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MARKETING AND VALUE CHAIN ANALYSIS OF GINGER: A STUDY IN SELECTED AREAS OF BANGLADESH

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Abstract

Ginger is one of the most common and popular high value spice crop and is widely used both in medicinal and culinary purposes. The study was undertaken to determine marketing system, marketing cost, margin, efficiencies and to examine the value chain of ginger aiming at determining the value addition in different steps of ginger marketing. A purposive and simple random sampling procedure was used in selecting primary data. Four major marketing channels were identified for domestic produced ginger marketing. Channel-3 was the most important supply chain through which 48 percent domestic produced ginger reaches to consumers. Marketing margin and profit were the highest in retailer than those of other intermediaries. Six actors like; farmer, local trader, trader, commission agent, wholesaler, retailer and consumer are identified who are involved in the ginger value chain activities. Farmer added the highest amount of value per unit of ginger and that of the lowest in wholesalers. Eleven marketing problems were identified, among them price fluctuation, high transport cost and lack of loan facilities were the major problems. It is therefore, recommended that government intervention is urgently needed to stabilize the price of ginger, loan facilities should be provided to the intermediaries and transportation cost should be kept reasonable.

Keywords: Ginger, marketing system, marketing efficiency and value chain

1. Introduction

Ginger has been used throughout recorded history for both medicinal and culinary purposes. Ginger is also used for the preparation of ginger oil, oleoresin, essences and tinctures (Bose *et al.*, 1999). It is a principal ingredient in the Bangladeshi kitchen as curry paste. More people are discovering its culinary splendor, and producers have found ginger to be a potentially highly profitable crop. Bangladesh produces 84.89 thousand metric tonnes of ginger per year that are mostly added in value chain activities (BBS, 2020). In most cases, poor storability and seasonality lead to market variations in quantity and quality of ginger and its associated price

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swings. The rising consumer price for ginger may be an indication of market inefficiency. The nonfarm dimensions of rural development – particularly in agricultural marketing and agro-processing often prove critical to successful agricultural growth (Abbott, 1986). Without well-functioning agricultural markets, productivity gains on the farm lead to temporary production surges and price collapses. Improved market access proves necessary for maintaining production incentives, permitting household specialization and enabling movement to high-value products and to value-added activities. Value chains provide a valuable visual framework for understanding the structural connective tissue linking small farmers with input suppliers, processors, traders and final consumers.

In highly competitive and increasingly global agribusiness markets, poor households must find niches in which they can compete effectively in the rapidly growing urban, rural and export markets. Yet the large agribusiness that increasingly drive change in agricultural value chains seek to reduce costs and raise profits, often by scaling up production and market share, reducing the number of suppliers they deal with and squeezing supplier prices (Reardon and Timmer, 2007). Marketing in developing countries such as Bangladesh is beset with a lot of problems, which constitute a bottleneck to the flow of goods and services. Such problems include seasonal variations, transportation of harvested produce, storage, processing, grading and communication (Ikechi, 2006). According to Arene (1999) efficiency is used to evaluate marketing performance. Performance can be achieved using the following approaches-marketing margin, net-returns and marketing efficiency ratios. Therefore, there is the need to assess the performance of the market to determine the efficiency of the ginger marketing system in Bangladesh. Despite the research and development efforts in improving the production and productivity of ginger in Bangladesh, little has been done to improve the performance of the entire ginger value chain.

But there is no policy to encourage farmers to produce exportable surplus, consequently, supplies are often unreliable. There is lack of information regarding markets for ginger, especially among the producers and traders. Farmers do not get fair price because of their low bargaining power, lack of market information, poor storage facilities, immediate cash need, etc. Therefore, the study was taken to measure the existing marketing system, marketing margin, marketing efficiency and finally to examine the value chain of ginger aiming at determining the value addition in different steps of marketing channel. The study is important to businessmen, farmers as well as to policy makers for planning future production, import, export, price stabilization measures, etc.

2. Methodology

Primary data were used for the study. For the collection of primary data, Nilphamari and Lalmonirhat districts were selected purposively depending upon the concentration of production and commercially marketing of ginger. In these study

areas, three types of markets such as primary, secondary and consumer market were selected. However, to examine the value chain of ginger aiming at determining the value added to marketed ginger in different steps of marketing channel, city markets of Dhaka and Rajshahi were selected. Purposive and simple random sampling techniques were used to pick a sample. A total of 80 farmers taking 40 from each area were selected randomly. Twenty four local traders (collectors), 30 traders, 10 commission agents, 20 wholesalers and 30 retailers were selected from the above selected areas including major consuming areas in Dhaka and Rajshahi. Two sets of pre-tasted interview schedule, one for farmers and the other for intermediaries were used for collection of data using survey method. Primary data were collected by face-to-face interview during 2016-17 cropping season.

Analytical technique

The collected data and information were reduced to tabular form which included classification of tables into meaningful results by using arithmetic mean, percentage and ratio. For ginger marketing, intermediaries involved in marketing channel were identified and marketing costs and margins, and profits of intermediaries were determined by using tables and flow diagrams. Value chain and value addition to ginger were shown by using flow channel and table. Except this the following analytical techniques were used for the study.

Cost and return Analysis: Following profit equation was employed to assess the profitability of production.

$$\pi = P_F.Q_F - (TVC + TFC)$$

Where, π=Profit of producer per hectare, P_F = per unit price of ginger (Tk/qt), Q_F = Quantity of ginger (Qt/ha), TVC = Total variable cost ginger, TFC = Total fixed cost of ginger

Marketing Efficiency: Efficient marketing plays an important role in increasing the producer's share in consumer's taka and maintains the tempo of increased production. Three indicators were used for measuring efficiency in different marketing channels. These indicators are (i) marketing cost; (ii) marketing margin and (iii) Percentage of producer's share of ginger

Marketing cost: The total marketing cost was determined by the following formula

$$Tc = Cp + \sum Mci$$

Where, Tc= Total cost of marketing, Cp= Producer cost of marketing

Mci= Marketing cost by the ith trader

Marketing margin: The absolute margin of the middleman, wholesaler, trader and retailers were determined by the following formula

$$MM = SP - PP$$

Where, MM= Marketing margin, SP= Selling price, PP= Purchase price

The cost of marketing was calculated and the low cost marketing channel was ranked I and that which was the highest cost as the last. The same approach was followed in ranking the margin of middlemen in each channel.

Producer's share: The producer's share was calculated by the following formula and the channel which was highest producer's share was ranked (1) and first and vice-versa.

$$\text{Percentage of producers' share} = \frac{P_{pi}}{P_{ri}} X100$$

Where, P_{pi}= Producer's share in the ith channel, P_{ri}= Average price at the retail level in each channel, i= Number of channels (i=1, 2....., n)

Marketing efficiency: Marketing efficiency is a complicated topic to be defined. It carries different meanings to different persons. Four methods like i) Shephred Method ii) Acharya and Agarwal Method iii) Composite Index Method and iv) Marketing Efficiency Index Method are usually used to calculate the marketing efficiency. However, Composite Index method was followed to estimate marketing efficiency for the present study. As per this method, the percentage of producer's price, marketing cost, marketing margin and marketing profit per 100 kg of ginger was calculated and these were assigned ranks. Total scores were found by adding the respective ranks in each channel. The mean scores were calculated for each channel. Where the mean score was less, it was efficient channel.

$R = \frac{R_i}{N_i}$, Where, R_i= Total value of ranks of all indicators (I_1, I_2 and I_3), N_i= Number of indicators

Value Addition by traders

Value Addition= Gross margin-Marketing cost

Gross Margin=Sale price-Purchase price

3. Results and Discussion

Marketing and value chain system of ginger: Marketing is the connecting link between the producers and consumers. Through marketing system, ginger being a semi perishable commodity, reaches the consumer in acceptable condition. The marketing system operates through a set of intermediaries performing useful commercial functions in a chain all the way from the producers to the final consumers.

An efficient marketing system is essential for earning fair profit for the ginger farmers and traders. In the study areas, the whole marketing of ginger has been broken down into various functions such as buying and selling, transportation, grading, storing, weighing, market information and pricing.

Involvement stakeholders and intermediaries: The major intermediaries performed marketing functions are farmer, local traders, traders, commission agent, wholesaler, retailer and consumer.

Farmer: The farmers of Nilphamari and Lalmonirhat, sell their ginger at home to local trader or at local market to local trader or trader. In few cases, the farmer sold their ginger to wholesaler, retailer and consumer in order to have good price. The farmer sold 74% of their ginger to trader and 18% to local trader. Farmer also sold a few amount of ginger to wholesaler (5%) and retailer (2%) through commission agent (Table 1).

Local trader: Local traders are usually operating in the ginger marketing system who purchases small quantity (400-600 kg) of ginger from farmer from their houses or from the local market and carry it to the terminal point and sell 100% of ginger to trader (Table 1).

Trader: Traders are professional ginger traders and they purchased 74% of ginger from farmer and 26% from local trader and sold their consignment to the wholesalers (44%) and retailers (56%) through commission agents (Table 1). Usually, they purchase ginger from the farmer in local market and bring their ginger to different commission agent's centre for sale. They are professional businessmen and have wide experience in ginger marketing.

Commission agent: The commission agents are main actors in the ginger distribution system. A commission agent arranges or negotiates sales for the sellers on commission basis. The commission agent has a fixed establishment and helps the traders to sell their products and charges usually a fixed commission of Tk.50.11 per 100 kg ginger for sellers and Tk.100.00 for buyer for the same amount of ginger. They provide short period storage facilities and also help to perform the function of grading. Sometimes the commission agents advance loan to traders on the condition that the traders have to sell ginger through them. Commission agents are also organized and they need license for operating the business.

Wholesalers: Wholesalers are the secondary traders who transact large volume of product. They purchased most of the ginger (95%) from trader through commission agent from district market and sold their entire product to district or upazila retailer. Wholesaler sold 100% of their ginger to retailer.

Table 1. Percent of domestic produced ginger transacted by value chain actors

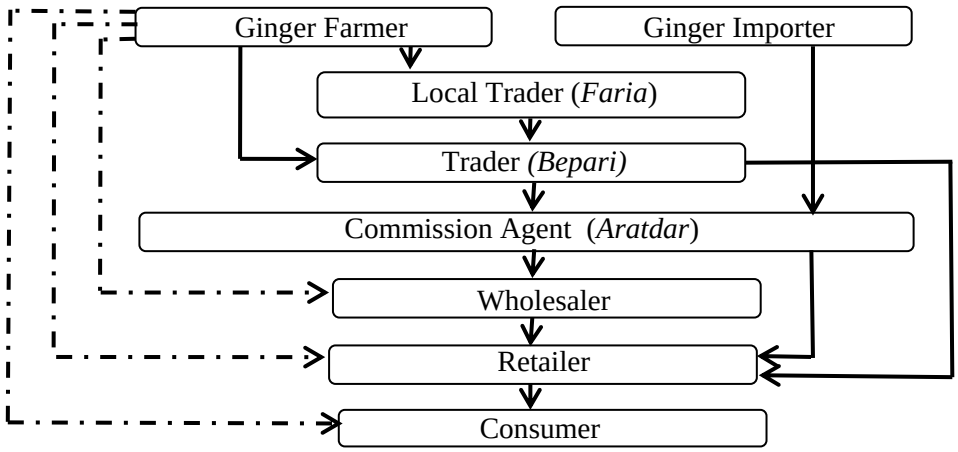
Value chain actor	Purchase from (%)					Sold to (%)				
	Farmer	Local trader	Trader	Wholesaler	Retailer	Local trader	Trader	Wholesaler cum CA*	Retailer cum CA*	Consu-mer
Farmer	100	-	-	-	-	18	74	5	2	1
Local trader	100	-	-	-	-	-	100	-	-	-
Trader	74	26	-	-	-	-	-	44	56	-
Commission agent	Commission agent negotiates between buyers and sellers of ginger and helps them at their own business premises on receipt of commission									
Wholesaler	5	-	95	-	-	-	-	-	100	-
Retailer	2	-	48	50	-	-	-	-	-	100
Consumer	1	-	-	-	99	-	-	-	-	-

Source: Field survey (2017) * Commission agent

Retailers: The retailers form the last link in the ginger marketing chain. They bought a large portion of ginger from wholesaler (50%) and traders (48%) through commission agent. Retailers sold the entire ginger to ultimate consumers (Table-1).

Marketing and Supply Channel of Ginger: Marketing channels are the alternative routes of product flows from producers to consumers (Kohls and Uhl 2005). The supply chain for ginger can involve a large number of stakeholders between farmer and the final consumer. The entire set of processes and activities required to produce a product and these deliver to a target market is considered as supply chain. Flow chart 1 showed the two ways distribution and supply chain of ginger. One is farmer produced which come to market after storage and processing. Other supply chain is where usually imported ginger is being distributed through marketing channel. Flow Chart 1 and Table 2 and Table 3 showed how ginger is being distributed from farmer or importer to ultimate consumers through intermediaries involved in supply chain of marketing system.

In the channel of ginger marketing in Bangladesh, the product moves from producer to ultimate consumer through a number of market intermediaries. There prevailed a several number of marketing channels of ginger in the study areas, which have been presented in Table 2. But all the channels were not equally important in the study area. Some channel handled only a negligible portion of supply of ginger. According to the volume of ginger handled and longevity or participation of the middlemen in the channel; the following four channels were identified as dominant in marketing of domestic ginger. So, the efficiency of the following four major channels was measured.



Flow Chart 1. Ginger marketing flow chart in Bangladesh (Solid lines are major flow and dotted lines are minor flow)

Table 2. Domestic produced ginger marketing channel in Bangladesh

Channel	Marketing channel	Ginger run (%)	Rank (I)
1.	Farmer→Local trader→Trader→ Commission agent →Wholesaler→ Retailer→ Consumer	18	III
2.	Farmer→Trader→ Commission agent →Wholesaler→ Retailer →Consumer	26	II
3.	Farmer→ Trader→ Commission agent → Retailer →Consumer	48	I
4.	Farmer→ Wholesaler→ Retailer →Consumer	5	IV
5.	Farmer→ Retailer →Consumer	2	V
6.	Farmer→ Consumer	1	VI

Source: Field survey (2017)

Table 2 showed, Channel-3 (Farmer → Trader → Commission agent → Retailer → Consumer) is the most important supply chain through which 48% domestically produced ginger reach to consumers. Twenty six percent (26%) of ginger runs through the Channel-2 (Farmer → Trader → Commission agent → Wholesaler → Retailer → Consumer) and 18% through Channel-1 (Farmer → Local trader → Trader → Commission agent → Wholesaler → Retailer → Consumer). Only 5% ginger run through the Channel-4 from farmer to consumer.

Marketing Cost, Margin and Profit of different Intermediaries: According to Kohls and Uhl (2005), marketing margin in a sense is the price of all utility adding activities and functions that are performed by the intermediaries. It is also termed as price spread as it represents the difference between the buying and selling price.

Total marketing margin is the difference between the price received by farmer and the price paid by the final consumers. Marketing margin and marketing cost are usually used to estimate the profitability of intermediaries involved in ginger marketing. However, marketing cost and marketing margin of respective categories of intermediaries are the main determinants of the profitability in marketing of ginger.

Table 3. Imported ginger marketing channel in Bangladesh

Channel	Marketing channel	Ginger run (%)	Rank (I)
1.	Importer→ Commission agent →Wholesaler→ Retailer →Consumer	44	II
2.	Importer→ Commission agent → Retailer →Consumer	56	I

Source: Field survey (2017)

Table 4. Marketing cost of involved in ginger trading in domestic market (Tk./100 kg)

Cost items	Farmer	Local trader	Trader	Commiss-ion agent	Whole-saler	Retailer	Total	% of total
Storage	6.11	5.12	6.25	-	10.21	-	27.69	2.28
Sorting	25.12	10.02	12.13	-	11.75	-	59.02	4.86
Weighing and Packaging	-	5.3	7.61	7.8	5.25	-	25.96	2.14
Loading and unloading	-	-	30.24	-	25.11	-	55.35	4.56
Transportation	25.24	22.11	105.17	-	50.41	40.15	243.08	20.04
Market tolls	20.23	15.18	8.5	10.03	12.32	12.16	78.42	6.46
Wage and salaries	-	15.3	25.21	15.11	21.34	-	76.96	6.34
Commission	-	-	50.11	-	100	100.15	250.26	20.63
House/shop rent	-	-	12.06	8.55	6.25	9.42	36.28	2.99
Electricity	-	-	1.52	1.52	1.32	0.13	4.49	0.37
Telephone bill	-	1.5	3.31	2.43	1.21	1.1	9.55	0.79
Personal expenses	8.12	8.14	15.03	10.5	8.23	7.21	57.23	4.72
Tips and donation	-	10	8.21	5.51	6.23	3.42	33.37	2.75
Wastage	-	50.12	52.34	-	25.21	105.02	232.69	19.18
Others	2.1	2.12	2.08	12	2.45	2.13	22.88	1.89
Total	86.92 (7.16)	144.91 (11.9)	339.77 (28.0)	73.45 (6.1)	287.29 (23.7)	280.89 (23.2)	1213.2 (100)	100

Source: Field survey (2017). Note: Figures within parenthesis indicate percentage.

Marketing cost at different levels of market

Marketing costs represent the cost of performing various marketing functions which are needed to transfer a commodity from the place of production to the ultimate consumers. The payment of commission makes the marketing cost higher for trader, wholesaler and retailer, respectively. However, marketing costs per 100

kg of ginger were estimated to be Tk.86.92, 144.91 and 339.77 for farmer, local trader and traders, respectively. On the other hand, wholesaler and retailer expensed Tk 287.29 and 280.89 as marketing cost for ginger marketing, respectively (Table 4). Channel-wise marketing cost is shown in Table 5. It was observed that Channel -1 incurred the highest marketing cost (Tk.1213.23/100 kg) followed by Channel-2 (Tk.1068.32/100 kg) and Channel-3 (Tk.781.03). Lowest marketing cost was found in Channel-4 and it was Tk.665.10 (Table 5). Highest numbers of intermediaries were involved in Channel-1 which was the main reasons for higher marketing cost.

Table 5. Marketing cost of indigenous ginger for different major channel (Tk./100 kg)

Cost Items	Channel			
	Channel 1	Channel 2	Channel 3	Channel 4
Storage	27.69	22.57	12.36	16.32
Sorting	59.02	49.00	37.25	36.87
Weighing and Packaging	25.96	20.66	15.41	5.25
Loading and unloading	55.35	55.35	30.24	25.11
Transportation	243.08	220.97	170.56	115.8
Market tolls	78.42	63.24	50.92	44.71
Wage and salaries	76.96	61.66	40.32	21.34
Commission agent's commission	250.26	250.26	150.26	200.15
House rent/Shop rent	36.28	36.28	30.03	15.67
Electricity	4.49	4.49	3.17	1.45
Telephone bill	9.55	8.05	6.84	2.31
Personal expenses	57.23	49.09	40.86	23.56
Tips and donation	33.37	23.37	17.14	9.65
Wastage	232.69	182.57	157.36	130.23
Others	22.88	20.76	18.31	6.68
Total	1213.23	1068.32	781.03	655.1

Source: Field survey (2017).

Marketing margin and profitability: In respect of market margin and profitability of intermediaries involved at different levels, there is a variation in market scenario for ginger marketing. Marketing margin was relatively higher in retailer (Tk.1820/100 kg) followed by traders (Tk.835/100 kg), local trader (Tk.690/100 kg) and wholesaler (Tk.674/100 kg), respectively. On the contrary, marketing profit was the highest for retailer (Tk.1539.11/100 kg) followed by local trader (Tk.545.09/100 kg), trader (Tk.495.23/100 kg) and wholesaler (Tk.386.71/100 kg), respectively. The marketing profit of trader was the lowest due to highest marketing cost and highest purchase price of ginger.

Table 6. Marketing margin and profit of different intermediaries for ginger (Tk./100 kg)

Particulars	Intermediaries			
	Local trader	Trader	Wholesaler	Retailer
Purchase price (PP)	6900	7590	8425	9099
Marketing cost (MC)	144.91	339.77	287.29	280.89
Sales price (SP)	7590	8425	9099	10919
Marketing margin (MM=SP-PP)	690	835	674	1820
Marketing profit (MP=MM-MC)	545.09	495.23	386.71	1539.11

Source: Field survey (2017)

Marketing Efficiency: Marketing efficiency is directly related to the cost involved in moving goods from the producer to the consumer and the quantity of services offered. If the cost incurred when compared with the service involved, is low, it will be efficient marketing. The improvement of marketing efficiency means the reduction of marketing cost without reducing the quantum of services to the consumer. Marketing efficiency is a complicated topic to be defined. It carries different meaning to different persons. The term marketing efficiency is seen in different perspectives by the marketing personnel and economist. Kohls *et al*. (2005) defined marketing efficiency as the maximization of input output ratio.

Farmer's share under different marketing channel of ginger: Farmer's share in consumer prices of ginger in different marketing channels was the highest in Channel-4 followed by Channel-3 and Channel-2 and was lowest in Channel-1. It indicated that if farmer would sell their ginger through Farmer→Wholesaler→ Retailer →Consumer, they would be most benefited. Unnecessary marketing tiers develops when there is market imperfection or producer-seller are unorganized and while there is lack of market information or the cost of gathering information is high.

Table 7. Farmer's share under different major marketing channel of ginger (%)

Particulars	Channel-1	Channel -2	Channel -3	Channel -4
Farmers' price (Tk./100 kg)	6894	6896	6904	6906
Consumer/retail price (Tk./100 kg)	10950	10920	10905	10901
Percentage of farmers' share (%)	62.96	63.15	63.31	63.35
Rank (I_1)	IV	III	II	I

Source: Field survey 2017

Marketing cost and margin of different channels of ginger: The Channel-1 of ginger marketing has incurred highest marketing cost whereas the lowest in case of Channel-4 (Table 8). It reveals if farmer sell their ginger through Farmer→Local

trader→ Trader→ Commission agent→Wholesaler→ Retailer→Consumer, the marketing cost becomes high (Channel-1). On the other hand, if farmer sell their ginger through Channel-4 (Farmer→ Wholesaler→ Retailer →Consumer) then the marketing cost is the lowest. The data reveals that the highest margin in Channel-1 and the lowest in Channel-4.

Table 8. Marketing cost and margins of different marketing channel for ginger (Tk./100 kg)

Particulars	Channel-1	Channel-2	Channel-3	Channel-4
Farmers price	6894	6896	6904	6906
Consumer price/retail price	10950	10920	10905	10901
Marketing margin (MM)	4056	4024	4001	3995
Rank (I_2)	IV	III	II	I
Marketing cost (MC)	1213.23	1068.32	781.03	655.1
Rank (I_3)	IV	III	II	I

Source: Field survey (2017)

Table 9. Marketing efficiency ginger under composite index method

Marketing Channel	Score as performance indicators				
	Farmer's share (%) (I_1)	Marketing margin (Tk./quintal) (I_2)	Marketing cost (Tk./ quintal) (I_3)	Total score	Rank
Channel-1	62.96 (4)	4056 (4)	1213.23 (4)	12	IV
Channel -2	63.15 (3)	4024 (3)	1068.32 (3)	9	III
Channel -3	63.31 (2)	4001 (2)	781.03 (2)	6	II
Channel -4	63.35 (1)	3995 (1)	655.1 (1)	3	I

Figures in the parenthesis indicate 'Rank'

Source: Field survey (2017)

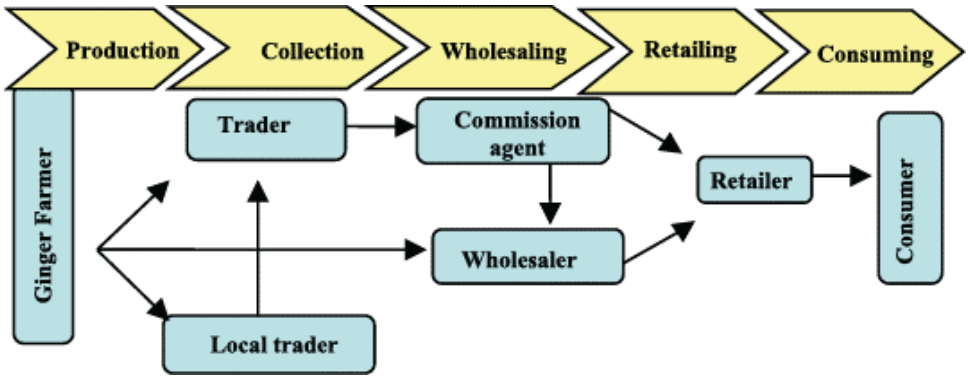
Efficiency of different marketing channels of ginger: The efficiency of different marketing channels was drawn as the basis of ranks of different performance indicators in different channels using composite index formula. The performance indicators revealed that the Channel-4 is more efficient than that of other channels (Table 9).

Value Chain Analysis of Ginger: Economic value chain analysis describes the range of activities required to bring a product to the final consumer and, in the case of international products, the extent to which intermediaries/agents gain from participating in the chain (Jacinto, 2004). A traditional food industry value chain consists of the producer, processor, wholesaler, exporter, importer, retailer and consumer. This study analyzed how market intermediaries operate along ginger value chains, and demonstrates how the revenue from ginger trade is distributed over the entire ginger value chain.

Value chain mapping: Value chain analysis plots the flow of goods and services up and down the chain, and between different chains. Mapping of value chains

obtains a clear understanding of the sequence of activities and the key actors and relationships involved in the value chain.

Figure 2. Value chains map of ginger in domestic market



In Bangladesh, ginger is produced mainly for the domestic consumption. Actors involved in the chain include the farmer, local trader, trader, commission agent, wholesaler, retailer and consumer, and products flow along the chain from one actor to another (Figure 2). The row at the top side showed different functions of the actors' respectively-production, collection, wholesaling, retailing and consuming. The diagram at the right side present all the actors involved—farmer, local trader, trader, commission agent, wholesaler, retailer and consumer, and the link and products flow between them.

Distribution of value addition: Each of the ginger value chain actors adds value to the product as the product passes from one actor to another. In a way, the actors change the form of the product through processing or improve the grade through sorting, cleaning or washing or create space and time utility. The distribution of value addition among the ginger value chain actors in Bangladesh is depicted in Table-10. Value addition is the difference in sales price and purchase price at each stage of the value chain. Ginger producers sold of Tk.6900/100 kg of ginger by adding a value of Tk.2062/100 kg which is about 40% of the total value added in Bangladesh. Local trader added value Tk.690 and that of trader Tk.835 per 100 kg of ginger which was 11.35 and 13.73% of the total value added, respectively. Wholesalers add the least (11.08%) and the retailers add Tk.1820/100 kg which is about 30% of the total value added (Table 10). The price change from producer's price and consumer price is 58%. The highest profit is earned by the retailers due selling high price of per unit of ginger to the consumer. The scale of operation of the retailers is small. On the other hand, the wholesalers make a small profit margin per unit of ginger handled but their operational scale is high making them the dominant value chain actors.

Table 10. Distribution of value addition among major chains of ginger (Tk./100 kg)

Value chain	Farmer	Local trader	Trader	Wholesaler	Retailer
Sale price	6900	7590	8425	9099	10919
Purchase price	4838	6900	7590	8425	9099
gross value added	2062	690	835	674	1820
% of total value added*	33.91	11.35	13.73	11.08	29.93

Value chain	Local trader		Trader	Wholesaler	Retailor	Consumer
Sale price	6900		7590	8425	9099	10919
Purchase price	4838	6900	7590	8425	9099	
Gross value added	2062	690	835	674	1820	
% of total value added*	33.91	11.35	13.73	11.08	29.93	

* Total value added=Tk.6081

Constraints in the ginger value chain: One of the merits of value chain approach is that it helps to clearly identify bottlenecks to the development of the chain right from input supply up until the consumption level in various ways. Table 11 summarized the constraints identified in this study which is common for all areas.

Table 11. Core constraints in ginger value chain

Input supply	Production	Marketing/ Trading	Processing	Retailing	Consumption
• Shortage of improved and quality seed • Damaged and spoiled seed due to poor transporting and handling	• Low yield • Poor disease control • Less targeted to seed production	• Perishability, • Low skill in post harvest management • Lack of storage facility	• Lack of processing facilities; • Low skill and technology for processing	• Lack of facilities; • Lack of capital	• Limited dishes/ recipes

Ten marketing problems were indicated by farmers in the study areas. Among them low price of ginger, price fluctuation, high transport cost, and lack of loan facilities were the major problem of farmer for marketing ginger in Bangladesh. Local trader reported price fluctuation, high transport cost, and lack of loan facilities were their main problem. Table 3.14 showed that value chain actor trader faced eight problems of which price fluctuation, high transport cost, lack of truck to transport and lack of loan facilities were their main problem. Cent percent traders cited that

price fluctuation and high transport cost are the major problems for ginger marketing. In the study areas, wholesalers indicated the main problem as price fluctuation, poor road and shortage of store house. On the other hand, retailers reported price fluctuation, poor road and perishability of ginger were their main problems (Table 12).

Table 12. Marketing problems of value chain actor for ginger marketing (% of respondents)

Marketing problem	Farmer (%) (N=80)	Local trader (%) (N=24)	Trader (%) (N=30)	Wholesaler (%) (N=20)	Retailer (N=30)
Low price of ginger	83	-	-	-	-
High seed ginger price	67	-	-	-	-
Price fluctuation	92	83	100	93	60
Bribery/donation	33	67	36	33	40
Lack of local market	29	28	-	-	-
High transport cost	83	89	100	53	33
Poor road	33	50	40	60	60
Shortage of truck to transport	-	-	89	47	43
Perishability	58	58	56	40	70
Shortage of store house	63	42	67	73	-
Lack of loan facility	85	78	93	43	50

Source: Computed from producer survey data;

Note: Multiple responses considered

Summary of Interventions

Input supply: Establish and/or strengthen cooperatives/groups that engage in ginger seed bulb production to achieve the economies of scale needed to meet producers' high demand for improved ginger seed. Introducing improved seed production and marketing system can significantly contribute to the solution. The ginger seed bulb producers can then be linked with ginger producers to create access to market for their business. Farmers continue to use local ginger variety from many times ago. Improved variety of ginger seed bulb replacement system should be put in place by involving the relevant stakeholders like Department of Agricultural Extension, NGO's, Research Institutions and Seed Producers. The system should enable farmers to replace the improved varieties at regular interval.

Storage facilities: Ginger is semi perishable agricultural product. In all the study areas lack of storage house and facilities for table and seed purpose ginger was raised by farmers and other actors as a priority problem. Low cost technology for

ginger storage should be developed and disseminates to the farmer. Except this, loan facilities should provided to farmer so, the farmer can made storage house for ginger.

Production: Producing diverse types of ginger varieties can create attractive market. From consumer surveys, it was learnt that preference for ginger varies from location to location and by consumer type. Institutions and restaurants prefer large sized ginger that can be easily peeled. Household consumers prefer medium sized pungent varieties. BARI Ginger-1 which is released from Spices Research Centre of BARI is a medium sized pungent variety. This variety is very preferable to consumer but seed is in short supply. BADC should produce huge amount of seed bulb of this variety; so that the farmer could get it easily. Ginger specific technical recommendations should be adequately disseminated to increase ginger production and productivity. The extension service should take up ginger as essential commodity and enhance its productivity.

Transportation: In the ginger market survey, it was observed that ginger is transported over long distance by packing gunny or netted bag. During loading and unloading, there is mishandling of the products which lead to quick spoilage and high loss. It is important to establish ginger transportation standards and enforce it;

Marketing: Market infrastructure should be developed in terms of quick transportation, proper storage and other physical facilities to reduce spoilage and damage. Organize and capacitate producers to enhance their negotiation power and skill. Create value chain forum at village level where the different value chain actors come together and discuss the problems of ginger value chain and solve them. Information technology (IT) service should be developed up to village. So, that the farmer and other value chain actor are able to know the market information easily.

Processing: Ginger processing facilities should be developed. Introduction of improved varieties of ginger will increase the supply. Along this, it is important to introducing ginger processing facilities that can induce consumption and also increase shelf life of the product. Involving the private sector in the enhancement of the processing of ginger can result in sustainability of the intervention.

Consumption: The demand for the product in the total consumption bundle of rural and urban consumers is small which means that the product fetches low price. The low consumption attributes to lack of knowledge to prepare different recipe, dishes, and products from ginger by most consumers in Bangladesh. Therefore, promotion of ginger utilization by demonstrating different ways of utilizing ginger for food can induce higher demand thereby motivating the producers to produce more.

4. Conclusion and Recommendations

The results of the study depicted that four major marketing channels were identified for domestic produced ginger marketing. Channel-3 was the most important supply chain of which through 48% domestic produced ginger reaches to consumers. Marketing costs per 100 kg of ginger were estimated at ranged from Tk.86.92 to 339.72 and marketing margin Tk.674 to 1820, respectively for different intermediaries. Marketing margin and profit were the highest in retailer than those of other intermediaries. Out of four marketing channel, Channel-4 was more efficient than those of other channels. Six actors like; farmer, local trader, trader, commission agent, wholesaler, retailer and consumer are identified who are involved in the ginger value chain. The study revealed that farmer added highest amount of value Tk.2062/100 kg ginger followed by retailer (Tk.1820), trader (Tk.835), local trader *(*Tk.690) and wholesalers (Tk.674) respectively. Eleven marketing problem were identified, among them price fluctuation, high transport cost and lack of loan facilities were the major and common problem for all kinds of intermediaries involved in ginger marketing in Bangladesh. A summary of the recommendations is given below-

Input supply: Establish and/or strengthen cooperatives/groups that engage in ginger seed bulb production to achieve the economies of scale needed to meet producers' high demand for improved ginger seed. Introducing improved seed production and marketing system can significantly contribute to the solution. The ginger seed bulb producers can then be linked with ginger producers to create access to market for their business. Farmers continue to use local ginger variety from many times ago. Improved variety of ginger seed bulb replacement system should be put in place by involving the relevant stakeholders like Department of Agricultural Extension, NGO's, Research Institutions and Seed Producers. The system should enable farmers to replace the improved varieties at regular interval.

Storage facilities: Ginger is semi perishable agricultural product. In all the study areas lack of storage house and facilities for table and seed purpose ginger was raised by farmers and other actors as a priority problem. Low cost technology for ginger storage should be developed and disseminates to the farmer. Except this, loan facilities should provided to farmer so, the farmer can made storage house for ginger.

Production: Producing diverse types of ginger varieties can create attractive market. From consumer surveys, it was learnt that preference for ginger varies from location to location and by consumer type. Institutions and restaurants prefer large sized ginger that can be easily peeled. Household consumers prefer medium sized pungent varieties. BARI Ginger-1 which is released from Spices Research

Centre of BARI is a medium sized pungent variety. This variety is very preferable to consumer but seed is in short supply. BADC should produce huge amount of seed bulb of this variety; so that the farmer could get it easily. Ginger specific technical recommendations should be adequately disseminated to increase ginger production and productivity. The extension service should take up ginger as essential commodity and enhance its productivity.

Transportation: In the ginger market survey, it was observed that ginger is transported over long distance by packing gunny or netted bag. During loading and unloading, there is mishandling of the products which lead to quick spoilage and high loss. It is important to establish ginger transportation standards and enforce it;

Marketing: Market infrastructure should be developed in terms of quick transportation, proper storage and other physical facilities to reduce spoilage and damage. Organize and capacitate producers to enhance their negotiation power and skill. Create value chain forum at village level where the different value chain actors come together and discuss the problems of ginger value chain and solve them. Information Technology service should be developed up to village. So, that the farmer and other value chain actor are able to know the market information easily.

Processing: Ginger processing facilities should be developed. Introduction of improved varieties of ginger will increase the supply. Along this, it is important to introducing ginger processing facilities that can induce consumption and also increase shelf life of the product. Involving the private sector in the enhancement of the processing of ginger can result in sustainability of the intervention.

Consumption: The demand for the product in the total consumption bundle of rural and urban consumers is small which means that the product fetches low price. The low consumption attributes to lack of knowledge to prepare different recipe, dishes, and products from ginger by most consumers in Bangladesh. Therefore, promotion of ginger utilization by demonstrating different ways of utilizing ginger for food can induce higher demand thereby motivating the producers to produce more.

References

Abbott, J.C. (1986). Marketing Improvement in the Developing World: What Happens and What We Have Learned. FAO Economic and Social Development Series No. 37. Food and Agriculture Organization, Rome.

Arene, C.J. (1999). Introduction to Agricultural Marketing Analyses for Developing Economics. Fulladu Publishing Company, Nsukka, 15-23.

BBS (2020). Year book of Agricultural Statistics of Bangladesh. Bangladesh Bureau of Statistics, Statistics and Informatics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

Bose T.K.; S.K. Mitra; A.A. Farooki and M.K. Sadhu (1999). Tropical Horticulture. Volume I, Naya Prokash, Calcutta, India.

Ikechi, K. (2006). The performance of vegetable production and marketing in Aba area, Abia State. Proceedings of the 40th conference of Agricultural Society of Nigeria, held in Umudike. Abia State, 133-134.

Jacinto, E.R. (2004). A research framework on value chain analysis in small scale fisheries. Paper presented to the 10th Biennial Conference of the International Association for Study of Common Property, Oaxaca, México, 9-13 August, p.27.

Kohls, R.L and J.N. Uhl (2005). Marketing of agricultural products. 9th edition. Macmillan publishing co., Inc., New York.

Reardon, T. and C. Timmer (2007). "Transformation of markets for agricultural output in developing countries since 1950: How has thinking changed?" in Handbook of Agricultural Economics. **3:** 2807-2855.

Appendix Table 1. Cost of ginger production in Bangladesh (Tk./ha)

Cost items	Small	Medium	Large	All
A. Variable cost	184312 (83.5)	182454 (83.0)	165038 (81.6)	177053 (85.2)
Land preparation	11440 (5.28)	13000 (5.92)	12480 (6.17)	12220 (5.88)
Sowing/Plantation	6500 (2.94)	7280 (3.31)	6240 (3.08)	6760 (3.25)
Manuring and fertilizer	2600 (1.18)	2080 (0.95)	1820 (0.90)	2080 (1.00)
Irrigation	260 (0.12)	520 (0.24)	260 (0.13)	260 (0.13)
Inter-cultural operation	46020 (20.85)	42900 (19.52)	41600 (20.56)	43420 (20.88)
Plant protection measures	1560 (0.71)	1300 (0.59)	1040 (0.51)	1300 (0.63)
Harvesting	32500 (14.72)	29900 (13.61)	28600 (14.14)	30420 (14.63)
Seed/seedlings	51000 (23.10)	51900 (23.62)	49500 (24.47)	50820 (24.44)
Power tiller/Ploughing	5850 (2.65)	5880 (2.68)	5820 (2.88)	5850 (2.81)
Irrigation	750 (0.34)	800 (0.36)	660 (0.33)	737 (0.35)
Manure	3030 (1.37)	3560 (1.62)	2907 (1.44)	3166 (1.52)
Urea	2880 (1.30)	3280 (1.49)	1728 (0.85)	2624 (1.26)
TSP	8558 (3.88)	8756 (3.98)	4730 (2.34)	7348 (3.53)
MP	6160 (2.79)	6120 (2.79)	3240 (1.60)	5180 (2.49)
Zink	600 (0.27)	400 (0.18)	400 (0.20)	400 (0.19)
Zypsum	710 (0.32)	650 (0.30)	580 (0.29)	650 (0.31)
Plant protection (Insecticides/fungicides)	3894 (1.76)	4128 (1.88)	3433 (1.70)	3818 (1.84)
Total variable cost	**83432 (37.79)**	**85474 (38.90)**	**72998 (36.08)**	**80593 (38.76)**
B. Fixed cost				
Lease value of land	33682 (15.26)	34547 (15.72)	34807 (17.20)	34345 (16.52)
Int. on op. capital	2765 (1.25)	2737 (1.25)	2476 (1.22)	2656 (1.28)
Total Fixed cost	36447 (16.51)	37284 (16.97)	37283 (18.43)	37001 (17.80)
Total cost (A+B)	**220759 (100)**	**219738 (100)**	**202321 (100)**	**214054 (100)**

Figures in the parenthesis indicate percentage.

Source: Field survey (2017).

Appendix Table 2. Per quintal cost of ginger production

Items	Small farmers	Medium farmers	Large farmers	All farmers
Seed ginger (kg/ha)	4610	4515	4390	4505
Total cost (Tk/ha)	220759	219738	202321	214054
Cost per quintal (Tk)	4789	4867	4609	4751

Source: Field survey (2017).

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