, *Faria*, *Bepari*, *Arathdar*, Wholesalers and Retailers were 11.11, 10.00, 9.09, 2.5, 10.57and 5.88 percent for per Bunch of banana.

Farmers of both study areas faced many problems in the production and marketing of banana. The major problems faced by them included lack of capital, lack of good quality

sucker, lack of subsidy, lack of availability of adequate input, lower price of banana, transportation problem, shortage of market facilities, shortage of storage facilities and dominance of value chain actors. The study identified some major problems faced by the actors in the banana value chain. The major problems faced by them included lack of capital, unavailability of loan, high interest rate, high transportation cost, inadequate communication facilities, lower price, shortage of storage facilities, high storage charge and inadequate marketing facilities.

8.3 Conclusion

Banana is extensively cultivated species in Shibpur and Manohordi of Narsingdi district. However, banana production was more profitable than any other fruit production. The management practice of based on the findings of the study it can be concluded apparently that considerable scope exists to increase the productivity of banana and to develop the value chain. Expanded banana cultivation can upgrade the living standard of the function areas of value chain. Banana enterprise in the study area was not found efficient enough. Despite of some limitations, the findings of the study confirm that the farmers can obtain positive net return from cultivation of banana. In the context of income generation and poverty alleviation, production of crop like banana may play a crucial role in meeting the cash needs of the farmers. The findings of the study also revealed that the trading of banana is a profitable venture to different intermediaries. The profit of farmer was higher than that of other intermediaries and the profit was found reasonable.

The marketing channel of banana is so long. Long marketing channel increases the product damage. The well planned management training and the marketing practice in accordance to with their problems, need, goals, and resource base can lead to viable marketing practice and sustainable income from the banana production.

Farmer engaged in banana production was not very solvent to make the full utilization of value chain opportunity. They faced huge problem to store banana for better price in the off season. Credit facilities should be made available at low interest rate by government.

Grading and standardization facilities should be utilized properly for efficient value chain of banana market. Lack of timely and proper market information was a great problem. So, market information should be available and ease accessible for the producers also for other value chain actors.

8.4 Recommendations

On the basis of the finding of the study it was evident that banana was profitable enterprises and they can generate income earnings and employment opportunity to the rural people of Bangladesh. But some problems and constraints bared to attain the above mentioned objectives. The policy makers should, therefore, take necessary measures. According to the findings of the study; some policy recommendations may be advanced which are likely to be useful for policy formulation.

On the basis of the findings of the study, the following specific recommendation may be made for the development of banana sector.

- a) Government should take necessary measures to lower the price of inputs which have positive significant impact on yield. It will increase the net benefit of banana producers.
- b) To avoid price fluctuation, support price should be ensured to the farmers.
- c) Banana farmers had to sell their product at low price during harvesting or just after harvest. An appropriate storage scheme should be developed so that the farmers are not forced to sell their product at low price in harvest period.
- d) Development of transportation system is essential for the improvement of trading and reducing cost of banana.
- e) Operating capital is a problem for the resource poor farmers of the study area. Institutional credit program should be launched aiming at particularly the small and medium farmers. The commercial bank should be encouraged to provide loans at a low interest rate to enable farmers to operate their farming on commercial basis.
- f) As banana is profitable enterprise, government and concern institutions should provide adequate extension program to expand their area and production.

- g) Banana based cropping pattern should be developed and disseminated to those areas of Bangladesh where their production is suitable.
- h) Steps should be taken to ensure fair price, quality of product, floor price, and the stability of production.
- i) Market cost is high because of inadequate information, infrastructure, high price risk etc.
- j) As most of the banana farmers are technically efficient at present production technology, improved method of production technology with sufficient storage ability should be introduced.

Moreover, a large number of people were involved in the production and marketing of banana. So, the farmers and intermediaries could be more benefited financially if production and marketing of banana were well expanded.

8.5 Limitations of the Study

There are some limitations of the study as the study conducted on the farmers and traders of the country through interview schedules.

- a) Most of the data collected through interview of the farmers and traders, so sometimes they were not well-cooperated with the interviewer.
- b) The information gathered mostly through the memories of the farmers and traders which were not always correct.
- c) In the resource and time constraints, broad and in-depth study got hampered to some extent.

8.6 Scope for Further Study

Although the present study is intended to provide some valuable information for the guidance of farmers, traders, policy makers as well as researchers, it is not free from

criticisms. Due to limitation of time and resources this study could not cover some important areas.

The weaknesses of the present study, of course, open avenues for further research which are given below:

- a) A broad based study in this line may be undertaken for better understanding not only to study relative profitability of banana but also with other crops.
- b) A further study can be undertaken by taking into account seasonal price variation and post-harvest loss of banana in different value chain.
- c) The study of other varieties of banana may be conducted individually to assess their comparative profitability.
- d) Acreage response, growth and instability of banana can be studied with respect to Bangladesh.

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APPENDIX

APPENDIX 1: Questionnaire for interview at banana producers' level

Department of Agribusiness & Marketing

Sher-e-Bangla Agricultural University,

Dhaka- 1207

Title: Value chain analysis of Banana in selected area of Narsingdi District.

1. Respondents Identity

Name: _____ Father's Name: _____

Village: _____ Union: _____

Upazila: _____ District: _____

A. Type of Farmer

- | | |
|---------------------------|--|
| 1. Large (above 7 acre) | 2. Medium (0.34-1.0 acre) |
| 3. Small (0.01-0.33 acre) | 4. Landless (No land in his or her name) |

B. Age

1. 15-25 yrs 2. 25-35 yrs 3. 35-45 yrs 4. 45-60 yrs 5. Above 60

C. Religion

1. Islam 2. Hindu 3. Others

D. Family members:

1. 1-4 2. 5-6 3. Above 7

E. Education

1. Illiterate 2. Primary 3. Secondary 4. Higher secondary 5. Graduate 6. Above

F. Farming experience:

1. 1-5 yrs 2. 5-10 yrs 3. 10-15 yrs 4. 15- 20 yrs 5. More than 20 yrs

G. Where farmer sell to:

1. Directly to the consumer 2. Directly to the traders 3. Both

2. Cost of Production of Banana per acre of land.

Sl. No	Items	Amount	Tk/Unit	Cost(TK)
Variable Cost	Land Preparation			
	Seed			
	Fertilizer(Urea/TSP/MP)			
	Insecticides/Pesticides			
	Irrigation			
	Weeding& Earthing Up			
	Harvesting			
	Others			
Fixed Cost	Land Value			
	Interest on loan			
	Other fixed cost			
	Other depreciation cost			
	Total Production Cost			

3. Yield/ Production from One acre of Land

Sl. No	Items	Amount(Bunch)	TK/Bunch	Taka
1.	Banana			
2.	By product			
3.	Total			

4. Marketing Cost

Cost items	Cost	Value added price (Production cost + value addition cost)	Value addition %
Cleaning			
Weighing & bagging			
Packaging			
Sorting			
Rent of Storage			
Labor Cost			
Transportation			
Personal expense			
others(specify)			

Total expenses: All production cost + other fixed cost + All marketing cost

5. Problems faced in Banana production

Problems of Banana production	Degree of problems
	Acute=1,tolerable=2,general=3
Lack of storage capacity	
Scarcity of human labor	
Non availability of credit	

High market price of inputs	
Low prices of output	
Lack of suckers/ seeds	
Inadequate extension service	
Problem of theft	

6. Your suggestions to overcome the problems of Banana production

- a)
- b)
- c)
- d)
- e)

Thank you for your kind cooperation

Signature:

Dated:

APPENDIX 2: Questionnaire for interview at banana traders' level

(Faria/Bepari/Arathdar/Wholesaler/Retailer)

Department of Agribusiness & Marketing

Sher-e-Bangla Agricultural University,

Dhaka- 1207

Title: Value chain analysis of Banana in selected area of Narsingdi District.

1. Respondents Identity

Name_____Father'sName_____

Village_____Union_____

Upazila_____District_____

2. From whom do you Purchase banana?

A. Age

1. 10- 20 yrs 2. 20-30 yrs 3. 30-40 yrs 4. 40-50 yrs 5. Above 50 yrs

B. Religion

1. Islam 2. Hindu 3. Others

C. Family members:

1. 1-4 2. 5-6 3. Above 7

D. Education

1. Illiterate 2. Primary 3. Secondary 4. Higher secondary 5. Graduate 6. Above

3. Do you always purchase from the same sellers? Yes/No

4. Does the Purchasing price vary for different sellers? Yes / No

If yes then how much

(specify).....

5. Do you store banana? Yes / No

If yes than why and how much time do you store banana?

.....

6. Whom do you sell it?
7. How many days need to complete Purchasing and selling? Days
8. Does the cost for Purchasing and selling vary in different months? Yes / No
If yes then why?

9. Purchase and Selling price of banana :

Cost of Purchasing and selling

Cost Items	Cost (Tk/ Bunch)	
	Purchasing	Selling
a) Transportation		
b) Loading and unloading		
c) Bag/Sack		
d) Market toll		
e) Weighing		
f) Weight loss		
g) Personal expenses (mobile, refreshment etc.)		
h) Rent for Shop/Store if any		
i) Un-official cost(Donation)		
j) Interest for borrowed money		
k) Others		
l) Value for own labor		
m) Value for family labor		

Value addition

Cost items	Cost (Tk/ Bunch)	Value added price (Tk/ Bunch) (Purchasing Price + value addition cost)	Value addition %
Cleaning			
Grading			
Storing			
Drying			
Other expenses			
a.			
b.			

10. How do you set selling price?

- a) Purchase price + marketing cost + fixed amount of profit b) Market price
c) Others, specify.....

11. The main problems faced by the traders in business:

Problems of traders in business	Degree of problems
	Acute=1,tolerable=2,general=3
Lack of storage capacity	
High storage cost	
Lack of credit	
Unstable price	
Scarcity of human labor	
Poor condition of market place	
Political unrest	

Poor condition of roads and transportation	
High transportation cost	
Polluted market area	
Others problem	

12. The probable solutions of trader's problems:

Solution of problem	Mark
Need transport facilities	
Need storage facility	
Reduce storage cost	
Reduce transportation cost	
Need credit facility	
Need stable pricing	
Reduce political unrest	
Other solution	

Thank you for your kind cooperation

Signature:

Dated: