

PROFITABILITY AND MARKETING SYSTEM OF Binachinabadam-8 IN SOME SELECTED NORTHERN CHAR AREAS OF BANGLADESH

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Abstract

The present study was undertaken to assess the profitability, marketing system, production and marketing problems of a groundnut variety, Binachinabadam-8 in the river bed areas of Rangpur, Gaibandha and Kurigram districts during 2022–23. The study analyzed the efficiency of different marketing chains by ranking performance indicators using a composite index formula. The average per hectare production cost of Binachinabadam-8 was Tk. 90,470 and the net return was Tk. 68,064. The benefit-cost ratio was estimated at 1.75 and 2.89 on a full cost and variable cost basis. The average estimated marketing cost was highest (Tk. 925/quintal) for Stockist and lowest (Tk. 87/quintal) for Arathdar. Net marketing margin was also highest (Tk. 1787/quintal) for Stockist and lowest (Tk. 115/quintal) for Arathdar. Farmer's share in consumer prices of Binachinabadam-8 in different marketing chains was the highest in Chain-IV (65.46%) and the lowest was in Chain-I (63.98%). The performance indicators revealed that the Chain-IV was the most efficient of the chains. Farmers reported major problems including lack of irrigation facilities, high seed value, flood incidence, high fertilizer prices, lack of capital, lack of training and insect and pest. The farmers faced significant marketing challenges, including unstable prices, high transportation charges, lack of storage facilities and lack of cash capital. Therefore, the study will help to over undertake appropriate measures to overcome the production and marketing problems and thereby will increase the profitability and production of Binachinabadam-8 in the river bed areas of Bangladesh.

Key words: Profitability, Marketing chain, Marketing efficiency, Production and marketing problems, Binachinabadam-8, Char areas

Introduction

Groundnut, or peanut, is commonly called the poor man's nut. Today it is an important oilseed and food crop in Bangladesh. Bangladesh is the biggest delta in the world, as it is within overflow plains of three large rivers like Padma, Brahmaputra-Jamuna, and Meghna (Sarker, *et al.*, 2003). The provisional sandbars that emerged in the Bengal Delta, which are >100 m across with approximately ten years, are known as char (Rogers *et al.*, 2013). The overall land area was increased in Bangladesh by 4% from 1948 to 2006, typically due to the retrieval of char lands (Rahman, 2010). This trend is increasing gradually. About 10 million people live in these areas and survive mainly on agriculture including some people who are most defenseless and the poorest. They carry on their livelihood with hardship (Ashley *et al.*, 2000). The majority of the plant nutrients in these soils are scarce, having very low organic matter contents and low moisture-holding capacity, particularly in the northern char region of Bangladesh (SRDI, 2012).

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The cropping intensity of char land is increasing gradually. Now a days several crops such as maize, wheat, sesame, potato, groundnut etc. are produced in different parts of char lands in Bangladesh. It has substantially changed the socioeconomic life of the char lands people. The total groundnut production was 74,749 MT from 40,285 hectares of cultivated land in Bangladesh (BBS, 2022). Groundnut occupies only about 6.97% of the total area under all oil crops and contributes about 6.73% to the total oilseed production in Bangladesh (BBS, 2021). The soil and climate of Bangladesh are quite suitable for groundnut production. It is cultivated mostly in sandy soils and riverbeds (Nath and Alam, 2002). Apart from the fact that the groundnut is an excellent oil crop, it fixes nitrogen in its root nodule through symbiosis with bacteria and thus require less amount of chemical nitrogenous fertilizer. It is a good source of protein, minerals and vitamins like Vitamin D and Vitamin E. It is also a nutritious fodder for the cattle and profitable cash crop to the farmers. Because of lower farming cost and excellent market price with huge demand, char farmers have been expanding groundnut cultivation every year in the char lands.

Few years back the char people of northern part mostly affected by river erosion had compelled the people living over there to rush to towns for earnings either as day labor or rickshaw and van puller. Now they found a hope of survival by growing groundnut without much investment and hassle. Another advantage of groundnut cultivation is that no natural calamities except flood can damage this crop.

On the other hand Binachinabadam-8 cultivation has no adverse impact on environment rather its green plants help maintained ecological balance in the area. The sustainability of increased trend of production of groundnut in these river based greatly depends on its efficient marketing system. Different constraints from production to consumer's level have been emerged including transportation, price fluctuation, traders etc. may hamper in decision-making of the farmers to cultivate groundnut. Therefore, the study may show us an efficient marketing system of Binachinabadam-8. Recognizing the above importance and suitability of Binachinabadam-8 production and marketing in char areas the study was undertaken with the specific objectives (i) to estimate the costs and return of Binachinabadam-8 in the study areas (ii) to find out the key players involved in the marketing system of Binachinabadam-8 (iii) to determine the marketing cost, margin and marketing efficiency at different levels and (iv) to identify the major production and marketing problems of Binachinabadam-8.

Materials and Methods

Selection of the study area, sample size and sampling technique

This study was conducted in three Binachinabadam-8 growing northern districts having river beds, namely Rangpur, Gaibandha and Kurigram in Bangladesh. A total of 180 samples taking 60 from each district and among the 60 samples 40 farmers and 20

traders/intermediaries were selected following stratified random sampling with the help of Department of Agriculture Extension (DAE) personnel for interview. Data enumerator under the direct supervision of the researchers collected field level cross sectional data using pre-tested interview schedule for this study.

Method of data collection and period of study

Data for the present study were collected from Binachinabadam-8 farmers through a face-to-face interview method using a pre-tested interview schedule. Data were collected by researchers with the help of trained enumerators for the period of May–June 2023.

Analytical techniques

Cost and return analysis

Collected data were edited, summarized, tabulated and analyzed to fulfill the objectives of the study. The data were analyzed with the help of appropriate statistical measures as frequencies, percentages, mean and standard deviation. The following conventional profit equation was applied to examine farmer's profitability level of Binachinabadam-8 in the study areas.

$$\pi = \sum P_m Q_m + \sum P_f Q_f - \sum (P_x i X_i) - TFC$$

Where,

π = Net profit/Net returns from Binachinabadam-8 farming (Tk./ha);

P_m = Per unit price of Binachinabadam-8 (Tk./kg);

Q_m = Total quantity of the Binachinabadam-8 production (kg/ha);

Q_f = Per unit price of other relevant Binachinabadam-8 (Tk./kg);

P_f = Total quantity of other relevant Binachinabadam-8 (kg/ha);

$P_x i$ = Per unit price of i-th inputs (Tk.);

TFC = Total fixed cost (Tk.); and

X_i = Quantity of the i-th inputs (kg/ha); $i = 1, 2, 3, \dots, n$ (number of inputs).

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

$$T_c = C_p + \sum M_{ci}$$

Where, T_c = Total cost of marketing, C_p = Producer cost of marketing and M_{ci} = Marketing cost by the i th 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 chain 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 chain.

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

$$\text{Percentage of producers' share} = (P_{pi}/P_{ri}) \times 100$$

Where, P_{pi} = Producer's share in the i th chain, P_{ri} = Average price at the retail level in each chain, i = Number of chains ($i=1, 2, \dots, n$)

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/gross margin per 100 kg of Binachinabadam-8 was calculated and were assigned ranks. Total scores were found by adding the respective ranks in each chain. The mean scores were calculated for each chain. Where the mean score was less, it was efficient chain.

$$R = (R_i/N_i)$$

Where, R_i = Total value of ranks of all indicators (I_1, I_2 and I_3), N_i = Number of indicators

Results and Discussion

Profitability of Binachinabadam-8 production

The cost of Binachinabadam-8 production, gross return, gross margin, net return and the benefit cost ratio (BCR) for Binachinabadam-8 cultivation are being discussed in the following sections.

Cost of Binachinabadam-8 production

The cost of human labour, power tiller, seed, fertilizers, pesticides and irrigation were taken into consideration, while calculating cost of Binachinabadam-8 production. Beside this, interest on operating capital was also considered as the cost of Binachinabadam-8 production. Total cost consists of variable cost and fixed cost that covered 60.73% and 39.27%, respectively, of total cost for Binachinabadam-8 production (Table 1).

The average costs of Binachinabadam-8 cultivation were Tk. 90,470 and Tk. 54,938 per hectare on full cost and cash cost basis, respectively. The highest production cost was for human labour (51.56%) followed by seed (17%), land use cost (9.54%), land preparation/power tiller (7.68%) and irrigation (5.66%). The cost of Binachinabadam-8

cultivation was found the highest at Rangpur (Tk. 94,215/ha) followed by Kurigram (Tk. 89,397/ha) and Gaibandha (Tk. 87,797/ha), respectively (Table1).

Table 1. Per hectare cost of Binachinabadam-8 production in different locations

Cost Component	Cost of production (Tk./hectare)			All area	% of total cost
	Rangpur	Gaibandha	Kurigram		
(A)Total Variable Cost	57,339	54,330	53,145	54,938	60.73
Hired labour (Man days)	21,721	19,452	18,065	19,746	21.83
Land preparation/Power tiller	7,480	6,854	6,523	6,952	7.68
Seed	14,960	15,201	15,984	15,382	17.00
Fertilizers:					
Urea	960	1050	925	978	1.08
TSP	2,157	2,078	2,216	2,150	2.38
MP	1,870	1,218	1,455	1,514	1.67
Gypsum	910	835	781	842	0.93
DAP	1,120	720	959	933	1.03
Pesticides	748	574	428	583	0.64
Irrigation	4,701	5,469	5,198	5,123	5.66
Int. on operating capital	712	878	611	733	0.81
(B) Total Fixed Cost	36,876	33,468	36,252	35,532	39.27
Family labour	27,259	25,112	28,323	26,898	29.73
Land use cost	9,617	8,356	7,928	8,634	9.54
Total Cost (A+B)	94,215	87,797	89,397	90,470	100.00

Source: Field survey, 2023

Return from Binachinabadam-8 production

The average return from Binachinabadam-8 production at different locations is shown in Table 2. The average yield of Binachinabadam-8 was 1761 kg/ha. The yield was highest at Rangpur (1875 kg/ha) followed by Gaibandha (1715 kg/ha) and Kurigram (1694 kg/ha). The average gross margin was found Tk. 1,03,596/ha on variable cost basis. Gross margin was the highest at Rangpur (Tk. 1,11,411/ha) followed by Gaibandha (Tk. 1,03,450/ha) and Kurigram (Tk. 95,927/ha). The average net return per hectare was Tk. 68,064. The net return was the highest at Rangpur (Tk. 74,535/ha) followed by Gaibandha (Tk. 69,983/ha) and Kurigram (Tk. 59,675/ha). Benefit cost ratio was estimated to be 1.75 and 2.89 on full cost and variable cost basis, respectively, implying that the Binachinabadam-8 cultivation at farm level was profitable.

Table 2. Profitability of Binachinabadam-8 cultivation at different locations

Type	Study areas			All area
	Rangpur	Gaibandha	Kurigram	
Yield from Binachinabadam-8 (Kg/ha.)	1,875	1,715	1,694	1,761
Average sale price (Tk./kg)	90	92	88	90
Total return (Tk./ha)	1,68,750	1,57,780	1,49,072	1,58,534
Total variable cost (Tk./ha)	57,339	54,330	53,145	54,938
Total Cost (Tk./ha)	94,215	87,797	89,397	90,470
Gross margin (Tk./ha)	1,11,411	1,03,450	95,927	1,03,596
Net return (Tk./ha)	74,535	69,983	59,675	68,064
Rate of return (BCR)				
BCR on full cost	1.79	1.80	1.67	1.75
BCR on variable cost	2.94	2.90	2.80	2.89

Source: Field survey, 2023

Groundnut marketing system

Marketing chain

Marketing chain is the alternative root of products flow from producers to consumers. Market chain analysis aims to provide information on profitability for the various agents along the market chain (Ferris *et al.*, 2001).

The following major marketing chains were found in the study areas:

- Chain-I: Farmer > Faria > Arathdar > Stockist > Paiker > Retailer > Consumer
- Chain-II: Farmer > Faria > Stockist > Bepari > Retailer > Consumer
- Chain-III: Farmer > Bepari > Arathdar > Paiker > Retailer > Consumer
- Chain-IV: Farmer > Paiker > Retailer > Consumer

Characteristics of actors involved in the groundnut marketing chain

Faria: Faria is a petty trader or small scale businessman who purchases groundnut from the producer from the village or from the local market and offer the same to the arathdar or bepari. Sometimes he sells his produce directly to the rural retailers or consumers.

Bepari: Bepari is a professional wholesale traders who make his purchase from producer or faria from the local market, bring their consignment to the urban wholesale market and sell them to the paiker and retailer through arathdar (commission agent).

Arathdar: Arathdar is a commission agent who has a fixed establishment and operates between bepari and retailers, or between farmer and paiker, or between bepari and paiker, or between faria and bepari. They take commission from both of the parties but generally they do not follow any standard rule to take commission.

Paiker: Wholesaler in consuming area is known as paiker, who purchases from bepari through arathdar and sell those to the retailer or consumer.

Retailer: The retailer, the last link in the marketing channel, buys groundnut from arathdar or wholesaler/paiker and sells these to the consumer.

Stockist: Stockist are working in the producing area who purchase wet groundnut from the farmers or faria and dry it in their chatal and store for some period for higher prices.

Marketing cost of different actors involved in groundnut marketing

The cost of marketing represents the cost of performing various marketing functions and operations by various agencies involved in the marketing process (Kohls and Uhl, 2005). In other words, the costs items, which are needed to move the product from producers to consumers, are ordinarily known as marketing cost. The per quintal marketing cost of Binachinabadam-8 of different actors like Faria Tk. 121, Bepari Tk. 278, Arathdar Tk. 87, Stockist Tk. 925, Paiker Tk. 141 and Retailer Tk. 145 in all areas. Marketing cost of stockist was the highest among the intermediaries. Weight loss and damage was the highest cost item for stockist. Because they purchase wet groundnut from farmers and dry it in their chatal. The other cost items of the actors were loading, unloading, packaging, Arathdar commission, khajna etc. The cost varied from area to area depending on distance (Table 3).

Table 3. Marketing cost of different actors involved in the chain (Tk./quintal)

Cost component	Faria	Bepari	Arathdar	Stockist	Paiker	Retailer
Transportation	32	61	-	38	38	21
Loading	9	22	-	14	18	14
Unloading	8	12	-	10	9	8
Wages and salaries	-	-	25	-	-	-
Packaging	15	22	-	-	17	-
Commission	20	55	-	-	22	67
Accountant cost	-	-	12	-	-	-
Drying & Grading	-	-	-	68	-	-
Khajna	19	19	-	-	20	-
Wastage and damage/Weight loss	-	65	-	562	-	-
Shop rent	-	-	8	-	-	-
Chatal cost	-	-	-	120	-	-
Storage cost	-	-	-	62	-	-
Market toll	-	-	-	-	-	16
sweeper	-	-	2	2	-	-
Electricity cost	-	-	8	10	-	-
Telephone/Mobile	8	10	15	20	9	9
Entertainment	10	12	17	19	8	10
Total	121	278	87	925	141	145

Source: Field survey, 2023

Marketing cost at different levels of marketing chain

Chain-wise marketing cost is shown in Table 4. It was observed that Chain-i incurred the highest marketing cost (Tk.1,697/quintal) followed by Chain-ii (Tk.1,440/quintal) and Chain-iii (Tk.1,286/quintal). Lowest marketing cost was found in Chain-iv and it was Tk. 863/quintal (Table 4). Highest numbers of intermediaries were involved in Chain-i which was the main reasons for the highest marketing cost.

Table 4. Marketing cost of Binachinabadam-8 for different marketing chain (Tk./quintal)

Cost component	Chain-I	Chain-II	Chain-III	Chain-IV
Transportation	190	184	181	174
Loading	77	75	74	65
Unloading	47	42	40	36
Wages and salaries	25	22	24	20
Packaging	54	51	50	42
Commission	164	162	160	115
Accountant cost	12	10	12	6
Drying & Grading	68	62	65	58
Khajna	58	55	58	52
Wastage and damage/Weight loss	627	426	288	110
Shop rent	8	8	7	6
Chatal cost	120	112	110	15
Storage cost	62	61	60	26
Market toll	16	14	14	10
sweeper	4	4	3	2
Electricity cost	18	14	18	16
Telephone/Mobile	71	66	70	60
Entertainment	76	72	52	50
Total	1,697	1,440	1,286	863

Source: Field survey, 2023

Marketing margin of different actors involved in the groundnut marketing

Marketing margin is the difference between the price paid by the consumer and price received by the producers. Marketing margin has two components marketing cost and net margin or profit. In broad sense, marketing margin is the difference between what is paid by the consumer and what is received by the producer. It is the price of all utility adding activities and functions that are performed by the intermediaries (Kohls and Uhl, 2005). It was revealed from the study that the net margin of the actors like Faria was Tk. 184, Bepari Tk. 297, Arathdar Tk. 115, Stockist Tk. 1787, Paiker Tk. 222 and Retailer Tk. 298 per quintal (Table 5). Among the intermediaries the stockiest added the highest margin followed by Retailer, Bepari, Paiker, Faria and Arathdar (Table 5). Because the stockist had done some marketing functions such as drying the groundnut in their chatal and stocked the quantity for higher price. On the other hand retailer has to sell small amount of groundnut for long period due to higher profit.

Table 5. Marketing margin of different stages of marketing chain (Tk./quintal)

Cost component	Faria	Bepari	Arathdar	Stockist	Paiker	etailer
A. Average sales price	9,155	9,730		8,962	9,541	9,984
B. Average purchase price	8,850	9,155		6,250	9,178	9,541
C. Gross margin (A-B)	305	575	202	2,712	363	443
D. Marketing cost	121	278	87	925	141	145
E. Marketing Margin (C-D)	184	297	115	1,787	222	298

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 chain of Binachinabadam-8

Farmer's share in consumer prices of Binachinabadam-8 in different marketing chains was the highest in Chain-IV followed by Chain-III and Chain-II and was the lowest in Chain-I (Table 6). It indicated that if farmer would sell their product through Farmer>Paiker>Retailer>Consumer, they would be most benefited. Unnecessary marketing tiers develops when there is market imperfection or producer-seller are inorganized and while there is lack of market information or the cost of gathering information is high.

Table 6. Farmer's share under different major marketing chain of Binachinabadam-8 (%)

Particulars	Chain-I	Chain-II	Chain-III	Chain-IV
Farmers price (Tk./100 kg)	8,800	8,914	8,967	9,105
Consumer/retail price (Tk./100 kg)	13,755	13,888	13,855	13,910
Percentage of farmers share	63.98	64.18	64.72	65.46
Rank(I ₁)	IV	III	II	I

Source: Field survey, 2023

Marketing cost and margin of different chains of Binachinabadam-8

The Chain-I of Binachinabadam-8 marketing has incurred the highest marketing cost whereas the lowest in case of Chain-IV (Table 7). It reveals if farmer sell their Binachinabadam-8 through Farmer > Faria > Arathdar > Stockist> Paiker > Retailer > Consumer, the marketing cost becomes the highest (Chain-I). On the other hand, if farmer

sell their product through Chain-IV (Farmer > Paiker > Retailer > Consumer) then the marketing cost is the lowest. The data reveals that the highest margin in Chain-I and the lowest in Chain-IV.

Table 7. Marketing cost and margins of different marketing chain for Binachinabadam-8 (Tk./ quintal)

Particulars	Chain-I	Chain-II	Chain-III	Chain-IV
Farmers price (Tk./100 kg)	8,800	8,914	8,967	9,105
Consumer/retail price (Tk./100 kg)	13,755	13,888	13,855	13,910
Marketing margin	4,955	4,974	4,888	4,805
Rank (I ₂)	III	IV	II	I
Marketing cost	1,697	1,440	1,286	863
Rank (I ₃)	IV	III	II	I

Source: Field survey, 2023

Efficiency of different marketing chains of Binachinabadam-8

The efficiency of different marketing chains was drawn as the basis of ranks of different performance indicators in different chains using composite index formula. The performance indicators revealed that the chain-IV is more efficient than that of other chains (Table 8).

Table 8. Marketing efficiency of Binachinabadam-8 under composite index method

Marketing channel	Source of performance indicator			Total score	Rank
	Farmer's share (%) (I ₁)	Marketing margin (Tk./quintal) (I ₂)	Marketing cost (Tk./quintal) (I ₃)		
Chain-i	63.98 (4)	4955 (3)	1697 (4)	11	IV
Chain-ii	64.18 (3)	4974 (4)	1440 (3)	10	III
Chain-iii	64.72 (2)	4888 (2)	1286 (2)	6	II
Chain-iv	65.46 (1)	4805 (1)	863 (1)	3	I

Source: Field survey, 2023

Major problems to Binachinabadam-8 production

Binachinabadam-8 is a profitable oilseed variety in the study areas. The farmers in the study areas faced some problems for Binachinabadam-8 production. The first ranked problem was lack of irrigation facilities (92%) in all the areas. Other problems were high value of seed (65%), incidence of flood (40%), high price of fertilizer (36%), lack of capital (26%), lack of training (14%) and insect and pest (12%) (Table 9).

Table 9. Major problems to Binachinabadam-8 production in the study areas

Type of problems	Percent of farmers responded				Rank
	Rangpur	Gaibandha	Kurigram	All area	
Lack of irrigation facilities	88	94	95	92	1
High value of seed	60	65	70	65	2
Incident of flood	30	82	8	40	3
High price of fertilizer	30	25	53	36	4
Lack of capital	17	50	12	26	5
Lack of training	10	15	18	14	6
Insect and pest	12	10	15	12	7

Source: Field survey, 2023

Marketing problems identified by the traders

The traders or intermediaries faced different marketing problems during their business. Eighty six percent farmers suffered unstable price during their business. Seventy six percent farmers had to pay high charge for transportation followed by lack of storage facilities (73%) and lack of cash capital (54%) (Table 10).

Table 10. Major marketing problems identified by the traders

Marketing problems	percent of traders responded				Rank
	Rangpur	Gaibandha	Kurigram	All areas	
Unstable price	90	82	85	86	1
High transportation cost	75	80	74	76	2
Lack of storage facilities	60	78	81	73	3
Lack of cash capital	38	55	68	54	4

Source: Field survey, 2023

Conclusion

Binachinabadam-8 production in the study areas is profitable. The study identified four major marketing chains for Binachinabadam-8 marketing. The actors in the Binachinabadam-8 marketing chain were Faria, Bepari, Arathdar, Stockiest, Paiker and Retailer. A good amount of marketing margin was received by the actors at different stages of the marketing chain. Out of four marketing chains, chain-IV was more efficient than those of the other chains. The study also identified seven production and four marketing problems of Binachinabadam-8 production in the study areas.

Acknowledgement

The authors acknowledge the Bangladesh Institute of Nuclear Agriculture (BINA) authority for their support in this research. The authors also recognize and appreciate the efforts of the enumerators for data collection and those farmers who were willing to provide us with the required information.

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