IDENTIFICATION OF EFFECTIVE POTATO MARKETING CHANNEL IN MUNSHIGANJ DISTRICT OF BANGLADESH

MD. ROMIZ MAHMUD

DEPARTMENT OF AGRIBUSINESS AND MARKETING
SHER-E-BANGLA AGRICULTURAL UNIVERSITY
DHAKA- 1207

DECEMBER 2020

IDENTIFICATION OF EFFECTIVE POTATO MARKETING CHANNEL IN MUNSHIGANJ DISTRICT OF BANGLADESH

BY

MD. ROMIZ MAHMUD

Reg. No. 18-09294

A thesis submitted to
The Department of Agribusiness and Marketing,
Sher-e-Bangla Agricultural University, Dhaka-1207
In partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE
IN
AGRIBUSINESS AND MARKETING
SEMESTER: JULY-DECEMBER, 2020

APPROVED BY:

Sharmin Afrin
Associate Professor
Department of Agribusiness and Marketing
Sher-e-Bangla Agricultural University

Mahfuza Afroj
Assistant Professor
Department of Agribusiness and Marketing
Sher-e-Bangla Agricultural University

Md. Rashidul Hasan
Chairman
Associate Professor
Department of Agribusiness and Marketing
Sher-e-Bangla Agricultural University
Dhaka-1207

DEPARTMENT OF AGRIBUSINESS AND MARKETING
Sher-e-Bangla Agricultural University
Sher-e-Bangla Nagar
Dhaka-1207

CERTIFICATE

This is to certify that the thesis entitled '**IDENTIFICATION OF EFFECTIVE POTATO MARKETING CHANNEL IN MUNSHIGANJ DISTRICT OF BANGLADESH'** 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 And Marketing,** embodies the result of a piece of research work carried out by **MD. ROMIZ MAHMUD**, Registration Number: **18-09294,** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

I further certify that any help or source of information received during the course of this investigation has duly been acknowledged.

Dated:

Dhaka, Bangladesh

.....

Sharmin Afrin
Supervisor
Associate Professor
Department of Agribusiness and Marketing
Sher-e-Bangla Agricultural University

DEDICATED TO MY BELOVED PARENTS

ACKNOWLEDGEMENTS

Alhamdulillah, all praises to the almighty **Allah** for his gracious kindness and infinite mercy which creates that opportunity for the author to complete the research work required for the partial fulfillment of the degree of **Master of Science**.

The author is deeply in debted and grateful to his **parents** who continuously prayed for his success and without their love, affection, inspiration, and sacrifice this work would not have been completed.

The author would like to express his sincere appreciation and immense indebtedness to his supervisor, **Sharmin Afrin**, Associate Professor, Department of Agribusiness and Marketing, Sher-e-Bangla Agricultural University for his active, sincere, ingenious, and untiring guidance, unfailing interest, constructive criticism, valuable suggestions, helpful comments, and continuous supervision throughout this research. Without his support, the author might not complete the research.

The author wishes to express his profound respect and a deep sense of gratitude to his co-supervisor, **Mahfuza Afroj**, Assistant professor, Department of Agribusiness and Marketing, Sher-e-Bangla Agricultural University for his guidance, constructive direction, affectionate encouragement, and kind co-operation at every step throughout the research.

The author thankfully acknowledges the contribution of the potato farmers and traders in the Munshiganjdistrict for their kind help and co-operation, without the willingness to provide information this research would not have been possible.

The author

ABSTRACT

Potato plays a significant role in increasing food security and income of the farmers of Bangladesh. It is an important vegetable for its commercial and nutritional value in the world as well as in Bangladesh. The marketing channel of potato is not well organized in Bangladesh.This study was carried out to analyze the existing potato marketing channel considering value addition and net margin conducted by the intermediaries.In order to make an assessment of the marketing channel of potato, the study was conducted in Shirajdikhan upazila of Munshiganj district. Primary data were collected during the period from February to April, 2020 through face to face interview with potato growers and potato traders using structured survey schedule.Thirty potato producers, 80 value chain actors (*Faria, Bepari*, wholesaler and retailer) were selected for the study. The study found four actors between producer and consumer. They were*Faria, Bepari*, wholesaler and retailer. Besides, marketing of potato produced in Shirajdikhan upazila of Munshiganjwas moved from the hands of producers to the hands of consumers through four separate supplychains.Total cost per 100 kg of potato cultivation with marketing cost was Tk. 988.33. Besides, gross margin and net return were Tk. 553.38 and Tk. 149.17 respectively for 100kg of potato.In the channel, the highest value (3.20 Tk/kg) was added by wholesaler and the lowest value (1.29 Tk/kg) was added by *Faria* of the total value addition. Besides, wholesaler made lowest marketing margin (0.50 Tk/kg) where retailer made highest marketing margin (1.13 Tk/kg) among the actors.The present study found some problems of the existing potato production and marketing system, such as potato growers did not get fair price due to lack of economic storage facilities, existence of stronger middlemen, inefficient transportation facilities, lack of proper marketing information and urgent requirement of money immediately after the potato harvesting period by the farmers. Based on the findings of the present study, it was recommended that credit facilities, timely supply of inputs, application of modern production and postharvest technologies andstability of price should be ensured along with the provision of storage, transport and market facilities.

TABLE OF CONTENT

LIST OF TABLE

LIST OF FIGURE

SL. No.	Title	Page

ABBREVIATIONS AND ACRONYMS

BADC	Bangladesh Agricultural Development Corporation
BARI	Bangladesh Agricultural Research Institutes
BBS	Bangladesh Bureau of Statistics
BDT	Bangladeshi Taka
CIC	Community Information Center
DAE	Department of Agricultural Extension
DAM	Department of Agricultural Marketing
FAO	Food and Agriculture Organization
FAOSTAT	Food and Agriculture Organization Statistics
FGD	Focus Group Discussion
ICT	Information and Communication Technology
KBE	Knowledge Based Economy
MMS	Multimedia Messaging Service
MSEs	Micro and Small Enterprises
MT	Metric Tonne
NGO	Non-Governmental Organization
SMEs	Small and Medium Enterprises
SMS	Small Message Service
USD	United States Dollar

CHAPTER I

INTRODUCTION

The majority of people in Bangladesh live off the rich flood plain land, either as smallholders with an average farm size of 0.76 ha (Ilangantilekel et al. 2000) or as landless agricultural workers. Since the previous several decades, agricultural advances and crop productivity improvement authorities have been addressing the ever-increasing need for food in such a land-scarce nation. Food security and poverty alleviation in rural areas are contingent on increased productivity of major food crops such as rice, wheat, and potato through the use of high yielding varieties (HYVs), irrigation, soil and pest-disease management, and improved agro-techniques at the farmer level through various research and agricultural extension activities (Siddique et al., 2014 and Hossain et al., 2001).

Bangladesh is presently the 14th biggest potato grower in the world and the fourth largest in Asia. (Food and Agriculture Organization of the United Nations, 2018). Bangladesh has made significant strides in potato production during the last decades, increasing about 5% each year. However, the nation now cultivates roughly 4,99,725 hectares (ha) of arable land and produced 20.443 metric tons/ha potato in 2016-2017. (BBS, 2017). The average yield of potato per hectare is 20.443 MT/ha, which is quite low in contrast to other potato producing nations such as France, where the average yield is 43.2 MT/ha, the Netherlands, where the average yield is 44.7 MT/ha, and the USA, where the average yield is 44.6 MT/ha in 2016. (Anonymous, 2017).

Potato is the second most significant crop in Bangladesh after rice (Boro-irrigated rice, Aman-rainfed rice, Aus-short duration rice) in various regions of the nation, such as Munshiganj district. It has recently become a significant and popular food crop due to its rapid economic return and versatility as a vegetable and delectable processed dish. Numerous processed items such as flakes, starch, chips and crips, frozen french fries, and potato rings are manufactured industrially, whereas chips, french fries, and sun-dried products are manufactured on a small scale (Hortex Foundation, 2011). Despite its enormous potential and scope, successful potato production in Bangladesh faces numerous

obstacles. In this aspect, however, the scarcity of high-quality seed at reasonable rates for small and marginal farmers is a significant limitation on productivity growth.

One of the most important characteristics of agricultural marketing, particularly in developing nations, is the presence of a multitude of intermediaries (Faria, Bepari, Aratdhar, Paiker, and retailer) between producer and customer. Intermediaries are frequently exploitative in nature. They charge the customer a premium price yet share just a little portion with the manufacturer. Their contribution to the marketing of the product, on the other hand, cannot be discounted (De and Bhukta, 1994).

Considering the potential and limitations of potato for rural people's food security and poverty reduction, this analysis focuses on the potato marketing channel in Bangladesh and identifies the most successful route by summarizing the parties involved.

1.1 Total area of potato cultivation in Bangladesh

The total area under potato cultivation was anticipated to reach 4,99,725 hectares, up from 4,75,488 hectares previous year. The potato's comparative area estimations are provided below;

Table 1.1: Total area of potato cultivation in Bangladesh

Variety	**2015-16**		**2016-17**	
	Area (Acre)	Area (Hectare)	Area (Acre)	Area (Hectare)
Local	1,70,439	68,973	1,83,413	74,223
High Yielding Variety	10,04,539	4,05,515	10,51,458	4,25,502
Total	11,74,978	4,75,488	12,34,871	4,99,725

Source: BBS, 2018

1.2 Total yield of potato in Bangladesh

Potato yields were estimated at 20.443 metric tons per hectare on average, down from 20.433 metric tons per hectare the previous year (Table 1.2). The following table compares the predicted yield rates of potato:

Table 1.2: Total yield of Potato in Bangladesh

Variety	2015-16		2016-17	
	Yield Per Acre (Maund)	Yield Per Hectare (MT)	Yield Per Acre (Maund)	Yield Per Hectare (MT)
Local Potato	125.47	11.573	131.10	12.093
High Yielding Variety	231.38	21.342	237.42	21.900
Total	216.01	19.925	221.63	20.443

Source: BBS, 2018

1.3 Total production of potato in Bangladesh

Potato production was anticipated at 102,15,957 metric tons, up from 94,74,098 metric tons previous year, a 7.83 percent increase (Table 1.3). This production statistic is important for Bangladesh since it represents the first time the country has exceeded one core metric ton. Below is a comparative estimate of potato production:

Table 1.3: Total production of Potato cultivation in Bangladesh

Variety	**2015-16**	**2016-17**
	Total Production(MT)	Total Production(MT)
Local potato	7,98,236	8,97,545
High Yielding Variety	86,75,863	93,18,412
Total	94,74,098	102,15,957

Source: BBS, 2018

1.4 Background of the study

Potato (*Solanum tuberosum*) has been produced in Bangladesh as a major food crop. The nation produces a large quantity of potato each year. Potatoes are by far the most produced vegetable in Bangladesh, with over 8.60 million metric tons produced in 2013, compared to approximately 13.22 million metric tons of other fresh vegetables (BBS, 2014). Bangladesh consumes 23 kilograms of potatoes per capita, China consumes 32 kilograms, and India consumes 15 kilograms (Reardon et al., 2012). With the advent of contemporary technology, the crop's relatively high yield and cheap cost of production may have prompted farmers to expand both the area and production of potato, therefore increasing the marketable surplus of potato in Bangladesh. However, owing to a lack of adequate storage and marketing facilities, farmers may not get a fair price and are often unable to repay their production costs. Due to a lack of storage facilities and the farmers' financial needs, the producers are forced to sell a large portion of their crop right after harvesting at a very cheap price. Farmers are driven to sell potato at rock-bottom prices during peak harvesting season in the majority of Bangladesh's potato-growing regions. In comparison, it has been noticed that potato prices are quite high in certain locations throughout the off season and even during the peak season. If farmers are unable to sell their food at a profit, they are likely to quit production, which will have a negative effect on the country's economy. Thus, it is critical to optimize market efficiency for the benefit of both farmers and consumers. Potato marketing channel analysis may be used to uncover a variety of difficulties relating to potato production and marketing, as well as to suggest potential solutions.

The purpose of this research is to ascertain the key deficiencies of current potato production and marketing systems in order to identify solutions that would result in sustained increases in production and value added activities. It is often considered that potato producers do not get a fair price due to a lack of storage facilities, the presence of intermediaries, inadequate transportation, a lack of effective marketing information, and the farmers' immediate need for money after potato harvesting. Potato arrivals are heavily impacted by farmers' inability to rely on them due to their semi-perishable nature, which results in a post-harvest market

oversupply. Thus, an effective marketing system is critical for increasing and sustaining potato output and so promoting agricultural development in the nation. Marketing efficiency is critical for producers whose involvement is critical for the end customers' gain.

1.5 Justification of the study

The nation produces a large quantity of potato each year. Increased agricultural productivity owing to the introduction of current high yielding cultivars and enhanced production and post-harvest technology has resulted in an increase in crop area and yield during the last several decades. However, as a result of a lack of adoption of demand-driven contemporary production technology and the absence of adequate storage and marketing facilities, farmers often do not get a fair price and are unable to recoup their production costs. Occasionally, producers are forced to sell a large portion of their crop shortly after harvest at a loss owing to a shortage of storage space and the farmers' monetary needs. In the majority of Bangladesh's potato producing districts, farmers are obliged to sell potato at rock-bottom prices during peak harvesting season. According to reports, potato prices are very high in certain locations throughout the off season and even during the peak season. If farmers are unable to sell their goods at a profit, they are likely to discourage potato cultivation, which will have a negative effect on the country's economy. Thus, it is critical to streamline the market in order to ensure the country's sustained potato production, which would benefit both farmers and consumers.

The analysis of the potato marketing channel may be used to determine the most effective channels, restrictions to potato production and marketing, and possible solutions for the potato industry's sustainable development in Bangladesh.

1.6 Research questions

The study's research questions are as follows:

1. Who are the intermediaries engaged in the marketing channel of potato in Munshiganj district?
2. What is the effective potato marketing channel in Munshiganj district?
3. What are the problems faced by potato producer and market actors?
4. What are the suggestions to recover the identified problems?

1.7 Objectives of the study

The overall objective of this study is to provide a better understanding about the existing potato marketing channel considering value addition and net margin conducted by the actors.

1.7.1 Specific objectives

1. To investigate the existing marketing channel of potato at Munshiganj.
2. To identify the most effective potato marketing channel.
3. To explore various problems faced by the potato producer and marketing channel actors.
4. To address various suggestions provided by the potato producer and marketing channel actors.

1.8 Scope of the study

The study's conclusions will have a significant bearing on the Shirajdikhan upazila of Munshiganj district. These results may also be relevant to other regions of Bangladesh with comparable environmental, cultural, and socioeconomic characteristics to the research area. Thus, the study may be beneficial for the policymakers, planners, extension personnel and field workers for successful planning to use effective potato marketing channel considering producers and actor’s problems and suggestions.

1.9 Assumptions of the study

An assumption is a supposition that an apparent fact or principle is true based on the facts provided. While conducting the study, the researcher prioritized these assumptions:

- The sampled respondents were really representative of the target demographic.
- The respondents included in the study's sample were adequately competent of answering the questions and expressing their thoughts.
- The respondents' responses were considerable and dependable.
- The researcher, the interviewer, was socially and culturally well-adjusted to the study location. The replies were completely objective.
- Farmers and marketing channel intermediates were mostly cooperative throughout the interview.

1.10 Organization of the thesis

This report is organized based on seven chapters. The first chapter will describe the introduction, background, research questions, objectives, scope, assumptions and limitations of the study. The second chapter represents a review of previous studies. Chapter three explains the research methodology. Chapter four will demonstrate the discussion about the intermediaries of potato marketing channel. Chapter five will demonstrate the effective potato marketing channel in the study area. In chapter six, various problems and suggestions have been discussed. Finally, chapter seven contains key findings, conclusion and recommendations.

1.11 Limitations of the study

Several limitations were noted throughout the research period, including the following:

- To begin, this investigation was confined to a small region, the area where the most potato was farmed.
- Second, the researcher was forced to deal with tiny sample sizes due to time and other resource restrictions. Although the data were thoroughly evaluated, a larger sample size may have bolstered the conclusions.

- Thirdly, due to time and cost constraints, all data and other relevant information were gathered as quickly as feasible.
- Fourthly, a significant weakness of the study was that the researcher had to rely entirely on the memory of potato producers and merchants to obtain crucial information since they did not retain written records of their on-farm operations throughout production, postharvest management, and selling. As a result, farmers and marketing channel players were questioned within the confines of their recollection in order to elicit the proper responses to the questions posed.
- Fifthly, while potato processors and cold storage owners are significant participants in the potato marketing channel, they are not included in our analysis. Obviously, including them would enhance the usefulness of this research.

Additionally, certain challenges were encountered during data collecting in soliciting responses from a variety of potato producers and dealers. They first resisted providing accurate information out of fear of increased income taxes, which was particularly true for the latter. They were eventually persuaded to report the facts.

Throughout the research period, numerous restrictions were addressed with deliberate attention in order to reduce any voice faults.

CHAPTER II

LITERATURE REVIEW

The information available in the literature pertaining to the basic concepts of marketing channel, guiding principles of agricultural marketing channels, benefit of marketing channel in agricultural sector, markets and marketing, market channel, market performance, measuring marketing channel, developing marketing channel towards the benefit of the poor, marketing channel governance and upgrading of marketing channels and status of potato production and marketing of potato in Bangladesh have been reviewed and presented in this section.

2.1 Definitions and concepts in potato marketing channel analysis

2.1.1 Market and marketing

The term "market" refers to a region in which one or more sellers of certain products/services and their close substitutes interact with and compete for the patronage of a set of customers. A market is a point, or a location, or a sphere within which price-setting forces work and where title transactions are often followed by real movement of the products involved (Backman and Davidson, 1962). Exchange and linkages result in the idea of market. It is the group of present and prospective purchasers of a product (Kotler and Armstrong, 2003). A market may be conceptualized as a process in which sellers transfer ownership of commodities to purchasers, who may be end consumers or middlemen.

2.1.2 Marketing efficiency

Marketing efficiency is the most often utilized metric for market performance. Farmers, marketing groups, customers, and society all have a shared aim of increased marketing efficiency. It is a widely accepted axiom that more efficiency indicates superior performance, while diminishing efficiency indicates worse performance. The majority of suggested modifications in marketing are justified on the basis of increased efficiency (Kohls and Uhl, 1985).

2.1.3 Marketing channel

In formal terms, a marketing channel is a corporate structure comprised of interconnected organizations that extends from the point of product or origin to the customer with the objective of delivering items to their ultimate consumption or destination (Kotler and Armstong, 2003). This channel may be brief or extensive, depending on the kind and quality of the product being advertised, the marketing services available, and the existing social and physical context (Islam, 1987).

2.1.4 Marketing channel actors

The chain of actors who directly deal with the products, i.e. produce, process, trade and own them.

- Marketing channel supporters: The services provided by various actors who never directly deal with the product, but whose services add value to the product.
- Marketing channel influencers: The regulatory framework, policies, infrastructures, etc.

2.1.5 Marketing performance

Market performance may be determined by examining the expenses and margins associated with marketing agencies operating in various channels. The marketing margin or pricing spread is a frequently used metric for system success. Margin or spread may be valuable descriptive statistics when they are used to illustrate how the consumer's price is distributed amongst players at various levels of the marketing system (Mendoza, 1995).

2.1.6 Marketing costs

Marketing expenditures exemplify the impediments to market participation faced by resource-poor smallholders. It refers to the expenses spent in the course of carrying out different marketing operations associated with the transit of products from manufacturer to consumer. Marketing expenses include the expenditures associated with negotiating an agreement, transferring the goods, monitoring the agreement to ensure that its terms are met, and enforcing the exchange agreement (Holloway et al., 2002).

2.1.7 Marketing margin

It is a frequently used indicator of a marketing system's success (Abbot and Makeham, 1981). It is described as the difference between the price consumers pay and the price producers get, or as the price of a collection of marketing services determined by demand for and supply of such services (Cramers and Jensen, 1982; William and Robinson, 1990; Holt, 1993).

Market margins are mainly determined by the quality and amount of marketing services given, the cost of delivering those services, and the efficiency with which those services are performed and priced. For example, a large margin may result in little or no profit or even a loss for the seller, depending on marketing expenditures and selling and purchasing prices (Mendoza, 1995). Market margins would be determined by supply and demand for marketing services and would be equal to the minimal expenses of service providing plus "normal" profit in a competitive market. As a result, measuring market margins is critical for determining the system's efficiency in terms of price creation and transmission.

There are three methods generally used in estimating marketing margin: (1) detailed analyses of the accounts of trading firms at each stage of the marketing channel (time lag method); (2) computations of share of the consumer's price obtained by producers and traders at each stage of the marketing chain; and (3) concurrent method: comparison of prices at different levels of marketing over the same period of time (Mendoza, 1995; Scarborough and Kydd, 1992).

2.1.8 Supply chain

The supply chain is the full network of organizations that are connected and reliant on one another in order to serve the same customer. It consists of suppliers who provide raw materials, manufacturers who transform the raw materials into goods, warehouses that store and distribute the products, distribution centers that transfer the products to retailers, and retailers that disseminate the products to the end user. Supply chains are fundamental to value chains because without them, no manufacturer can provide what consumers want, when and where they want, at the price they want.

2.1.9 Supply chain management

Supply Chain Management is the process of controlling the movement of materials and information throughout a supply chain in order to maximize customer satisfaction at the lowest feasible cost. Supply chain management needs supply chain participants to commit to collaborating closely in order to coordinate order creation, order taking, and order fulfillment. As a result, they establish an extended business that extends much beyond the producer's location.

2.1.10 Value chain

Interconnected value-adding operations that transform inputs into outputs, hence increasing the bottom line and assisting in the creation of competitive advantage. Typically, a value chain consists of the following:

(1)inbound distribution orlogistics,(2)manufacturing operations, (3) outbound distribution or logistics, (4) marketing and selling, and (5) after-sales service. These activities are supported by (6) purchasing or procurement, (7) research and development, (8) human resource development, (9) and corporate infrastructure.

A value chain is the collection of actions necessary to take a product from conception to completion, including all stages of production and transformation. A value chain is comprised of a number of players (or stakeholders), ranging from input suppliers, producers, and processors to exporters and purchasers, all of whom are involved in the actions necessary to get an agricultural product from conception to ultimate use (Kaplinsky and Morris, 2001).

2.2 Measuring value addition

A critical part of global value chain research is the way in which 'value' is understood and quantified. Profit, value addition, and price markups are all indicators of income distribution among value chain participants, according to Gereffi (1999). Shares of value contributed may be determined at each link in the chain. A second method of calculating value added is to examine its distribution throughout the vegetable market's value chain actors and decompose it for each actor to get estimations of each value-added share. The marketing margin is the difference between the value of a product or group of goods at one point in the marketing process and the value of an equal product or group of products at another point in the marketing process. Measuring this margin enables you to determine how much you spent for the processing and marketing services applied to the product(s) at that level of the marketing process (Smith, 1992).

2.3 Literature on individual marketing channels

Some initial literature review (Benedek *et al*., 2014; Mukiama *et al.*, 2014;Fischer and Qaim, 2012; Blandon *et al*., 2010; Chirwa, 2009; Tsourgiannis *et al*., 2008; Ferto and Szabo, 2002) on studies focusing on factors affecting the choice of market channels by farmers seemed to suggest 7 major categories of variables including characteristics of farmers, characteristics of farms, product attributes, market variables, transaction-specific variables, the nature of channel relationship, and policies standards and regulations.

Bongiwe (2013)demonstrated that the farmer's age, the amount of baby corn produced, and his or her level of education were all significant predictors of the farmer's decision to sell vegetables to the NAM Board market channel rather than to another wholesale market channel. The farmer's age, the distance between his or her producing region and the market, participation in a farmer association, and marketing agreement were all important predictors of the farmer's decision to choose a non-wholesale market route rather than another wholesale market channel. The research examined market channel selection determinants using descriptive and multinomial logistic regression analysis.

Sarma (2010) identified marketing channels for the marketing of sweet potato in the study areas and these channels were (1) Producer-Retailer-Consumer (2)Producer-Wholesaler-Retailer-Consumer, (3)Producer-Arathdar-wholesaler-Retailer-consumer. He said that channel 2 was a critical channel for farmers in the study regions when it came to selling sweet potatoes since a large amount of the harvest was sold via this channel. He also noted that growers suffered the highest per quintal marketing cost for sweet potato in channel (2) (53.33), followed by channel (1) (33.80) and channel (3). (24.57). Producers suffered minimal marketing costs in channel 3 due to the enormous volume of goods conveyed. While resulting in minimal shipping costs. In the majority of situations, manufacturers did not experience losses in channel 3. He also noted that channel 1's marketing efficiency was the highest (2.25), followed by channel 2's (1.37), and channel 3's (1.13). The larger marketing margins captured by market intermediaries in channels ii and iii resulted in sweet potato marketing being inefficient.

Omar and Haq (2014) found that sometimes same intermediaries had done some overlapping works. For example, wholesaler (Bepari/Paiker) sometimes performed retail business. When they sold to retailers, they were deemed one chain; when they sold to consumers, they were considered another chain. On the basis of product flow through various chains, fifteen marketing chains for potato were identified. Four of these fifteen chains were critical, since they were responsible for 62 percent of potato transit from producer to consumer. Omar (2014) also discovered in his investigation that farmers employed a variety of modes of conveyance to bring potatoes to the market. They often transported potatoes at the market by van, head load, or rickshaw. The average marketing cost per quintal of potato was found to be Tk 32.88. Of the marketing cost categories, transportation accounted for the lion's share (72 percent). This cost varies by region.

Sabur (2004) attempted to examine the marketing efficiency for different potato marketing channels by using six performance indicators. The study revealed that local marketing channel-lII (Farmer - Bepari - Consumer) was efficient while the channel which supply potato to the major consuming area i.e. channel-VI (Farmer - Aratdhar - Paiker - retailer - Consumer) was more efficient. The channel-VI by which farmers sell potato through local

Aratdhar need to be encouraged. By the indication of producers' share to consumers' price (62 to 85%) and other performance indicators, potato market can be considered as efficient.

Khondaker (2004) investigated on the potato marketing system and its changes in Bangladesh and found several problems and influencing factors which affected potato market systems and intermediaries. They observed in Debidwar upazila (lower administrative unit below district), Comilla District. Researcher said some farmers produce seed potato in some parts of their farm plots for their own use in the next season and/or for sales, and others purchase seed potato every year either mostly from such farmers or sometimes from BADC. Seed potatoes must be kept in cold storage until the next year. At the time of the survey, the price of BADC-certified seeds per maund was between Tk 500 and Tk 750, while the price of multiplied seeds from farmers was between Tk 350 and Tk 400. The storage fee is set at Tk 80 per maund, regardless of the length of the storage term. They take potatoes in units of no less than 10 maunds and lend customers between 20,000 and 30,000 taka for quantities more than 200 maunds; however, Tk 5 per maund is added to the storage price in this instance. When consumers who have taken out a loan choose to retrieve their potatoes from storage, they must return the debt in addition to paying the storage price of 85 taka per maund. Owners of cold storage facilities do not sell stored potatoes without the approval of merchants. As Lewis (1991) noted, cold storage operators used to be involved in trade and even "contract farming" with farmers, but they now prefer to focus exclusively on their storage company.

Christopper Sebatta (2014) discovered that smallholder potato growers in Uganda confront several production and marketing constraints, including restricted market access and insufficient excess for market sale. He want to emphasize the elements that impact smallholder farmers' choice to join in the potato market, as well as the extent to which they participate. The results suggested that proximity to a village market impacted the choice to participate in the potato market favorably and substantially (p 0.05). The second step of the model revealed that non-farm income had a negative and substantial (p 0.01) effect on the amount of market involvement of potato farmers.

Elias *et al*. (1982) conducted an economic study on potatoes production in some selected areas of Bangladesh. They estimated the average per acre production cost of potato at Tk. 7376 and the average gross return at Tk. 9931. They obtained average potato yield of 242 mounds per acre (Dolon, 2018).

Saklayen (1999) investigated that the potato marketing in selected areas of Munshiganj district. This research focused mostly on the Sadar and Tongibari upazilas in Munshiganj district. Thirty farmers and thirty market intermediaries from Munshiganj Sadar and Tongibari Upazilas were included in the sample. He discovered that the marketing cost per quintal of potato was Tk 43.46 for farmers in Munshiganj Sadar Upazila and Tk 44.36 for farmers in Tongibari Upazila, respectively. Beparis, Paikers, cold storage owners, and Munshiganj bazar retailers incurred marketing expenditures of Tk 60.95, Tk 56.87, Tk 133.60, and Tk 37.81 per quintal potato, respectively. For Beparis, Paikers, Cold storage owners, and merchants of Tangibari bazar, the marketing expenses per quintal were Tk 45.42, Tk 61.21, Tk 134.64, and Tk 37.32, respectively. The net margins on a quintal potato were determined to be Tk 21.73, Tk 21.50, Tk 19.57, and Tk 23.28 for Beparis, paikers, cold storage operators, and merchants in Munshiganj market, respectively. Beparis, Paikers, the owners of cold storage facilities, and merchants in Tongibari bazar all earned net margins of Tk 30.02, Tk 26.91, Tk 25.62, and Tk 21.94 per quintal potato, respectively.

Kawsar (2001) carried out a-study entitled "An Economic Analysis of Diamant Potato Production in Some Selected Areas of Bangladesh". The study's primary objective was to assess farmers' socioeconomic characteristics, to estimate the costs and returns of the Diamant potato variety, and to ascertain the variables impacting yield and returns. 139 farmers were chosen at random from five Upazilas in five districts: Bogra, Comilla, Munshiganj, Rangpur, and Thakurgaon. The findings indicated that Diamant potato production is lucrative in East and North Bengal, taking into account the chosen farm types. Rangpur had the best gross margins per acre, whereas Munshiganj had the highest net returns. North Bengal's gross margin and net return were both greater. Medium farmers, on the other hand, had the largest gross margins and net returns.

Hossain (2004) investigated that the potato marketing in selected areas of Bogra district. This study was mainly based on Sadar Upazila of Bogra district. The sample included 30 farmers and 30 intermediaries. Production cost, yield, marketing cost, marketing margin, and net margin of potato farmers and intermediaries were calculated in this study.

Saiyem (2007) investigated the potato marketing system and price behavior in selected areas of Rangpur district. The samples include 60 sample farmers and intermediaries. In this study production cost, yield, marketing cost, marketing margin, net margin and price behavior of potato farmers and intermediaries were estimated.

Hajong (2011) found that many intermediaries were involved such as *Farias, Beparis,Paikars*, retailers, and cold storage owners in the production and marketing system of potato. Potato producers divide their crop between family use, gifts and in-kind payments to relatives, seed, and the maximum amount for sale. Again, during storage, several potatoes were damaged and lost. While storing potatoes in cold storage plants significantly reduces excessive losses, not all farmers can take advantage of the facility due to a variety of factors, including high cold storage charges, uncertainty about future market prices, financial insolvency, poor communication and inadequate transportation facilities, and a lack of any provision for compensation for potato damage in cold storage plants.

According to the aforementioned reviews, research on potato marketing have been conducted entirely. In Bangladesh, systematic study on the potato's marketing channels is scarce. As a result of the existing research, an in-depth study on potato production and marketing has been conducted. The study's findings may assist farmers, marketers, and consumers in making decisions about potato production, trade, and consumption.

CHAPTER III

METHODOLOGY

3.1 Introduction

This chapter details the methodologies used at various phases of the research. Methodology is a fundamental and necessary component of every study. This chapter discusses the methods used in the research, which includes the selection of the study region, sample selection, creation of a survey schedule, data collecting method, survey duration, data editing and tabulation, and analytic tools. The techniques and procedures utilized and followed in the research are listed below, along with their associated goals.

3.2 Selection of study srea

As the research area selection is a critical phase that is highly dependent on the study goals. As a result, the research area was chosen with caution. The research was undertaken in Shirajdikhan Upazila of Munshiganj district to analyze the potato marketing channel. Munshiganj district is Bangladesh's top potato producing zone. Shirajdikhan in particular is the district's top potato growing location. The research location has many beneficial qualities for potato production, including topography, soil composition, and climatic conditions.

The following considerations were taken into account while determining the research area:

- Munshiganj is the country's most productive and commonly planted potato district.
- All of the marketing channel actors required for the research are located in this targeted region due to its simple accessibility and well-developed communication infrastructure.
- There are a large number of potato producers, each with a unique farm size.

As a result, the district of Munshiganj was chosen as the research region due to the abundance of potato producers and dealers.

3.3 Selection of period of study

The current research was conducted over a six-month period, from November 2019 to April 2020. Between February and April 2020, data were gathered through face-to-face interviews with potato producers and dealers utilizing a predefined survey schedule. The researcher personally visited the region to obtain further data.

3.4 Selection of samples

30 potato producer, 80 marketintermediaries (*Faria*, *Bepari*, wholesaler and retailer) were puposively chosen from the research area in the following way.

Table 3.1: Sample size of different respondent

Marketintermediaries	Sample Size
Growers	30
Faria	20
Bepari	20
Wholesaler	20
Retailer	20
Total	110

3.5 Preparation of the survey schedule

Two distinct kinds of interview schedules were developed to obtain data from various sorts of samples. A schedule of interview questions covers topics such as potato production, marketing, and disposal at the producer level. Another interview schedule was created to obtain data from potato merchants, which included questions on potato purchasing, storage, and sale. All schedules were pretested and refined before being finalized. Interview schedules were developed in accordance with the study's unique goals.

3.6 Data collection

Face to face interviews were used to acquire pertinent data from the chosen subjects. Prior to conducting real interviews, the sample farmers and dealers were informed of the study's academic goal. They were first hesitant to respond to the questions; however, after being persuaded that the study was strictly academic and would have no impact on them, they agreed to collaborate with the researcher. During the interview, the researcher addressed questions in a methodical manner and clarified them where appropriate. Farmers were urged to supply accurate information to the extent practicable. Many respondents reported having no records of their enterprises or activities. Memory remembering approach was used to address this issue. Additionally, data were gathered from potato dealers such as Faria and Bepari, as well as wholesalers and retailers. Along with primary data, secondary data were gathered from a variety of sources, including journals, other organizations such as the Bangladesh Department of Agricultural Marketing, and online searches.

3.7 Tabulation and analysis of data

The first stage was to evaluate the data for each schedule to identify inconsistencies or omissions in the data gathering process and to eliminate extraneous data. The data were meticulously adjusted to remove any inaccuracies introduced by the schedules used to capture the information. The processed data were imported into an SPSS spreadsheet and compiled to facilitate tabulation. Initially, information was gathered in local units. Following their verification, they were translated to quantitative form using appropriate grading. Tables were created as necessary by summarizing the data. The acquired data were examined in accordance with the study's goals. Data inconsistencies were eliminated. SPSS was used to conduct the analysis.

3.8 Analytical technique

The analytical approach used in an agribusiness research might be used to assess it. The goal of data analysis was to accomplish the study's objectives. The following strategies are most likely to have been utilized:

3.8.1 Gross return and net return of the farmer

The gross return on a business was computed by multiplying the entire volume of production by the average price throughout the harvesting season (Dillon and Hardaker, 1993). It was calculated as the total of the volumes of the primary and secondary products. Gross return was estimated using the following equation:

GR = ∑Qm.Pm, Where:

GR = Gross Return from potato;

Qm = Quantity of potato

Pm = Average Price of potato

Net return was calculated by deducting all costs (variable and fixed) from gross return.

To determine the net return of potato production the following equation was used in the recent study:

Net return= Gross Return – (Variable Cost + Fixed Cost)

Gross Return = Total Production x per unit price of potato

Variable costs = Sum of each cost incurred during the production of potato.

Fixed costs are,

- Land use cost;
- Interest on operating capital;

Marketing costs are:

- License fee;
- Loading and unloading;
- Power and electricity charge;
- Telephone charge;
- Market toll;

- Transportation;
- Grading;
- Storage cost;
- Personal expenses;

3.8.2 Marketing margin and net margin of marketing channel intermediaries

The following formula was used to determine the marketing margin and net margin of various marketing channel intermediaries:

Value addition = Sales price-Purchase price

Interest on Operating Capital = Amount of Operating Capital X Interest Rate (%) X Time Required (in years)÷2

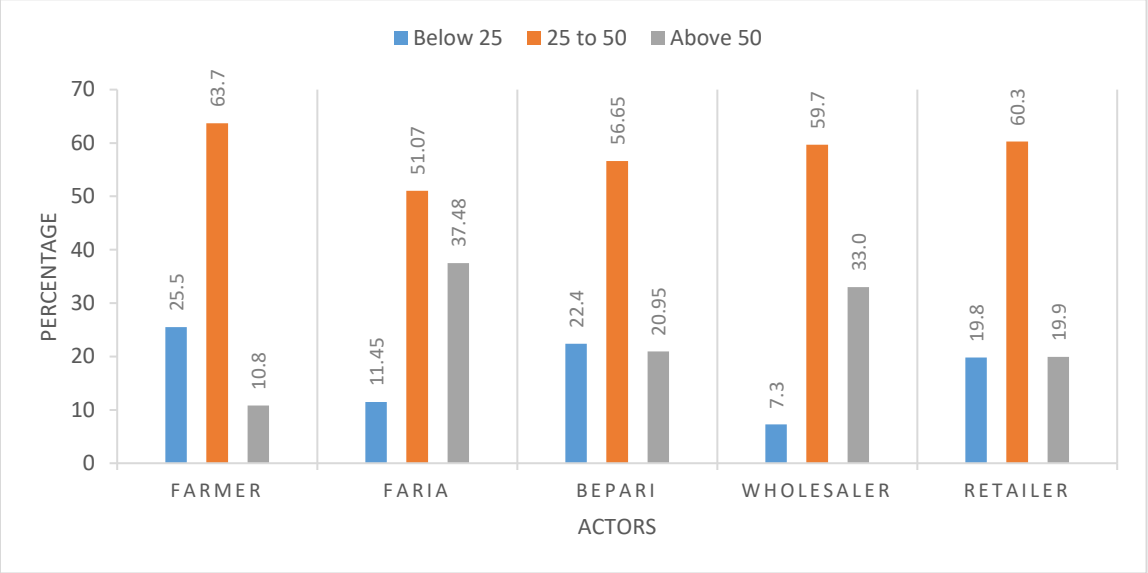
Net Marketing Margin=Value addition-marketing cost.

CHAPTER IV

INTERMEDIARIESOF POTATO MARKETING CHANNEL

The first objective of this study was to identify the intermediaries involved in the potato marketing channel in the district of Munshiganj. The chapter will demonstrate the descriptive studies of different respondents and identify the intermediaries involved in the existing potato marketing channel of the study area.

4.1 Age of the respondents



Source: Field Survey, 2020

Figure 4.1: Percentage distribution of respondent's age

Figure 4.1 shows age of the respondents which were plotted in a Bar-diagram for better representation. These groups of people were aged from below 25years, 25 to50years and above 50 years.

4.1.1 Age range of farmers

Around 63.7 percent of all farmers in the research region were in the age bracket of 25-50 years, 25.5 percent were under the age of 25, and 10.8 percent were above the age of 50. The majority of farmers in the study region were in their forties.

4.1.2 Age range of *Faria*

Around 51.07 percent of the respondents in the research region were between the ages of 25 and 50, 11.45 percent were under the age of 25, and 37.48 percent were above the age of 50.

4.1.3 Age range of *Bepari*

Around 56.65 percent of all respondents in the research region were between the ages of 25 and 50, 22.4 percent were under the age of 25, and 20.95 percent were above the age of 50.

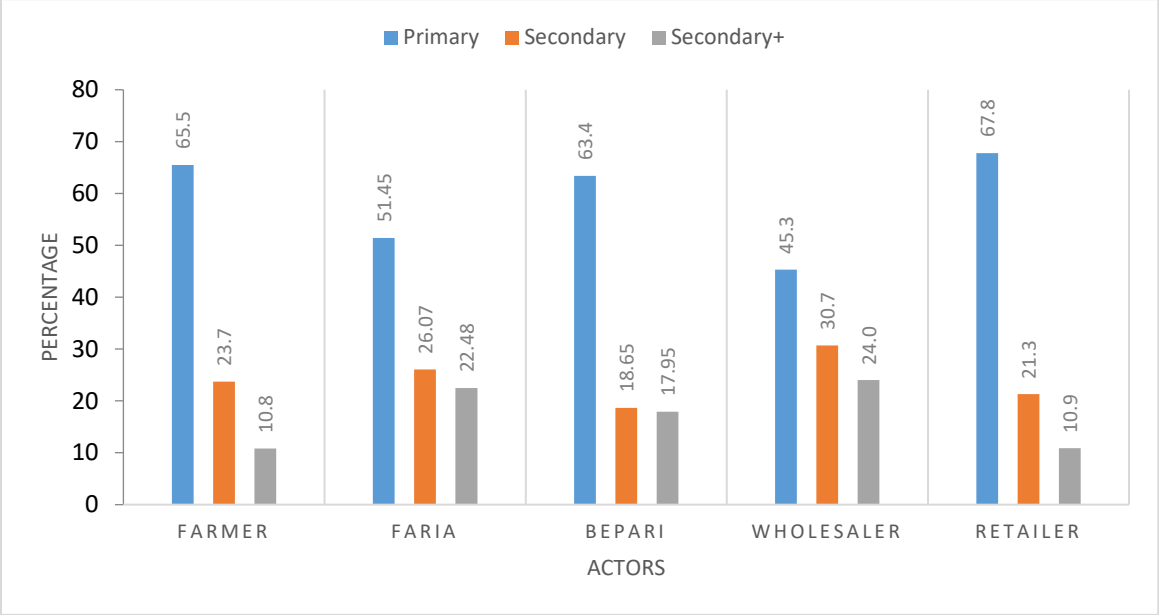
4.1.4 Age range of wholesaler

Around 59.7 percent of the respondents in the research region were between the ages of 25 and 50, 7.3 percent were under the age of 25, and 33% were above the age of 50.

4.1.5 Age range of retailer

Around 60.3 percent of all respondents in the research region were between the ages of 25 and 50, 19.8 percent were under the age of 25, and 19.9 percent were above the age of 50.

4.2 Respondent's education level



Source: Field Survey, 2020

Figure 4.2: Percentage distribution of respondent's education.

Figure4.2shows the educational qualification of the respondents. Education levels ranged from Primary to Secondary.

4.2.1 Educational qualification of farmer

According to figure 4.2, 65.5 percent of respondents have finished elementary school, 23.7 percent have completed secondary education, and 10.8 percent have completed secondary. As a result of the study, it is determined that the majority (65.5 percent) of respondents were educated to a primary level.

4.2.2 Educational qualification of *Faria*

It is inferred from the figure 4.2 that, 51.45% of the respondents have completed primary level education, 26.07% of the respondents have completed secondary level education and 22.48% of the respondents have completed secondary. Therefore, it is found from the analysis that the majority (51.45%) of the respondents were qualified with primary level education.

4.2.3 Educational qualification of *Bepari*

According to figure 4.2, 63.4 percent of respondents have finished elementary school, 18.65 percent have completed secondary education, and 17.95 percent have completed secondary. As a result of the study, it is determined that the majority (63.4 percent) of respondents were educated to a primary level.

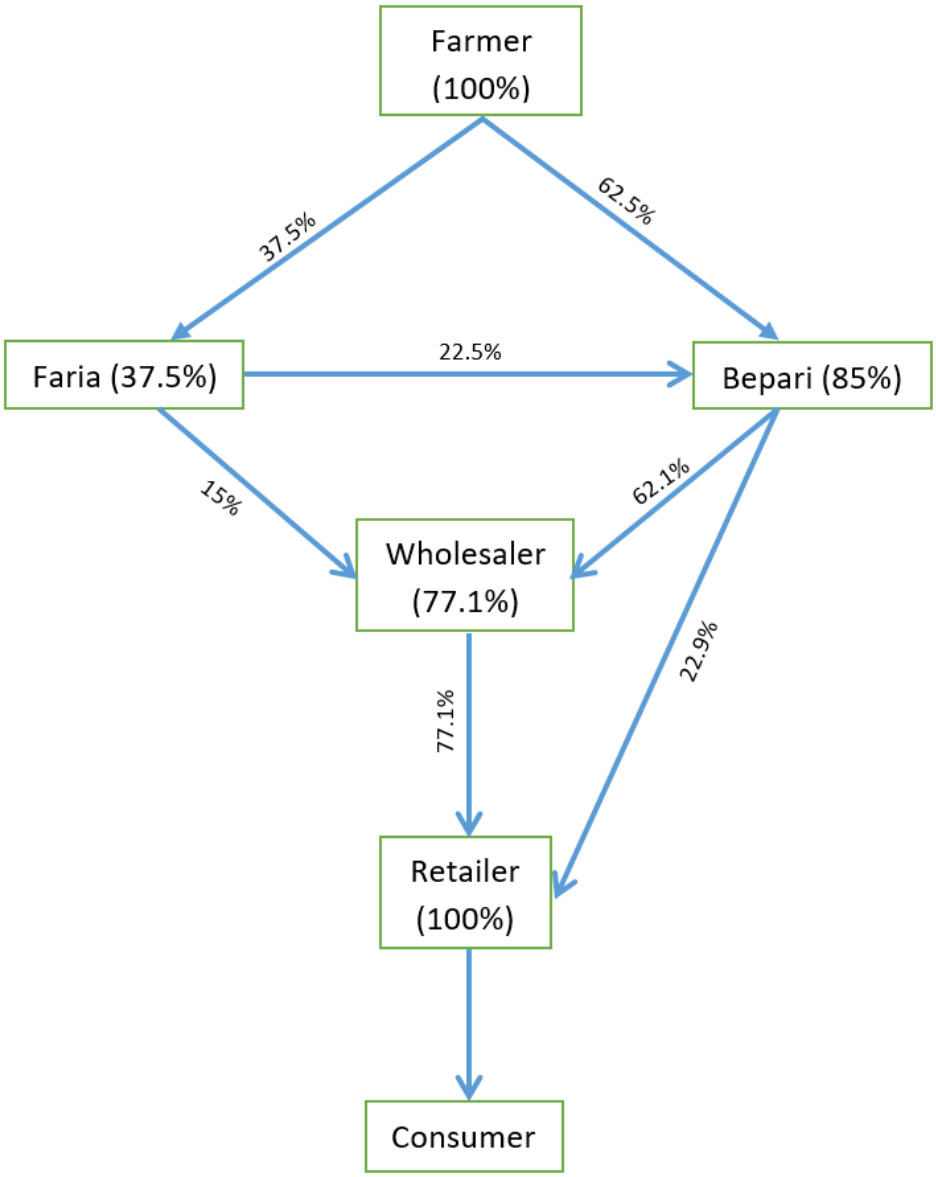
4.2.4 Educational qualification of wholesaler

According to figure 4.2, 45.3 percent of respondents have finished elementary school, 30.7 percent have completed secondary education, and 24 percent have completed secondary. As a result of the study, it is determined that the majority (45.3 percent) of respondents were educated to a primary level.

4.2.5 Educational qualification of retailer

It is inferred from the figure 4.2 that, 67.8% of the respondents have completed primary level education, 21.3% of the respondents have completed secondary level education and 10.9% of the respondents have completed secondary. Therefore, it is found from the analysis that the majority (67.8%) of the respondents were qualified with primary level education.

4.3 Existing marketing channel in Munshiganj district



Source: Field Survey

Figure 4.3: Existing marketing channel in Munshiganj district

Four mostly used marketing channels were found in the case of potato marketing at Munshiganj district from the study. They were:

Channel I

Channel II

Channel III

Channel IV

The study found four intermediaries between producer and consumer. They were: *Faria, Bepari*, wholesalerand retailer.

4.4 Intermediaries involved in the marketing channel

4.4.1 Farmer

Potato producers or farmers typically perform a single function: they produce potatoes and sell them via dealers.Around 80% of Bangladesh's 12 million agricultural families are small farmers (landholding less than 0.2 hectare), and some of these farmers are landless (BBS, 2007). There is no exact data on the number of potato producers. Potatoes are classified vegetables, and according to the BBS, there were 1,260,000 vegetable

Source: Field Survey

Figure 4.4: Potato grower of Munsiganj District

farmers in 2008. From the study it is found that farmers sold 37.5% and 62.5% of potato through *Faria* and *Bepari* respectively.

4.4.2 Faria

Faria is a bangla term who handle 37.5% of total produced potato. They were organized independently.

They didn't have any set offices. Most *Faria* didn't have a permanent stores and workers. They practiced cage sales or purchases very often. They are non-licensed trader and sold potato to both wholesaler (22.5%) and *Bepari* (15%).

Source: Field Survey

Figure 4.5: Faria of potato market in Munsiganj District

4.4.3 Bepari

In contrast, large dealers, locally referred to as Bepari, were unlicensed operators in the productionareas. Each rural aggregation market has about 10-15 vendors. They handle a significant quantity of potato and a few other

Source: Field Survey

Figure 4.6: Bepari purchasing potato from farmer

agricultural goods. In the selected study area *Bepari* purchase potato from farmer (62.5%) and Faria (22.5%). *Bepari* sold their purchases to wholesaler and retailer. In Munshiganj district, 85% of potato was sold by *Bepari*, where 62.1% through wholesaler and 22.9% through retailer.

4.4.4 Wholesaler

A wholesaler is a commission agent who maintains a physical presence in the market. Additionally, the number of wholesalers fluctuates between 15 and 25 in rural aggregation marketplaces. Wholesalers often engage in other agricultural items. They provide a tangible venue for buyers and sellers to meet and bargain. They use a small number of hired workers or part-time or full-time paid employees to conduct different tasks such as weighing, sorting, grading, and cleaning. Wholesalers charge purchasers a commission if a transaction occurs. Occasionally, they become purchasers of the commodities delivered to their facilities. They are registered merchants with warehouses. In general, wholesalers distribute commodities in a large geographic area between the points of production and consumption. At Munshiganj, wholesalers purchased 77.1% of potato from *Faria* (15%) and *Bepari* (62.1%).

Source: Field Survey

Figure 4.7: Wholesaler purchasing potato in Munsiganj District

4.4.5 Retailer

Retailers operate as the intermediary between the wholesaler and the potato consumer. They often purchase potatoes from Faria and Bepari and sell to customers directly. Retailers that specialize in potatoes offer a variety of veggies and seasonings and are found in every agribusiness consumer market. They acquired 100% of the potato in Munshiganj from wholesalers (77.1%) and Bepari (85 percent).

4.4.6 Consumer

Consumers are the people or company who purchase the potato for consumption and for processing. Consumers generally purchase potato from retailer, sometimes companies made bulk purchase from the wholesalers.

CHAPTER V

IDENTIFICATION OF EFFECTIVE MARKETING CHANNEL

The current research has as one of its objective was to identify the effective marketing channel of potato from the existing potato channels in Munshiganj district. This chapter analyzed the cost, return, and margin of all the actors in the channels and sorted out the most effective channel.

5.1 Cost and return analysis of potato farmer

As shown in Table 5.1, the sum of variable input costs resulted in total variable costs of Tk. 233.67 per 40 kg of potato and Tk. 584.12 every 100 kg of potato. The costs of fixed inputs were added together to produce total fixed costs of Tk. 96.52 per 40 kg of potato and Tk. 241.32 per 100 kg of potato. Additionally, the operating capital interest rate was Tk.11.25 per 100 kg of potato. As a result, the total cost of potato production was Tk. 825.44 per 100 kg. Farmers' marketing costs comprised grading, washing, and sorting, transportation, loading, and unloading, market tolls, personal expenses, and unofficial payment, totaling Tk. 162.89 per 100 kg of potato. If marketing costs are included in the entire production cost, the price per 100 kg of potato drops to Tk. 988.33.

Table 5.1: Cost of production and marketing of potato for farmer

	Cost item	Cost (Taka/100 kg)
Variable cost	Human and labor cost	218.3
	Land Preparation	96.37
	Seed	107.7
	Fertilizer	59.75
	Insecticides	46.25
	Irrigation	55.75
	Total	584.12
Fixed costs	Rental value of Land	230.07
	Interest on operating capital	11.25
	Total	241.32
Total production cost		825.44
Marketing cost	Grading, washing, sorting	60.30
	Transportation cost	33.10
	Loading and unloading	14.69
	Market toll	18.00
	Personal expense	21.00
	Unofficial payment	15.80
	Total	162.89
Grand total		988.33

Source: Field Survey, 2020

Gross return was computed in Table 5.2 by multiplying the total quantity of items by the average sales price. The gross return on potato was found to be Tk. 1137.5 per 100 kg (11.375 Tk/kg), whereas the variable cost per 100 kg was Tk. 584.12 (5.84 Tk/kg). The total cost of potato cultivation per 100 kg, including marketing costs, was Tk. 988.33 (9.88 Tk/kg). Additionally, gross margin was calculated by subtracting total variable costs from gross return and was found to be Tk. 553.38 per 100 kg of potato (5.53 Tk/kg). The net

return was calculated by deducting the entire cost of the project from the gross return. As a result, the net profit on 100 kilograms of potato was Tk. 149.17 (1.49 Tk/kg).

Table 5.2: Estimation of Net return for potato farmers

Particulars	Tk. Per 40 kg	Tk. Per 100 kg	Tk. Per kg
i. Gross return	455	1137.5	11.375
ii. Total Variable cost	233.67	584.12	5.84
iii. Total cost	395.33	988.33	9.88
iv. Gross margin (i-ii)	211.33	553.38	5.53
v. Net return (i-iii)	59.67	149.17	1.49

Source: Field Survey, 2020

5.2 Marketing cost and margin analysis of *Faria*

5.2.1 Marketing cost incurred by *Faria*

The marketing costs spent by *Faria* are shown in Table 5.3. The *Faria* incurred an estimated average marketing cost of Tk.0.21 per kilogram potato. Market toll was the most expensive of the marketing cost categories, accounting for 47.62 percent of total cost. Personal expenditures were the second greatest cost component, accounting for 28.57 percent of total cost. Additionally, telephone bills and miscellaneous expenses accounted for 14.29 percent and 9.52 percent of total expenses, respectively.

Table 5.3: Total marketing cost estimation of *Faria*

Cost items	**Tk. Per 100 kg**	**Tk. Per kg**	**Percent of total cost**
Personal expenses	6	0.06	28.57
Telephone charge	3	0.03	14.29
Market toll	10	0.10	47.62
Other cost	2	0.02	9.52
Total	21	0.21	100

Source: Field Survey, 2020

5.2.2 Marketing margin of potato received by *Faria*

The table 5.4 details *Faria*'s marketing profit on potato. The average price of a 100 kg potato was Tk 1137.5 (11.375 Tk/kg) and the average price of a 100 kg potato was Tk 1267.00 (12.67 Tk/kg). Additionally, the potato's value addition was estimated by subtracting the buy price from the sales price. The value addition per 100 kg of potato was Tk.129.5, whereas the value addition per kilogram of potato was Tk.1.29. Tk. 21.00 (0.21 Tk/kg) was the average marketing cost per 100 kg of potato. The net marketing margin was derived in this instance by subtracting marketing costs from the value added. For *Faria*, the net marketing margin per kg of potato was Tk. 1.085 and the net marketing margin per 100 kg of potato was Tk. 108.5.

Table 5.4: Net marketing margin estimation of *Faria*

Particulars		Tk. Per 100 kg	Tk. Per kg
i.	Purchase Price	1137.5	11.375
ii.	Sales Price	1267.00	12.67
iii.	Value addition (ii-i)	129.5	1.29
iv.	Marketing Cost	21	0.21
v.	Net Marketing Margin (iii-iv)	108.5	1.085

Source: Field Survey, 2020

5.3 Marketing cost and margin analysis of *Bepari*

5.3.1 Marketing cost incurred by *Bepari*

Bepari's marketing expenses are shown in Table 5.5. The *Bepari* was estimated to have experienced an average marketing cost of Tk. 1.61 per kilogram of potato. Transportation was the most expensive item on the list, accounting for 49.69 percent of the total. Potato storage cost was the second greatest cost factor, accounting for 26.71 percent of total cost. Market toll, loading and unloading, telephone charges, and personal expenditures accounted for 9.94, 8.70, 1.86, and 3.11 percent of total costs, respectively.

Table 5.5: Estimation of total marketing cost for*Bepari*

Cost items	Tk. Per 100 kg	Tk. Per kg	Percent of total cost
Market toll	16	0.16	9.94
Loading and unloading	14	0.14	8.70
Transportation	80	0.80	49.69
Rent of store	0	0.00	0.00
Storage cost	43	0.43	26.71
Telephone charge	3	0.03	1.86
Unofficial payment	0	0.00	0.00
Personal expenses	5	0.05	3.11
Total	161	1.61	100.00

Source: Field Survey, 2020

5.3.2 Marketing margin of potato received by *Bepari*

The table 5.6 details *Bepari*'s marketing margin on potato. For 100 kg of potato, the average purchasing price was Tk. 1216.00 (12.16 Tk/kg) while the average selling price was Tk. 1460 (14.60 Tk/kg). Additionally, the potato's value addition was estimated by subtracting the buy price from the sales price. The value addition was Tk. 244.00 (2.44 Tk/kg) per 100 kg of potato. The average cost of selling 100 kg of potato was Tk. 161.00. The net marketing margin was derived in this instance by subtracting marketing costs from the value added. The net marketing margin per 100 kg of potato was Tk. 83.00, whereas the net marketing margin per kilogram of potato was Tk. 0.83.

Table 5.6: Net marketing margin received by*Bepari*

Particulars		Tk. Per 100 kg	Tk. Per kg
i.	Purchase Price	1216.00	12.16
ii.	Sales Price	1460.00	14.60
iii.	Value addition (ii-i)	244.00	2.44
iv.	Marketing Cost	161	1.61
v.	Net Marketing Margin (iii-iv)	83.00	0.83

Source: Field Survey, 2020

5.4 Marketing cost and margin analysis of wholesaler

5.4.1 Marketing Cost incurred by wholesaler

The wholesaler's marketing costs are shown in Table 5.7. The wholesaler mostly sold potatoes to other wholesalers. *Faria* and *Bepari* collected potato from the farmer and sold it straight to faraway wholesale markets. The wholesaler's projected average marketing cost per kilogram of potato was Tk. 2.705. Among the total cost elements, storage cost was the most expensive, accounting for 27.73 percent of total cost. Transportation costs were the second greatest cost factor, accounting for 25.88 percent of overall costs. Apart from other costs, licensing, loading and unloading, market toll, grading, telephone fee, personal expenditures, and unofficial payment accounted for 0.18, 7.39, 5.55, 16.64, 3.70, 7.39, 1.85, and 3.70 percent of total costs, respectively.

Table 5.7: Estimation of total marketing cost for wholesaler

Cost items	Tk. Per 100 kg	Tk. Per kg	Percent of total cost
License	0.50	0.005	0.18
loading and unloading	20.00	0.20	7.39
Transportation	70.00	0.70	25.88
Market toll	15.00	0.15	5.55
Storage cost	75.00	0.75	27.73
Telephone charge	10.00	0.10	3.70
Unofficial payment	5.00	0.05	1.85
Personal expenses	20.00	0.20	7.39
Grading	45.00	0.45	16.64
Others	10.00	0.10	3.70
Total	270.5	2.70	100.00

Source: Field Survey, 2020

5.4.2 Marketing margin of potato received by wholesaler

The table 5.8 details the marketing margins earned by wholesalers on potatoes. For 100 kg of potato, the average purchasing price was Tk. 1470.00 and the average selling price was Tk. 1790.00. Potato value addition was determined by subtracting the purchase price from the sales price. The value addition was Tk. 3.20 per kg of potato and Tk. 320.00 for 100kg of potato. Tk.270.5 (2.71Tk/kg) was the average market price per 100 kg of potato. The net marketing margin was determined by subtracting marketing expenses from the value added. The wholesaler's net marketing margin was Tk. 0.50 per kg of potato and Tk. 49.50 for 100 kg of potato.

Table 5.8: Estimation of net marketing margin for wholesaler

Particulars		Tk. Per 100 kg	Tk. Per kg
i.	Purchase Price	1470.00	12.16
ii.	Sales Price	1790.00	14.60
iii.	Value addition (ii-i)	320.00	3.20
iv.	Marketing Cost	270.5	2.71
v.	Net Marketing Margin (iii-iv)	49.50	0.50

Source: Field Survey, 2020

5.5 Marketing cost and margin analysis of retailer

5.5.1 Marketing Cost incurred by retailer

The cost of marketing spent by the store is shown in Table (5.9). Retailers mostly sold potatoes to end users. They purchased potatoes in the district wholesale market and sold them straight to end consumers. The merchants incurred an estimated average marketing cost per kilogram of potato of Tk. 1.62. Among the cost factors, transportation was the most expensive, accounting for 30.86 percent of total cost. Electricity and licensing costs were the second greatest cost components, accounting for 12.35 percent of total cost. Apart from the cost of loading and unloading, the telephone fee, market toll, personal expenditures, and unofficial payment accounted for 9.26, 7.41, 9.26, and 9.26 percent of total cost, respectively.

Table 5.9: Estimation of total marketing cost for retailer

Cost items	Tk. Per 100 kg	Tk. Per kg	Percent of total cost
License	20.00	0.20	12.35
loading and unloading	15.00	0.15	9.26
Transportation	50.00	0.50	30.86
Market toll	15.00	0.15	9.26
Telephone charge	12.00	0.12	7.41
Unofficial payment	5.00	0.05	3.09
Personal expenses	15.00	0.15	9.26
Electricity charge	20.00	0.20	12.35
Others	10.00	0.10	6.17
Total	162.00	1.62	100.00

Source: Field Survey, 2020

5.5.2 Marketing margin of potato received by retailer

The Table (5.10) shows the marketing margin of potato received by retailer. The average purchase price was Tk.1810.00 (18.10 Tk/kg) and sales price was Tk.2085.00 (20.85 Tk/kg) for 100kg of potato. Here, the value addition of potato was calculated by deducting purchase price from the sales price. The amount of value addition was Tk.2.75 for per kg of potato and Tk.275.00 for 100kg of potato. The average marketing cost per 100kg of potato was Tk.162.00 (1.62 Tk/kg). Besides, net marketing margin for retailer was Tk. 1.13 per kg of potato and Tk. 113.00 for 100kg of potato.

Table 5.10: Estimation of net marketing margin for wholesaler

Particulars	Tk. Per 100 kg	Tk. Per kg
i. Purchase Price	1810.00	18.10
ii. Sales Price	2085.00	20.85
iii. Value addition (ii-i)	275.00	2.75
iv. Marketing Cost	162.00	1.62
v. Net marketing margin (iii-iv)	113.00	1.13

Source: Field Survey, 2020

5.6 Value Addition, Marketing cost and net marketing margin of different market actors of potato

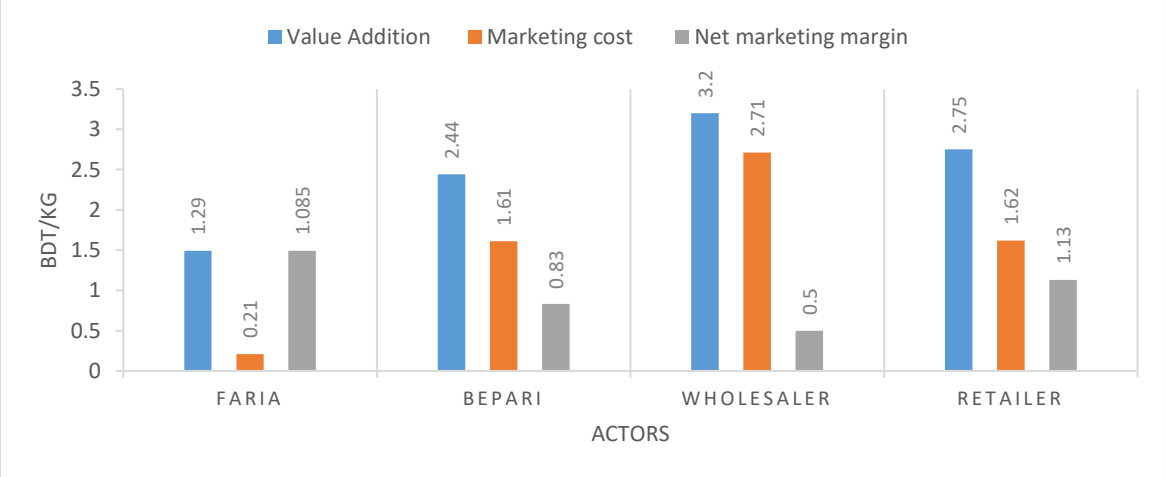
From the Figure (5.1) it is shown that *Faria* added minimum values during selling potato. He added Tk. 1.29 per kg where *Bepari*, retailer and wholesaler added Tk. 2.44, Tk. 2.75 and Tk. 3.20 per kg respectively.

Table 5.11: Value addition, marketing cost and net marketing marginof*Faria*, *Bepari*, wholesaler, and retailer

Actors	Value Addition (Tk. per kg)	Marketing cost (Tk. per kg)	Net marketing margin (Tk. per kg)
Faria	1.29	0.21	1.085
Bepari	2.44	1.61	0.83
Wholesaler	3.20	2.71	0.50
Retailer	2.75	1.62	1.13

Source: Field Survey, 2020

In the case of marketing cost *Faria* incurred Tk. 0.21 perkg while wholesaler incurred maximum marketing cost (Tk. 2.71) per kg of potato. But wholesaler made the lowest marketing margin (Tk. 0.50 /kg) than other actors. Besides, retailer made the highest marketing margin (Tk. 1.13 /kg) among the actors.



Source: Field Survey, 2020

Figure 5.1: Value addition, marketing cost and net marketing margin of different intermediaries

5.7 Value addition, marketing cost and net marketing margin in different channel

The Figure 5.2 showsthe value addition, marketing cost, and net marketing margin in four channel of potato marketing.

1. *ChannelI*: It is seen from the above figure that,value addition in channel I was 9.68Tk/kg, marketing cost was 6.15Tk/kg and net marketing margin was 3.545Tk/kg.
2. *ChannelII*: It is seen from the above figure that,value addition in channel II was 6.48Tk/kg, marketing cost was 3.44Tk/kg and net marketing margin was 3.045Tk/kg.
3. *ChannelIII*: It is seen from the above figure that, value addition in channel IIII was 8.39Tk/kg, marketing cost was 5.94Tk/kg and net marketing margin was 2.46Tk/kg.
4. *ChannelIV*: It is seen from the above figure that, value addition in channel IV was 7.24Tk/kg, marketing cost was 4.54Tk/kg and net marketing margin was 2.715Tk/kg.

Table 5.12: Total value addition, marketing cost and net marketing margin in different channel

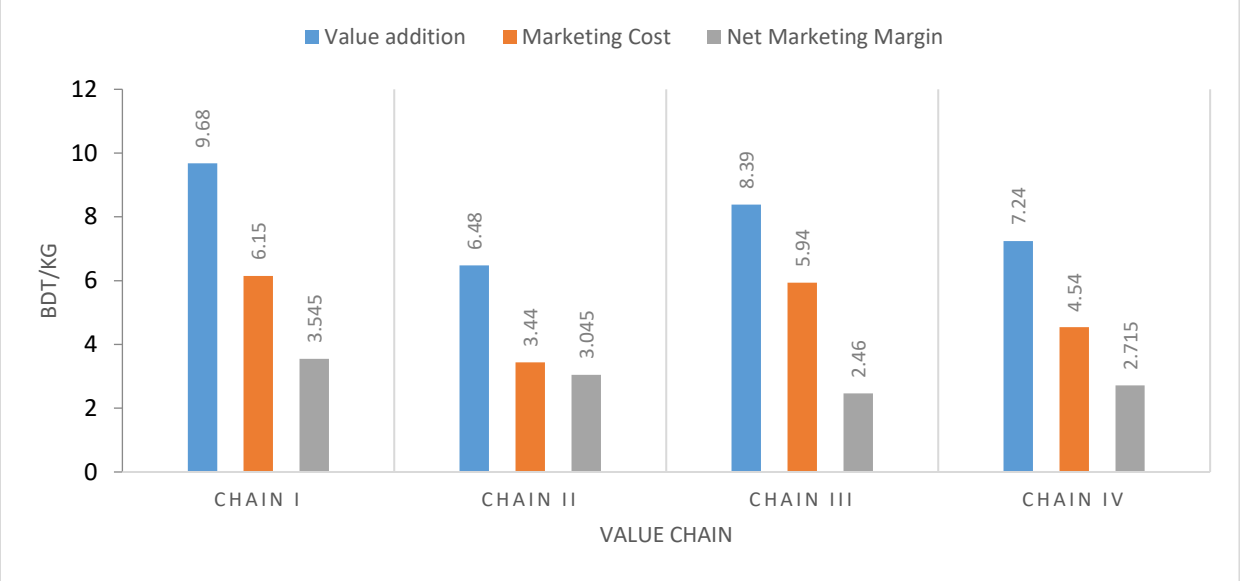
Particulars	Channel I	Channel II	Channel III	Channel IV
Value addition (Tk/kg)	9.68	6.48	8.39	7.24
Marketing cost (Tk/kg)	6.15	3.44	5.94	4.54
Net marketing margin (Tk/kg)	3.545	3.045	2.46	2.715

Source: Field Survey, 2020

5.8 Effective marketing channel of potato

The figure 5.2 shows that, the value addition was highest (9.68Tk/kg) in channel I and lowest (6.48Tk/kg) in channel II. Marketing cost was highest (6.15Tk/kg) in channel I and lowest (3.44 tk) in chain II. And net marketing margin was highest (3.545Tk/kg) in channel I and lowest (Tk. 2.46) in channel III. As the net marketing margin was the lowest in

channel III, therefore,channel III is more effective potato marketing channel in the study area.



Source: Field Survey, 2020

Figure 5.2: Value addition, marketing cost and net marketing margin in existing marketingchannel of Munshiganj

CHAPTER VI

PROBLEMS AND SUGGESTIONS

The producers and traders of potato faced different problems while producing and selling the produces and they also provided some suggestions to overcome the problems. This chapter fulfilled the third objective of the study.

6.1 Problems faced by farmers

The Table 6.1 shows the type of problems faced by the farmers involved in potato production and marketing.

6.1.1 Low market price of potato

The majority of respondents said that low pricing was a significant issue in potato marketing. Due to the absence of a remunerative price for potato, farmers in the designated regions did not get a reasonable return on their investment. According to Table 6.1, about 90% of producers (27 out of 30 farms) had this issue.

6.1.2 High price of quality seed and fertilizers

The high cost of good-quality seed and fertilizers was a significant issue for farmers in the study region when it came to potato growing. According to Table 6.1, about 53.33 percent of producers (16 out of 30) had this issue.

6.1.3 Inadequate extension service

More than 63% of the respondents (19 out of 30) agreed about inadequate extension service as a problem in potato production.

6.1.4 Lack of credit facilities

Potato growers in the research regions noted that potato cultivation requires adequate use of fertilizers, water, and other inputs, as well as specific attention to timely agronomic methods. Potato production was expensive due to the high input needs. It was difficult for manufacturers to handle the requisite money. Around 80% of producers (24 out of 30 farms) cited a lack of financing as a major constraint on potato output (Table 6.1).

6.1.5 Shortage of good quality seed

The majority of farmers in the study regions said that a key issue was a scarcity of high-quality seed. They were unable to get the needed grade of excellent seed due to an inadequate quantity to fulfill consumer demand. As a result, manufacturers employed their own conserved seeds and sometimes a local variety of seeds. As a consequence, they had a meager potato yield. According to Table 6.1, about 73.33 percent of producers (23 out of 30 farmers) expressed dissatisfaction with the market availability of high-quality seed during potato growing season.

6.1.6 Lack of marketing facilities

There were no sheds in the study locations to cover growers and their potatoes from rain or sunlight, and producers were forced to sell their goods standing in the open. Thus, 46.67 percent of manufacturers cited a lack of market facilities as a concern.

6.1.7 Market toll

Farmers were required to pay the bazar authorities a market toll in exchange for putting potato on the market grounds. As part of their deal with farmers, the bazaar authority collects toll. Market toll was acknowledged as a concern in potato marketing by 75% of respondents.

6.1.8 High transportation cost and inadequate transportation facilities

The majority of farmers said that the study region lacked roads and communication infrastructure. Though the main route from the local market was rather nice, the road from the farmers' premises to the local market was quite bad. As a result, growers were forced to carry their potatoes to a nearby market using a van, which was quite expensive. Due to high transportation costs and inadequate communication infrastructure, farmers were forced to sell potatoes at cheap prices at local marketplaces. Around 86.67 percent of farmers (26 out of 30) reported having difficulty transferring their goods to markets due to high transportation costs and insufficient communication facilities.

6.1.9 Dominance of market intermediaries

Market intermediaries were few in number but highly structured in the research region, while farmers were dispersed but numerous. The middlemen have historically controlled the marketing system and have been in a stronger position to determine potato pricing. As a consequence, the majority of growers were forced to sell their potato at a discount since there was no option to get the goods back from market without incurring additional transportation costs and danger of potato damage. This was cited as a concern by around 73.33 percent of producers (22 out of 30 farms).

Table 6.1: Problems faced by farmers

Type of Problems	Frequency	Percentage
Low market price of potato	27	90.00
High price of quality seed and fertilizers	16	53.33
Inadequate extension service	19	63.33
Lack of credit Facilities	24	80.00
Lack of good quality seed	23	73.33
Lack of marketing facilities	14	46.67
Market toll	21	70.00
High transportation cost and inadequate transportation facilities	26	86.67
Dominance of marketing channel intermediaries	22	73.33
Diseases and pest attack	23	76.67
Poor storage facilities and high cold storage charge	18	60

Source: Field Survey, 2020

6.1.10 Diseases and pest attack

Disease and insect assault were significant problems for farmers in the research regions when it came to potato farming. Additionally, they said that they lacked enough training on pest and disease management measures for potato growing. According to Table 6.1, about 76.67 percent of producers (23 out of 30 farmers) reported being harmed by illnesses and insect attack throughout their potato growing.

6.1.11 Poor storage facilities and high cold storage charge

The majority of farmers in the study regions said that inadequate storage facilities and expensive cold storage charges were a big issue when it came to potato storage. According to the table, over 60% of producers (18 out of 30 farmers) cited inadequate storage facilities and excessive cold storage charges as a hindrance to potato growth.

6.2 Problems faced by the actors

The table 6.2 shows the type of problems faced by the intermediaries involved in potato marketing channel.

6.2.1 Inadequate capital

*Faria*s said that they were unable to get credit from traditional credit companies. There were a few small local non-governmental organizations (NGOs) that supplied loans to major middlemen. They were not granted such privileges because their operations were not permanent; they were transient. According to the table, almost 85 percent of intermediaries (68 out of 80) identified insufficient finance as a significant marketing challenge. They were forced to borrow money from non-institutional sources at a high interest rate at a particular period.

6.2.2 Lack of transportation facilities

*Faria*s utilized a vehicle to transport potatoes from the farmers' home to the local market. Due to the bad state of the road, the cost was rather expensive. Wholesalers and *Bepari* utilized trucks, pick-up trucks, and sometimes *Votvoti* for potato trade. The table indicates that over 70% of intermediaries (56 of 80) identified inadequate communication and

transportation infrastructure as a marketing challenge for potato marketing. Due to inadequate communication and transportation infrastructure, dealers spent significant marketing costs in transporting their potato to the appropriate locations.

6.2.3 Lack of storage facilities

Wholesalers and *Bepari* stated that a significant volume of potato rotted owing to a lack of storage space. *Faria*s said that they were sometimes forced to sell their potatoes at a loss owing to a shortage of storage space. The table indicates that around 80% of intermediaries (64 of 80) cited a lack of storage facilities as a challenge in the potato sector. Due to a lack of suitable storage facilities, intermediaries reported that the maximum quantity of potato bought rotted.

Table 6.2: Problems faced by the intermediaries

Type of Problems	**Frequency**	**Percentage**
Inadequate capital	68	85.00
Lack of transportation facilities	56	70.00
Lack of storage facilities	64	80.00
Inadequate marketing facilities	52	65.00
Lack of adequate market information	68	85.00
High cold storage cost	72	90.00

Source: Field Survey, 2020

6.2.4 Inadequate marketing facilities

Additionally, the table indicates that 65 percent of intermediaries cited insufficient marketing capabilities as a concern (52 out of 80). They emphasized the absence of a dedicated market for potato marketing, much alone a shed or other market facilities.

6.2.5 Lack of adequate market information

Marketing data are critical in the potato trading industry. In potato trading, there was a dearth of appropriate market information. *Faria*s and wholesalers gathered market data by cell phone from other potato sellers and the present market scenario. Additionally, the *Bepari* gathered market data through cell phone from other *Bepari* situated in different markets. In the research region, there was an insufficient amount of market information about the potato industry. Around 85% of intermediaries (68 out of 80) cited a lack of market intelligence as a serious issue in the potato sector.

6.2.6 High cold storage charge

The intermediaries said that the cost of cold storage was excessive, despite the fact that some of them were forced to keep potatoes in cold storage due to a lack of low-cost storage facilities. The high commission and tax rates also harmed the players involved in potato marketing in the research region. Around 90% of intermediaries (72 of 80) had difficulties as a result of the high cost of cold storage.

6.3 Suggestions provided by farmers:

The Table 6.3 shows some suggestions which were suggested and ranked by the farmers to solve the problems.

Table 6.3: Ranking of suggestions provided by farmers

Suggestions		1	2	3	4	5	6	7	8
Adequate infrastructural facilities	N (%)	0	0	0	0	1 (3.3)	4 (13.3)	13 (43.3)	12 (40.0)
Reduction of price risk	N (%)	17 (56.6)	9 (30.0)	4 (13.3)	0	0	0	0	0
Easy access to credit	N (%)	0	1(3.3)	12 (40.0)	7 (23.3)	6 (20.0)	4 (13.3)	0	0
Establishment of standard cold storage	N (%)	0	0	9 (30.0)	8 (26.6)	12 (40.0)	1 (3.3)	0	0
Proper training	N (%)	11 (36.6)	9 (30.0)	2 (6.6)	5 (16.6)	3 (10.0)	0	0	0
Solve the problem of transportation	N (%)	3 (10.0)	8 (26.6)	1 (3.3)	6 (20.0)	1 (3.3)	11 (36.6)	0	0
Supply of adequate fertilizer, insecticide and pesticide	N (%)			2 (6.6)	17 (56.6)		9 (30.0)	2 (6.6)	0
Supply of quality seed	N (%)	0	0	0	0	6 (20.0)	0	16 (53.3)	8 (26.6)

Source: Field Survey, 2020

In the 1st ranking, it is seen that 17 out of 30 respondents thought that the reduction of price risk is required. Here the percentage of the respondents is 56.6%. Next, which is needed by farmers are both proper training and the reduction of price risk. As the reduction of price

risk is in 1st ranking, therefore, proper training will be in the 2nd position. Here the percentage of respondents is 36.6%; 9 out of 30 respondents responded this.

In the 3rd ranking, easy access to credit is required which is 40% of the total respondents. Supply of adequate fertilizer, and pesticides is in the 4th ranking. In the 5th ranking, establishment of standard cold storage is required by 40% of the respondents. In the 6th and 7th, respondents recommended to solve the problem of transportation (36.6%) and supply of quality seed (53.3%) respectively. Adequate infrastructural facilities is in 8th ranking by the respondents which is 40%.

6.4 Suggestions provided by the actors:

The Table 6.4 shows the suggestions provided by the actors involved in potato marketing channel. It is seen from the Table 6.4 that, majority of the respondents (80%) suggested adequate transportation facilities were required whereas 75% of the respondents suggested easy access to market information as the solution of the above problems.

Table 6.4: Suggestions provided by the actors

Suggestions	Frequency	Percentage
Adequate transportation facilities	64	80.00
Easy access to credit	48	60.00
Improve storage facilities	52	65.00
Sufficient marketing facilities	40	50.00
Easy access to market information	60	75.00
Reduce storage cost	56	70.00

Source: Field Survey, 2020

Besides, 70, 65, 60 and 50% of the respondents suggested the reduction of storage cost, improve storage facilities, easy access to credit, and sufficient marketing facilities as the solution respectively.

CHAPTER VII

KEY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Key finding, conclusion and recommendation was narrated from the chapter iv, v, vi of the present study.

7.1 Key findings

7.1.1 Age range of the respondents

Majority of the respondents (63.7% farmers, 51.07% *Faria*, 56.65% *Bepari*, 59.7% wholesaler and 60.3% retailer) belonged to the age group of 25-50 years.

7.1.2 Educational qualification of the respondents

Majority of the respondents (65.5% farmers, 51.45% *Faria*, 63.4% *Bepari*, 45.3% wholesaler and 67.8% retailer) have completed primary level education.

7.1.3 Existing marketing channel in Munshiganj district

The study found 4 intermediaries between producer and consumer. They are *Faria, Bepari*, wholesaler and retailer.Four mostly used marketing channels were found in case of potato at Munshiganj district from the study. They are:

ChannelI: Farmer-*Faria-Bepari*-Wholesaler-Retailer-Consumer

ChannelII: Farmer-*Faria-Bepari*-Retailer-Consumer

ChannelIII: Farmer-*Bepari*-Wholesaler-Retailer-Consumer

ChannelIV: Farmer-*Faria*-Wholesaler-Retailer-Consumer

7.1.4 Cost and Return Analysis of Potato Farmer

For 100 kg of potato, the total production cost was Tk. 825.44 and the selling cost was Tk. 162.89. If marketing costs are included in the entire production cost, the price per 100 kg of potato drops to Tk. 988.33. Besides, gross return was Tk. 1137.5 and variable cost was Tk. 584.12 for 100kg of potato. The total cost of potato cultivation per 100 kg, including

marketing costs, was Tk. 988.33. Additionally, the gross margin and net return were both Tk. Tk. 553.38 and 149.17 cents per 100 kg of potato

7.1.5 Marketing cost and margin analysis of *Faria*

Marketing cost: The *Faria* incurred an estimated average marketing cost of Tk.0.21 per kg potato. Market toll was the most expensive of the marketing cost categories, accounting for 47.62 percent of total cost.

Marketing margin: The value addition was Tk. 1.29 per kg of potato. The average cost of marketing a kg of potatoes was Tk. 0.21. *Faria*'s net marketing margin per kilogram of potato was Tk. 1.085.

7.1.6 Marketing cost and margin analysis of *Bepari*

Marketing cost: The *Bepari'*s projected average marketing cost per kg of potato was Tk. 1.61. Transportation was the most expensive component, accounting for 49.69 percent of total cost.

Marketing margin: The value addition was Tk. 2.44 per kg of potato. The average cost of selling a kilogram of potatoes was Tk. 1.61. For *Bepari*, the net marketing margin per kg of potato was Tk. 0.83.

7.1.7 Marketing cost and margin analysis of wholesaler

Marketing cost: The wholesaler's projected average marketing cost per kg of potato was Tk. 2.705. Among the total cost elements, storage cost was the most expensive, accounting for 27.73 percent of total cost.

Marketing margin: The value addition was Tk. 3.20 per kilogram of potato. The average cost of selling a kg of potatoes was Tk. 2.71. The wholesaler's net marketing margin per kilogram of potato was Tk. 0.50.

7.1.8 Marketing cost and margin analysis of retailer

Marketing cost: The retailers incurred an estimated average marketing cost per kg of potato of Tk. 1.62. Among the cost elements, transportation was the most expensive, accounting for 30.86 percent of the overall cost.

Marketing margin: The value addition was Tk. 2.75 per kilogram of potato. The average cost of selling a kg of potatoes was Tk. 1.62. The retailer's net marketing margin per kilogram of potato was Tk. 1.13.

7.1.9 Value Addition, marketing cost and net marketing margin of different market actors of potato

Faria added Tk. 1.29 per kg where *Bepari*, retailer and wholesaler added Tk. 2.44, Tk. 2.75 and Tk. 3.20 per kg respectively. In case of marketing cost *Faria* incurred Tk. 0.21 per kg while wholesaler incurred maximum marketing cost (Tk. 2.71) per kg of potato. But wholesaler made lowest marketing margin (0.50 Tk/kg) than other intermediaries. Besides retailer made highest marketing margin (1.13 Tk/kg) among the intermediaries.

7.1.10 Value addition, marketing cost and net marketing margin in different channel

Channel*I*: Value addition in channel I was 9.68Tk/kg, marketing cost was 6.15Tk/kg and net marketing margin was 3.545Tk/kg.

Channel*II*: Value addition in channel II was 6.48Tk/kg, marketing cost was 3.44Tk/kg and net marketing margin was 3.045Tk/kg.

Channel*III*: Value addition in channel III was 8.39Tk/kg, marketing cost was 5.94Tk/kg and net marketing margin was 2.46Tk/kg.

Channel*IV*: Value addition in channel IV was 7.24Tk/kg, marketing cost was 4.54Tk/kg and net marketing margin was 2.715Tk/kg.

7.1.11 Effective marketing channel of potato

Value addition was highest (9.68Tk/kg) in channel I and lowest (6.48Tk/kg) in channel II. Marketing cost was highest (6.15Tk/kg) in channel I and lowest (3.44Tk/kg) in channel II. And net marketing margin was highest (3.545Tk/kg) in channel I and lowest (2.46Tk/kg)

in channel III. As the net marketing margin was lowest in channel III, therefore channel III is more effective marketing channel in potato. I can change a marketing margin according to sharma,2010.

7.1.12 Major problems faced by farmers

Ninety percent of farmers cited low market prices for potatoes as a key issue, while eighty percent cited a lack of finance facilities as a major issue in potato production. The majority of farmers (73.33 percent) expressed dissatisfaction with the market's availability of high-quality seed during potato growing season. Lack of market facilities was cited as a difficulty in potato marketing by 46.67 percent of farmers, while market toll was cited as a problem by 70% of respondents. Additionally, 86.67 percent of farmers reported that high transportation costs and insufficient communication infrastructure were a barrier to getting their goods to market. Around 77% of growers reported being harmed by illnesses and insect attack during their potato growing. Sixty percent of farmers cited inadequate storage facilities and excessive cold storage charges as a hindrance to potato growth.

7.1.13 Problems faced by the intermediaries

85 percent of intermediaries identified insufficient finance as a major marketing challenge, while 70% identified limited communication and transportation infrastructure as a big marketing challenge. Additionally, 80 percent of intermediaries cited a lack of storage space as a challenge in the potato sector. Inadequate marketing facilities were cited as an issue by 65% of respondents. Eighty-five percent of intermediaries cited a lack of market intelligence as a significant issue in the potato sector. Ninety percent of respondents had difficulties as a result of the high cost of cold storage.

7.1.14 Suggestions provided by farmers

In the 1st ranking, it is seen that 56.6% of the respondents thought that the reduction of price risk is required. Next, which is needed by farmer is proper training. Here the percentage of respondents is 36.6%. In the 3rd ranking, easy access to credit is required which is 40% of the total respondents. Supply of adequate fertilizer, insecticide and pesticide is in the 4th ranking. In the 5th ranking, the establishment of standard cold storage

is required by 40% of the respondents. In the 6th and 7th, respondents recommended solving the problem of transportation (36.6%) and supply of quality seed (53.3%) respectively. Adequate infrastructural facilities are in 8th ranking by the respondents which is 40%.

7.1.15 Suggestions provided by the actors

Majority of the respondents (80%) suggested that adequate transportation facilities are required whereas 75% of the respondents suggested easy access to market information as the solution of the above problems. Besides, 70%, 65%, 60% and 50% of the respondents suggested for the reduction of storage cost, improve storage facilities, easy access to credit and sufficient marketing facilities as the solution of their problems respectively.

7.2 Conclusions

Potato is critical for the agricultural sector's development and sustainability, as well as for Bangladesh's national economy. It immediately helps to employment creation, food security, nutrition, and poverty reduction. According to the report's findings, there seems to be great room for increasing potato yield and improving the value chain. Increased potato farming has the potential to improve the living standards of value chain function regions. Potatoes are not just a source of nutrition; they also provide farmers with a source of financial revenue. A sizable number of people are engaged in the processing and selling of potatoes. Thus, growers and intermediaries stand to profit financially from a well-developed potato production and selling system. To help stabilize potato prices, it is critical to estimate potato prices and production targets well in advance of planting, so that farmers may adjust their potato acreage appropriately. Price volatility may be reduced by using a buffer stock effectively. Government intervention in potato marketing is critical to ensuring a fair price for farmers by managing these unexpected price changes. Farmers involved in potato production lacked the financial means to fully exploit marketing channel opportunities. They were unable to get a higher price for potatoes stored during the off season. The government should make credit available at a reasonable interest rate. Processing options were not available in the research region. The processor used a combination of local and traditional techniques. Thus, more value might be created more effectively if the processing sectors received technological and financial assistance. Grading and standardizing facilities should be correctly used to ensure efficient potato marketing. A significant difficulty was the lack of timely and accurate market information. As a result, market information should likewise be widely available and accessible to producers and performers. Finally, agro-processing businesses were desperately required in the research region. To establish a successful potato marketing channel, all parties, including farmers, need have appropriate knowledge, financial aid, and a well-developed transportation infrastructure.

7.3 Recommendations

In order to boost potato production and marketing in Bangladesh, credit facilities should be increased. To resolve this problem, numerous financial organizations and governments should come forward.

- The producer must be provided with an adequate supply of inputs. Adequate inputs include fertilizers, seeds, irrigation, and other potato-related infrastructure.
- Input costs should be minimized. The cost of inputs is the impediment to potato production. Reduced input costs would result in more output and a monopoly on demand.
- All of the farmers in the sample said that a significant challenge in potato marketing was low pricing. Farmers in the targeted regions have not achieved a reasonable return on potato farming due to a lack of remunerative pricing. The price of potatoes decreases year after year throughout the season, and producers confront serious difficulties. The government should establish a market policy aimed at assisting potato farmers and marketers.
- The majority of farmers in the study region reported that a key issue was a scarcity of high-quality seed. They were unable to get the needed grade of excellent seed due to an inadequate quantity to fulfill consumer demand. As a result, the manufacturers employed their own conserved seeds and, on occasion, indigenous types of seeds. As a consequence, they received a meager harvest of potatoes. During the growing season, the supply of high-quality seeds should be increased.
- The majority of growers in the research region reported that high cold storage charges were a significant issue when it came to potato storage. Cold storage fees should be cut.
- Governments and private firms should also oversee the creation of a low-cost community-based cold storage facility at the farmer level, the commercial counselor's discovery of new export markets in Bangladesh, and the campaign to increase potato consumption.
- Developing a regular flow of information amongst the market actors is required.

- Transportation costs are extremely high, as are marketing costs. In potato marketing, transportation costs play a critical role. To decrease the marketing cost of potatoes on the market, transportation cost should be minimized.
- In Bangladesh, market facilities are not adequate. In order to boost potato production and growth, various market facilities in Bangladesh have to be developed in the study areas.
- The marketing system remained governed by the marketing actors, who retained a stronger bargaining position when setting potato prices. Since a consequence, the majority of farmers were compelled to sell their potatoes at a loss, as there was no way to market the crop without incurring extra marketing expenses and danger of potato damage. Therefore, the domination of marketing actors must be controlled and minimized.
- Training need assessment for both farmers and intermediaries
- The development of skills and capacity building, addressing all aspects of potato production in compliance with Good Agricultural Practice (GAP) codes, would increase production quality and add value. This will also improve farmers' awareness and skills. It may include-
  - ✓ Organized contractual arrangement for production and timely supply.
  - ✓ Quality seed production, preservation and use
  - ✓ Linkage with processors, exporters and farmers
  - ✓ Improved techniques for production
  - ✓ Soil, fertilizers and the control of pests
  - ✓ Techniques for better harvesting and post-harvest management of potatoes
- In general, potato marketing channel actors do not have sufficient and adequate knowledge and understanding of different aspects of potato production, post-harvest handling, grading, packaging and cool chain management and processing. Therefore, Government should take necessary measures for improving the knowledge and understanding of marketers on these issues.

- A significant issue faced by producers in potato cultivation was disease and pest attack in the study area. They also stated that they were not well qualified in their potato cultivation with regard to pest and disease control measures. By providing the farmer with proper assistance, BADC and other organizations may resolve the issue.

REFERENCES

Abbot, J. and P. Makeham, (1981). Agricultural economics and marketing in the tropics. Wing Tai Cheung Printing Co. Ltd, Rome. 58pp.

Backman, T. and R. Davidson, 1962. Marketing principle. *The Ronal PressesCo*. NY. pp. 3-24.

BBS, (2007). Bangladesh Bureau of Statistics. Vegetables Production Statistics, 2011. Dhaka, Bangladesh.

BBS, (2017). Bangladesh Bureau of Statistics. Statistical Year Book of Bangladesh, Bangladesh Statistics Division, Ministry of Planning, Govt. of the People's Republic of Bangladesh.

Benedek, Z., Fertő, I., Baráth, L., and J. Tóth. (2014). Factors Influencing the Decision of Small-scale Farmers on Marketing Channel Choice: a Hungarian Case Study. In Factors Influencing the Decision of Small-scale Farmers on Marketing Channel Choice: a Hungarian Case Study. pp. 26–29. Slovenia: Ljubljana.

Blandon, J., S. Henson and J. Cranfield. 2009. Small-scale farmer participation in new agri-food supply chains: case of the supermarket supply chain for fresh fruit and vegetables in Honduras. Journal of International Development **21**: 971-984

Bongiwe G. Xaba, M. B. (2013). Factors Affecting the Choice of Marketing Channel by Vegetable Farmers in Swaziland. *Sustainable Agriculture Research,* **2**(**1**).

Chirwa, E. (2009). Determinants of Marketing Channels among Smallholder Maize Farmers in Malawi.

Christopper Sebatta, J. M. (2014). Smallholder Farmers' Decision and Level of Participation in the Potato Market in Uganda. *Modern economy,* 895-906.

De, A.K. and Bhukta, A. (1994). Marketing of potato in West Bengal: An economic view of Agricultural Marketing,**36**(**4**):36-44.

Dolon, M. I. (2018). Potato cultivation and its effect on income generation: a study in Thakurgaon district. Department of development and poverty studies Sher-e-bangla Agricultural University, Dhaka-1207.

Elias, S. M. and Nazrul M. I. (1982). Socio-economic Assessment of improved Technology of potato and Identification and Constraints to its higher production. Agricultural Economics Research Report No. 4. Joydebpur, Agricultural Economics Division, BARRI.

FAO. (2019). Statistical database. Food and Agricultural Organization of United Nations (FAO). Rome, Italy.

Ferto, I. and Szabo, G.G. (2002). The choice of the supply channels in Hungarian fruit and vegetable sector. Research Papers in Economics.

Fischer, E. and Qaim, M. (2012) Linking Smallholders to Markets: Determinants and Impacts of Farmer Collective Action in Kenya. *World Development*, **40**:1255-1268.

Gereffi, G. (1999). A commodity chains framework for analyzing global industries. Workshop on spreading the gains from globalization, University of Sussex, Institute of Development Studies.

Hajong, P. (2011). Marketing and Storage System of Potato in Some Selected Areas of Rangpur District. M.S. Thesis, submitted to the Department of Agribusiness and Marketing, Bangladesh Agricultural University, Mymensingh. Bangladesh.

Hajong, P. (2011). Marketing and Storage System of Potato in Some Selected Areas of Rangpur District. M.S. Thesis, submitted to the Department of Agribusiness and Marketing, Bangladesh Agricultural University, Mymensingh. Bangladesh.

Holloway, G. and S. Ehui, (2002). Expanding market participation among smallholder livestock producers: A collection of studies employing Gibbs sampling and data from the Ethiopian highlands. Socio-economic and Policy Research Working Paper 48. ILRI, Nairobi, Kenya.

Hortex Foundation, (2011). Horticulture Export Development Foundation, Newsletter, July-September, 2011. Dhaka, Bangladesh.

Hossain, A. M. J. (2004). Potato Marketing in a Selected Area of Bogra District. M.S. Thesis, submitted to the Department of Cooperation and Marketing, Bangladesh Agricultural University, Mymensingh. Bangladesh.

Hossain, M., Lal, B. M. and Chowdhury. A. (2001). Changes in agriculture and economy in the flood-prone environment in Bangladesh, 1998-2000, Workshop on Flood-prone Rice Systems held from 9-11 January 2001, at BRAC Center for Development Management, Rajendrapur, Gazipur, Bangladesh.

Ilangantilekel, S. G., M. S. Kadian, M. Hossain, A. E. Hossain, U. Jayasinghe and Mahmood, A. A. (2000). Toward alleviating poverty of rural potato farmers by strengthening the potato seed system in Bangladesh: A rapid rural appraisal. CIP Program Report, 1999- 2000. [http://www.cipotato.org/potato/tps/docs/32seedBangldsh.pdf].

Islam, M.T. (1987). An Economic Study of Potato Preservation in Cold Storage in Some Selected Areas of Bangladesh. M.Sc. Thesis, submitted to the Department of Cooperation and Marketing, Bangladesh Agricultural University, Mymensingh. Bangladesh.

Kaplinsky, R. and M. Morris, (2001). A handbook for value chain research, IDRC. Ottawa, Canada. Kaplinsky, R. and M. Morris, 2001. A handbook of value chain analysis. Working paper prepared for the IDRC, Institute for Development Studies, Brighton, UK.

Kawsar, K.M. (2001). An Economic Analysis of Diamant Potato Production in Some Selected Areas of Bangladesh. M.S. Thesis, submitted to the department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.

Khondaker, K., (2004). The potato marketing system and its changes in Bangladesh: from the perspective ofa village study in Comilla district. *The Developing Economies*, 63−94.

Kohls, R., and N. Uhl, (1985). Marketing of agricultural products. 5th Edition. McMillian Publishing Company, New York, USA.

Kotler, P. and G. Armstrong, (2003). Principle of marketing, 10th Edition. Hall of India Pvt. Ltd. New Delhi. pp 5-12.

Lewis D. J. (1991). Technologies and transactions: a study of the interaction between new technology and agrarian structure in Bangladesh. Center for Social Studies, Dhaka University, Dhaka, Bangladesh.

Mendoza, G., (1995). A premier on marketing channel and margins. Lyme Rimer Publishers Inc., USA.

Mukiama, B. K., Suphanchaimatand, N., and Sriwaranun, Y. (2014). Factors influencing vegetable farmer's choice of marketing channel in KhonKaen, Thailand. *KHON KAEN AGR Journal*,**42**(**4**):595-604.

Omar, M. I., & Hoq, M. S. (2014). Analysis of growth rate, marketing efficiency and seasonal price variation of potato in selected areas of Bangladesh. *Journal of Natural Sciences Research*,**4**(**5**).

Reardon, T., Chen, K., Minten, B. and Adriano, L. (2012). The quiet revolution in staple food value chains. ADB and IFPRI, Mandal-nyong, Philippines.

Resource Management in the Tropics and Subtropics (ARTS). Germany.

Sabur, S. A. (2004). Marketing efficiency of different channels for potato in selected areas of bangladesh. *Bangladesh Journal of Agricultural Economics*, **5**(**3**):67-79.

Saiyem, M. A. (2007). Marketing System and Price Behaviour of Potato in Selected Areas of Rangpur District. M.S. Thesis, submitted to the Department of Cooperation and Marketing, Bangladesh Agricultural University, Mymensingh. Bangladesh.

Saklayen, M.G. (1999). Marketing of Potato in Some Selected Areas of Munshiganj District. M.S. Thesis, submitted to the Department of Cooperation and Marketing, Bangladesh Agricultural University, Mymensingh. Bangladesh.

Sarma, P. (2010). Price spread and marketing efficiency of sweet (Ipomoea batatas (L) Lam) IN Kshoregonj district: a micro-level study. Mymensingh: Bangladesh Agricultural University Research System (BAURES).

Scarborough, V. and J. Kydd, (1992). Economic analysis of agricultural markets. A manual of marketing series 5, Chatham, UK: Natural Resource Institute: 172p.

Siddique, M. N. A., Islam, M. M., Halim, M. A., Kamaruzzaman, M., Sultana, J. and D Karim, (2014). Mapping of site-specific soil spatial variability by geo-statistical technique for textural fractions in a Terrace soil of Bangladesh. *Journal of Bioscience and Agriculture Research*. **1**(**1**): 08-16.

Tsourgiannis, L., Eddison, J. and Warren, M. (2008). Factors affecting the marketing channel choice of sheep and goat farmers in the region of east Macedonia in Greece regarding the distribution of their milk production. *Small Ruminant Research*,**79**:87–97.

APPENDICES

INTERVIEW SCHEDULE FOR FARMER

1. Identification:

Name :	Age :
Occupation :	Village :
Upazilla :	Mobile :

2. Identification of land:

Types of land	Area (Decimals)
Owned Cultivated	
Taken for share cropping	
Rented in	

3. Cost of Potato Cultivation :

Cost Items	Cost (Tk / 40 kg)
Variable Cost	
1.Human and labor cost	
2. Land Preparation	
3. Seed	
4. Fertilizer	
5. Insecticides	
6. Irrigation	
Fixed Cost	
Rented value of land	
Interest on operating capital	

4. After Production cost :

Cost Items Cost)	Cost (Tk / 40 kg)
1. Gradling, washing, sorting	
2. Transportation cost	
3. Loading and unloading	
4. Market toll	
5. Personal expense	
6. Unofficial payment	
7. Cold storage change.	

5. Problem about potato :

6. Probable Solutions to your problem:

7. Selling price (tk/40kg)/Season/yearly/monthly/week

8. To whom you sell your produce?
(Bepari/Paiker/Wholesaler/Aratder/Retailer/Consumer

Signature:Date :

INTERVIEW SCHEDULE FOR BEPARI

1. Identification of respondent:

Name :	Age :
Occupation :	Village :
Upazilla :	Mobile :

2. From where do you buy potato? Farmer / Faria / W.S / Aratdar
3. Does the price vary for different sellers? Yes / No
4. Cost of Potato Purchase (Farmer / Faria / wholesaler)

Cost Items	Cost
1. License	
2. Loading and unloading	
3. Transportation	
4. Storage cost	
5. Market cost	
6. Grading	
7. Mobile charge	
8. Personal expenses	
9. Unofficial expenses	
10. Purchase price	
11. Sales price	
12. Others	

5. Where do you sell your potato?
6. Are you involved in storing? Yes / No
7. What are the main problems of your business?
8. What are the solutions?

Signature: Date :

INTERVIEW SCHEDULE FOR FARIA

1. Identification of respondent:

Name :	Age :
Occupation :	Village :
Upazilla :	Mobile :

2. From where do you buy potato? Farmer / Bepari / W.S / Aratdar

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

4. Cost of Potato Purchase (Farmer / Faria / wholesaler)

Cost Items	Cost
1. License	
2. Loading and unloading	
3. Transportation	
4. Storage cost	
5. Market cost	
6. Grading	
7. Mobile charge	
8. Personal expenses	
9. Unofficial expenses	
10. Purchase price	
11. Sales price	
12. Others	

5. Where do you sell your potato?
6. Are you involved in storing? Yes / No
7. What are the main problems of your business?
8. What are the solutions?

Signature: Date :

INTERVIEW SCHEDULE FOR WHOLESALER

1. Identification of respondent:

Name :	Age :
Occupation :	Village :
Upazilla :	Mobile :

2. From where do you buy potato? Farmer / Bepari / Faria / Aratdar

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

4. Cost of Potato Purchase (Farmer / Faria / wholesaler)

Cost Items	Cost
1. License	
2. Loading and unloading	
3. Transportation	
4. Storage cost	
5. Market cost	
6. Grading	
7. Mobile charge	
8. Personal expenses	
9. Unofficial expenses	
10. Purchase price	
11. Sales price	
12. Others	

5. Where do you sell your potato?
6. Are you involved in storing? Yes / No
7. What are the main problems of your business?
8. What are the solutions?

Signature: Date :

INTERVIEW SCHEDULE FOR RETAILER

1. IDENTIFICATION OF RESPONDANT:

Name :	Age :
Occupation :	Village :
Upazilla :	Mobile :

2. From where do you buy potato? Farmer / Bepari / W.S / Aratdar
3. Does the price vary for different sellers? Yes / No
4. Cost of Potato Purchase (Farmer / Faria / wholesaler)

Cost Items	Cost
1. License	
2. Loading and unloading	
3. Transportation	
4. Storage cost	
5. Market cost	
6. Grading	
7. Mobile charge	
8. Personal expenses	
9. Unofficial expeses	
10. Purchase price	
11. Sales price	
12. Others	

5. Where do you sell your potato?

6. What are the main problems of your business?

7. What are the solutions?

Signature: Date :