

Changes in Indigenous Paddy/rice Marketing Channel Structure: An Evidence from Two Districts of Bangladesh

ABSTRACT

Aim: The study examines the evolution of the indigenous paddy and rice marketing systems in Bangladesh.

Study Design: Descriptive-quantitative and qualitative.

Place and Duration of Study: For the investigation, a simple random sampling procedure was used in two districts of Bangladesh, Brahmanbaria and Habiganj. The survey was conducted from February to March 2022.

Methodology: In total, 113 farmers and 43 different paddy and rice traders' data were collected from two villages in Brahmanbaria. In addition, data was also collected from 179 farmers in six villages and 23 different types of paddy and rice traders in Habiganj district. The data was tabulated and entered in SPSS 18 and MS Excel to calculate descriptive statistics.

Results: The study revealed that in the indigenous paddy/rice marketing channel, Faria and LPA/Bepari were both very active actors. Over time, Faria's business vanished in the 2nd stage, and LPA/Bepari has become the dominant actor, as about 64.3% of paddy is traded through them. In the 3rd stage, LPA/Bepari's business has decreased, and LPB/Paddy Aratdar has become a dominant actor as about 68.9% of paddy is traded through them. In the 3rd stage, Paddy Aratdar cum wholesaler has vanished from the paddy/rice marketing channel. Due to intense competition among paddy and rice traders, changes in their functions and marketing power in the paddy and rice markets, the development of infrastructure, and the enlarging of farmers' facility conditions are the main reasons for the change.

Conclusion: Therefore, infrastructure and farmer facility condition enhancement need to be extended for future paddy/rice marketing structure improvement.

Keywords: Paddy/rice marketing, traditional system, paddy/rice traders, marketing channel structure

1. INTRODUCTION

Bangladeshi economy is mostly driven by agriculture [5]. About 40 percent of the labour force is employed in this sector [6]. As a main cereal crop, paddy sector is significant in Bangladesh's agriculture. The country is ranked third after China and India in terms of rice production, which is the primary staple food and a major crop in the country. Rice cultivation occupies 74.8% of the country's cropped area [4]. This sector is, directly and indirectly, a source of livelihood for 88 percent of people in the country [5]. Rice contributes 46% of the crop sector's GDP and 5% of the overall GDP in Bangladesh [6,7].

All over Bangladesh, paddy and rice are traded through a very complex distribution system that is very traditional and indigenous [9]. Typically, the paddy/rice marketing channel consists of various numbers of paddy/rice traders. The most common types of traders are referred to as Faria, Local Paddy Assembler/Bepari, Local Paddy Broker/Paddy Aratdar, Paddy Aratdar cum Wholesaler, Rice Miller, Rice Wholesaler cum Retailer, Rice Wholesaler, and Retailer [14]. These traders are different by the nature of the business, working place, functions performed, volume of transactions, and area of distance coverage. Sometimes there are overlapping functions carried out by the same traders. Also, the use of different local names to refer to the same or similar functions sometimes leads to confusion. Things become more complicated by changing the roles of some traders, although the names remain unchanged [12,14].

Due to this long paddy/rice marketing channel, farmers get a very small profit from selling their products. About 70% of our total farmers who belong to the small-scale category are suffering severely. They cannot cover their living costs with the net income from paddy selling. They are facing very difficult conditions, which is why they cannot enlarge their paddy-cultivated land [4,11,21,22]. Moreover, in the absence of the farmer's agriculture cooperatives, farmers have to go through different traders to sell paddy [15]. The country's paddy and rice market is driven by these private traders, who control every aspect of the marketing channel. There is a significant price

gap between farm and retail rice because of these private traders buying and selling locally produced paddy [1]. To gain price power in the market, rice millers and paddy wholesalers collaborate together. It can efficiently control the pricing and paddy marketing channels, like an oligopoly paddy market. The traders' power over the paddy market creates an imperfectly competitive market structure. [13]. They controlled the paddy market according to their preferences and made high profits by creating artificial crises [14]. Furthermore, individual practices in agriculture exhibit large transaction costs and weak farmers' negotiation power with traders [15]. Moreover, the farmers must rely on the long paddy/rice marketing channel [20].

However, the paddy/rice marketing channel structure changed over time. It is interesting to explore how indigenous paddy and rice marketing channel structures have changed due to a lack of research. This study also elucidates the reasons behind these structural changes in the paddy and rice marketing systems of Bangladesh. It can fill the gap in the literature and inform researchers, policymakers, and other groups to explore the paddy sector in Bangladesh in the future.

2. MATERIAL AND METHODS

2.1. Study Area and Data Collection

For the study, the two nearest districts were selected for the survey: Brahmanbaria and Habiganj. In both districts, the main agricultural income of the people comes from agriculture, and rice is the main crop for farmers [1, 2]. Data were collected through face-to-face interviews with a semi-structured questionnaire through a simple random sampling procedure. The survey was conducted in 2022 February to march.

In the first phase of the study field survey was conducted in the Brahmanbaria district of Bangladesh. The district is situated in east-central Bangladesh and is 115 km away from Dhaka (the capital city). Two villages from the Sarail subdistrict of Brahmanbaria were selected for an investigation. In total, 113 farmers and 43 different paddy and rice traders' data were collected for the study. (8) Local Paddy Assemblers/Bepari, (6) /Local Paddy Brokers/Paddy Aratdar, (8) Paddy Wholesalers, (17) Rice Miller, and (4) Rice Retailers were interviewed.

In the second phase, in Habiganj district survey was conducted. It is 175 km from the capital city of Dhaka and the eastern part of Bangladesh. Data were collected through face-to-face interviews with 179 farmers in six villages. This study collected data from 23 different types of paddy and rice traders, such as LPB/PaddyAratdar (17), LPA/Bepari (3), and Rice Miller (3).

Data from secondary sources includes both published and unpublished documents from the Statistical Yearbook, Agriculture Census, and Government Survey findings of the country. Data was also collected from internet sources, newspaper articles, different journal articles, and publications at Bangladesh Agricultural University.

2.2. Data Analysis

After the completion of data collection, data was tabulated and entered in SPSS 18 and MS Excel. The calculation of descriptive statistics and different tables and figures was prepared using the data.

3. RESULTS AND DISCUSSION

3.1. Characteristics of the Respondent Paddy Farmers

Table 1 shows the distinct characteristics of two different district farmers. Habiganj farmers are older compared to Brahmanbaria farmers. Regarding educational status, neither group is highly educated. According to land scale, Brahmanbaria farmers are holding more land on a large scale than the Habiganj farmers group, as few landlord farmers are there. In terms of occupational status, Brahmanbaria farmers are mostly dependent on paddy cultivation as their main occupation. However, Habiganj farmers depend on others to work with paddy cultivation.

Table 1. Characteristics of the respondent paddy farmers

Particulars	Brahmanbaria N=113		Habiganj) N=128	
	n	%	n	%
A. Age (mean)	45.7(9.7)	-	51.7(2.9)	-
B. Education level				
1 Primary or less	70	61.9	81	63.3
2 Upper than primary	43	38.1	47	36.7
C. Land Scale				
1 Small	56	49.6	90	70.3
2 Medium	29	25.7	33	25.8
3 Large	28	24.8	5	3.9

D. Occupation status

1	Paddy cultivation only	85	75.2	78	60.9
2	Paddy and others job	28	24.8	50	39.1

Source: Survey data, 2022

3.2. Indigenous Marketing Channel Structure of Paddy/ rice in Bangladesh (1st Stage)

The indigenous paddy/rice marketing structure is shown in Fig. 1. There are two flows in the channel: one is paddy, and the other is rice. Produced paddy goes from farmers to different paddy traders to rice millers and processors for processing. In the paddy flow channel, there are several traders such as Faria, LPA/Bepari, and Paddy Aratdar cum wholesalers who purchase paddy from farmers and sell it to Rice Millers and Paddy processors. Faria and LPA/Bepari had existed in the marketing channel. Faria is the most dominant actor, and they played strong roles and functions in the previous period. They are non-licensed small-scale paddy traders operating mainly in the village market. They do not have permanent business premises, travel from village to village, and purchase paddy from farmers directly. They operate their business with their capital, and their scale of business is smaller than that of LPA/Bepari. They can also act as commission agents for LPB/Paddy Aratdar. They use small vehicles such as rickshaws and vans for transporting paddy from the farmer's house to their own house and from their home to the market. In the rice flow channel, there are Rice Aratdar, Rice Aratdar cum Wholesaler, Rice Wholesaler, and Rice Wholesaler cum Retailer, Retailer, and lastly, Consumer in the marketing channel.

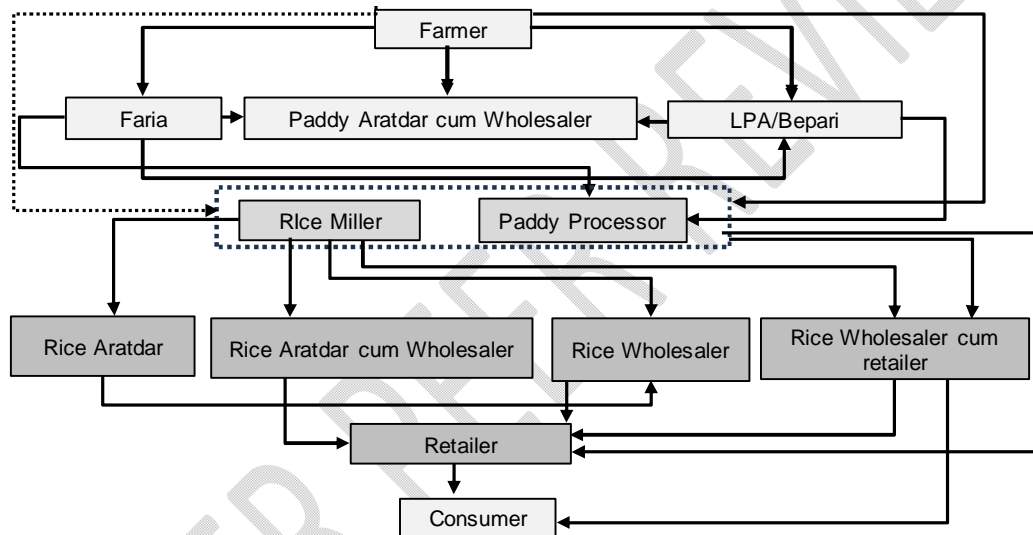


Fig.1. Indigenous marketing channel structure of paddy/ rice in Bangladesh

Source: Bangladesh Agriculture University [9]

3.3. Marketing Channel Structure of Paddy /rice in Brahmanbaria District (2nd Stage)

In the 2nd stage, the Local Paddy Assembler/Bepari is the most active paddy trader (Fig. 2). About 64.3% of the farmers traded paddy through them. They have the most influential power among all paddy traders. They generally purchased paddy at a farmer's house and sold it to the LPB/Paddy Aratdar. LPA/Bepari borrows funds for paddy collection from a local moneylender or paddy Aratdar. They mainly rent boats to collect paddy from farmers. Farmers cannot negotiate strongly with LPA/Bepari. Farmers have to sell at LPA/Bepari's decided price. In this system, only 12.4% of farmers traded paddy through Rice Millers, 3.0% through LPB/Paddy Aratdar, and 2.4% through Paddy Aratdar cum Wholesaler. In the rice channel, there are Rice Aratdar, Rice Aratdar cum Wholesaler, Rice Wholesaler, Rice Wholesaler cum retailer, and Consumer.

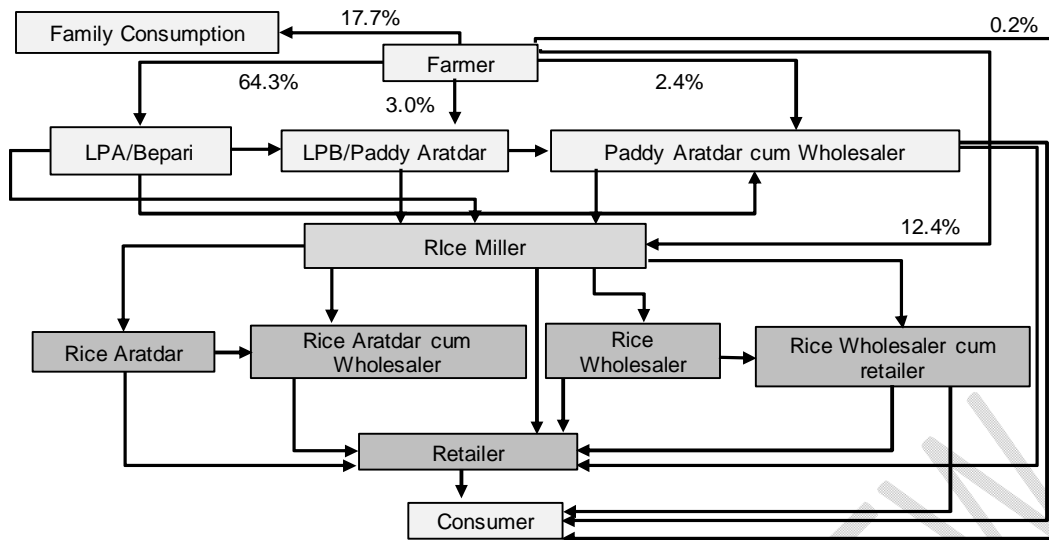


Fig. 2. Marketing channel structure of paddy/ rice (Brahmanbaria District)
 Source: Survey data, 2022

3.4. Marketing Channel Structure of Paddy/rice in Habiganj District (3rd Stage)

In the 3rd stage, LPB/Paddy Aratdar is the most dominant actor, as 68.9% of farmers traded paddy through them in fig. 3. LPB/Paddy Aratdar is another big paddy assembler or broker. After purchase, LPB/Paddy Aratdar sells paddy directly to Rice Miller. Some Rice aratdars have rice mills. LPB/Paddy Aratdar is a bridge between LPA/Bepari and Rice Miller. They can negotiate with each other. LPA/Bepari has less power than LPB/Paddy Aratdar. In the rice channel, there are also Rice Miller, Rice Aratdar, Rice Aratdar cum wholesaler, Rice Wholesaler, Wholesaler cum Retailer, Retailer, and Consumer.

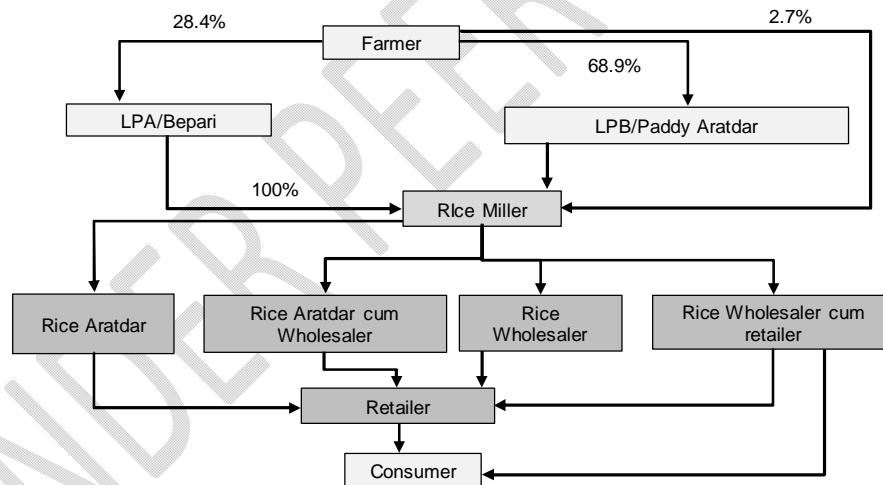


Fig.3. Marketing channels of paddy/rice in Bangladesh (Habiganj District)
 Source: Survey data, 2022

3.5. Different Paddy Traders, their Functions, and Changing Conditions at Different Stages

3.5.1. Faria

They are non-licensed small-scale paddy assemblers operating mainly in the village market. They store paddy for 2 to 8 days at their house. Monthly transactions of them from 1 to 1.5 tons of paddy. They operate their business with their capital, and their scale of business is smaller than that of LPA/Bepari. In Table 2, the first stage of the paddy/rice marketing system was traditional and indigenous. Faria is the main collector of paddy from farmers. They went to the farmer’s house and field to collect paddy by rental transport. They also act as a commission agent for Paddy Aratadar. They use small vehicles such as rickshaws and vans for transporting paddy from the farmers house to their own home and from their home to the market. Over time, Faria has not existed in the 2nd and 3rd stages of paddy/rice marketing channel in this study. Their dominant power has also finished with the chanaina structure.

Table 2. Conditions of Faria at different stages

Trader	1st stage	2nd stage	Conditions	3rd stage	Conditions
Faria	1	The volume of business was small.			
	2	They went to the farmer's house and field.			
	3	They also acted as an agent of LPB/Paddy Aratdar and got a commission from them.	-	-	-
	4	They used a rental transport facility.			

Source: Bangladesh Agriculture University, Tasnoovaet al., [9, 17]

3.5.2. LPA/Bepari

Local Paddy Assembler/Bepari is a regular or full-time paddy assembler. They generally purchased paddy at a farmer's house and sold it to the LPB/Paddy Aratdar. LPA/Bepari borrows funds for paddy collection from a local moneylender or LPB/Paddy Aratdar. They mainly rent boats to collect paddy from farmers. Farmers cannot negotiate strongly with LPA/Bepari. They have to sell at LPA/Bepari's decided price. In the 1st stage, LPA/Bepari has less dominating power than Faria. However, in the 2nd stage, they have the most power among all paddy traders. 64.3% of paddy was traded through them, and they have much more influential power than other traders. In the 2nd stage, farmers' facility conditions are very negligible, and farmers are bound to sell paddy to LPA/Bepari. In the 3rd stage, LPA/Bepari has less power than in the 2nd stage. Farmer's facility conditions are better than in the 2nd stage, as they have good transportation facilities. Infrastructure development has happened in the 3rd stage. Farmers can bring paddy by themselves to the market and sell paddy.

Table 3. Conditions of LPA/Bepari at different stages

Trader	1st stage	2nd stage	Conditions	3rd stage	Conditions
LPA/Bepari	1	Their volume of business is larger than Faria.	1 64.3% of farmers traded paddy through them.	1 Only 28.4% of paddy was traded through them.	1 The facility condition of farmer is more than 2nd stage.
	2	They come to the farmer's house to buy paddy.	2 They come to farmgate to buy paddy.	2 Their influential power is lower than 2nd stage.	2 The transportation facility and infrastructure are better than the 2nd stage.
	3	They borrow money from local money lenders and lent money to farmer.	3 They hired a car or boat to transport paddy.	3 Farmers have to sell paddy at LPA/Bepari's decided price.	3 They come to the farmer's house and buy paddy.

Source: Survey data, 2022

3.5.3. LPB/Paddy Aratdar

Local Paddy Broker/Paddy Aratdar is another big paddy assembler or broker. They gain commissions for paddy from LPA/Bepari. After purchase, LPB/Paddy Aratdar sells paddy directly to Rice Miller. Some LPB/Rice Aratdar have rice mills. They work as a bridge between LPA/Bepari and Rice Miller. They can negotiate with each other. In the 2nd stage, LPB/Paddy Aratdar buys paddy from LPA/Bepari. Transactions are in cash with no commission sales, while in the latter, commission sales dominate. They did not get an advance from Rice Millers. Indeed, they are more likely to sell traditionally. Some advance payments to LPB/Paddy Aratdar have also been reported in the 2nd stage. In the 3rd stage, they have the most power in the paddy marketing channel, as 68.9% of paddy was traded through them. Here the transportation system is better, and farmers can carry paddy to the shop in Aratdar.

Table 4. Conditions of LPB/Paddy Aratdar at different stages

Trader	1st stage	2nd stage	Conditions	3rd stage	Conditions
LPB/Paddy Aratdar	-	<ol style="list-style-type: none"> 3.0% farmers traded paddy through them. They buy paddy from LPA/Bepari, sometimes from farmers. 	<ol style="list-style-type: none"> They have a shop in the market. Their financial condition is better than others. 	<ol style="list-style-type: none"> 68.9% of paddy was traded through them. They have strong influential power. 	<ol style="list-style-type: none"> Road conditions are very good. Farmers sell paddy to the market to LPB's shop. Sometimes LPB's agent comes to the farmer's house to carry paddy.

Source: Survey data, 2022

3.5.5. Paddy Aratdar cum Wholesaler

Rice Aratdar-cum Wholesaler is also a paddy assembler. Their scale of business is smaller than that of LPB/Paddy Aratdar, but they have much more power among paddy traders. They buy paddy from Faria and LPA/Bepari in large amounts and supply it to Rice Millers and Processors. Table 5 discovered that Paddy Aratdar cum Wholesaler has existence in the first stage and in the 2nd stage. A very small portion of paddy was traded through them. They have labor, shops, and other facilities. However, in the 3rd stage, there is no existence of Paddy Aratdar cum Wholesaler. They have disappeared from the marketing channel in the 3rd stage.

Table 5. Conditions of Paddy Aratdar cum Wholesaler at different stages

Trader	1st stage	2nd stage	Conditions	3rd stage	Conditions
Paddy Aratdar cum Wholesaler	<ol style="list-style-type: none"> They buy paddy from Faria or LPA/Bepari. They sell paddy directly to Rice millers and processors. They work as a Paddy Wholesaler also. 	<ol style="list-style-type: none"> 2.4% of farmer trade d paddy through them. They have strong power among paddy traders. 	<ol style="list-style-type: none"> A very little portion of paddy traded through them. They have a shop, labor, and other facilities. 	-	-

Source: Survey data, 2022

3.5.6. Rice Miller

Rice millers are licensed traders, and there are two types of mills: automatic and semi-automatic. They have invested large amounts of money to build up an infrastructural framework for their mills. They purchase paddy from LPA/Bepari, LPB/Paddy Aratdar on a large scale, a small portion from farmers. They employ permanent labour or contract labour. After processing rice, the Rice miller sells it to Rice Aratdar, Rice Wholesalers, Retailers and outside Wholesalers all over Bangladesh, and negotiates strongly with them. Rice Millers buy paddy and sell rice both in cash and on credit. When business agents live in distant areas most of the transactions are done on credit.

Table 6. Conditions of Rice Millers at different stages

Trader	1st stage	2nd stage	Conditions	3rd stage	Conditions
Rice miller	1 Licensed processor trader.	<ol style="list-style-type: none"> Large investment. They have 	1 Their condition is better than other traders.	1 They have permanent labor and workers.	1 The mill area is far from the

2 Large investment premises.	permanent premises.	2 The buying price of paddy is high.	2 They buy the majority of paddy from LPB/Paddy Aratdar also from LPA/Bepari.	2 Farmers can bring paddy to Rice Miller easily.
3 Have permanent premises.	3 The majority of paddy gets from LPB/Paddy Aratdar.	3 Has permanent workers and labor.	3 2.7% of farmers traded paddy directly to Rice millers	
	4 12.4% of farmers sell paddy to them.	4 Marketing margin is high.		

Source: Survey data, 2022

Major changes have occurred in the milling sector of the study areas. The entire traditional milling system dramatically decreased older technologies of husking mills, boiler-operated mills, and shallow-engine run mills, which were in decline, with fully automatic and semi-automatic mills rapidly taking over. These changes have been particularly notable in Brahmanbaria district in the 2nd stage, where a total of 404 large rice mills were established in the area. The introduction of automatic mills has altered incentives for traders in several ways. Weighing and bagging are now done using modern techniques. The quality of the produced grain is standardized, and it does not matter due to weather, as drying is automatic. Concerns regarding the colour, quality, and weight of rice that were once important have now become largely irrelevant. Their financial condition was better, and margins were high all the time as they worked as processors of rice. In the 3rd stage, the rice mill area is far from the farmers village. In the 2nd stage, a few farmers—that is, 12.4% of paddy farmers can directly sell to Rice Millers and in Habiganj only 2.7%.

3.5.7. Farmer's Facility Conditions

Table 7 clearly shows the facility conditions of farmers in both stages. It reveals that most of the facilities for farmers are better in the 3rd stage than in the 2nd stage. In each sector, such as transportation, storage, and communication, farmers hold more facilities than in the in the 2nd stage.

Table 7. Farmers' facility conditions

Particulars	Brahmanbaria (2nd stage) Percentage N=113	Habiganj (3rd stage) Percentage N=179
A. Transportation		
1 Truck	0.0	<8.5
2 Tractor	10.0	< 24.0
3 Van	4.6	< 38.0
B. Storage		
Store	24.2	< 41.3
C. Information		
1 Radio	10.4	< 45.0
2 Television	31.1	< 56.0
3 Mobile	75.0	< 80.0

Source: Survey data, 2022

3.5.8. Reasons for Farmers Selling Paddy to Different Paddy Traders

There are some reasons for selling paddy to different traders in the survey areas, which have been given as a ranking below. Table 8 shows that in the 2nd stage, most reasons for selling paddy to different traders were that it was easy to transport paddy, get immediate cash from traders, transport facilities provided by traders, and get credit facilities for paddy production. On the other hand, in the 3rd stage, farmers get immediate cash and credit facilities from traders, as well as no process activity needed, which are the reasons for selling to traders. In both villages, farmers are bound to sell paddy to different traders as they have a lack of storage, need immediate cash to meet household expenses and farming costs and get advance pay from traders.

Table 8. Reasons for farmers selling paddy to different traders

Reasons for selling paddy to Trader	Brahmanbaria (2nd stage) Ranking	Percentage	Habiganj (3rd stage) Ranking	Percentage
1 Easy to transport	1	75.5	5	35.0
2 Get immediate cash	2	60.0	1	60.0
3 Sold without processing	6	32.0	3	50.0
4 Credit facility	4	50.0	2	55.5
5 Lack of storage facility	5	40.0	4	42.0
6 Transportation facility	3	55.5	7	22.0
7 Advance pay from trader	7	28.0	6	26.0

Source: Survey data, 2022

3.5.9. Characteristics of Changes in Paddy/rice Marketing Channel Structure

- 1 The functions of paddy traders, their roles, and operations have altered over time. In the indigenous channel paddy market has faced dominant actors such as Faria and LPA/Bepari. Farmers are primarily engaged in transactions with Faria and LPA/Bepari and Faria was the most active actor.
- 2 In the 2nd stage, Faria did not exist as an actor in the paddy/rice marketing system, whereas LPA/Bepari became the dominant actor. More than 64% of paddy is traded through LPA/Bepari. There is strong competition among paddy-collecting traders as farmers can verify paddy prices through their mobile phones.
- 3 In the 3rd stage, LPB/Paddy Aratdar became the leading actor in the paddy/rice marketing system, more than 68% of paddy traded through LPB/Paddy Aratdar in this stage. The use of weighing balances rather than the traditional basket has also gone in the farmers' favor. Increased competition, better information (due to mobile phones), and easier access to the market than before for the farmers.
- 4 In the 3rd stage, Paddy Aratdar Cum Wholesaler has disappeared from the marketing channel.

Through these three stages, it has been shown that from previous times, the paddy/rice structure has changed at present time in the country. These figures delineated the changing pattern of the structure of the paddy/rice marketing system.

3.5.10. Some Factors of Changing the Structures of Paddy/rice Marketing System

Currently the paddy/rice marketing system has been modified more than before. Transactions are in cash and at the farm gate as well. Unlike in the past, when growers would go to the village market to sell, they are now able to sell directly from the farm gate also. There may be some factors for changing the paddy/rice marketing channel structure; these are listed below:

- 1 Increase the intense competition among paddy/rice traders. Marketing power has increased as a large number of traders are involved in the marketing system.
- 2 For the development of infrastructure such as roads and transportation and communication systems, farmers can go to the market and directly sell paddy.
- 3 Farmers' marketing facility conditions have also enlarged than before.

3.5.11. Constraints of the Paddy/rice Marketing System of the Farmers

It has pointed out some constraints for farmers in the paddy/rice marketing system. Table 9 shows the problems by ranking, which are as follows: Farmers are facing various constraints in both districts. According to Table 9, in the 2nd stage, the most constraints farmers are facing are lack of fair pricing, inadequate infrastructure development, inadequate market information, lack of storage, etc. A major problem behind the 'backward area' was its remote location. They have difficulty accessing the nearest market because of inadequate transport facilities and infrastructure development. In the 3rd stage, farmers face the most problems: lack of fair pricing, inadequate market information, lack of storage and poor infrastructure, etc. In both stages, farmers have inadequacy of labour, a lack of transportation, market access problems, poor extension facilities, a lack of technical guidance, and a lack of credit facilities.

Table 9. Constraints of the paddy/rice marketing system of farmers

Constraints of farmers by ranking	Brahmanbaria (2nd stage)	Percentage	Habiganj (3rd stage)	Percentage
1 Inadequate market information	3	53.0	2	60.0
2 Inadequate infrastructure development	2	65.5	4	35.0
3 Lack of fair pricing	1	75.0	1	68.5
4 Inadequacy of labor to transport	7	24.0	5	27.0
5 Lack of storage system	4	43.0	3	52.0
6 Lack of access to adequate market	6	30.5	7	20.0
7 Lack of transportation	5	38.0	10	10.0
8 Poor extension facility	8	20.0	8	15.5
9 Lack of technical guidance	9	15.0	9	12.0
10 Lack of credit facility	10	12.0	6	22.0

Source: Survey data, 2022

4. CONCLUSION

This study discusses the changes in paddy and rice marketing channel structure and identifies the reasons for the change. It found that the paddy/rice marketing channel structure has changed in the following ways: Faria and LPA/Bepari was active actor and Faria was the most dominant traders in the indigenous paddy/marketing channel. However, Faria business has vanished in the 2nd stage, and LPA/Bepari has become the dominant actor, as more than 64% of farmers traded paddy through LPA/Bepari. In the 3rd stage, LPA/Bepari's business has decreased, and LPB/Paddy Aratdar has become a more dominant actor, as more than 68% of farmers traded paddy through LPB/Paddy Aratdar. In the 3rd stage, Paddy Aratdar cum wholesaler has vanished from the paddy/rice marketing channel. As infrastructure has developed in the 3rd stage from the 2nd stage, the marketing facility conditions have also improved. The factors in changing the paddy/rice marketing channel structure are intense competition among paddy and rice traders, their functions and marketing power in the paddy market, the development of infrastructure, as well as the enlarging of farmers' facility conditions. Therefore, more infrastructure development is necessary for future marketing structure improvement. In that case, the government has to think about improving the infrastructure for farmers. It is difficult to establish this for individual farmers. In that case, farmers may establish farmers' agricultural cooperatives to improve their marketing facilities and power in the paddy and rice market and reduce traders' involvement in the marketing channel.

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Author(s) hereby declares that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during writing or editing of manuscripts.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

AUTHORS' CONTRIBUTIONS

The authors did hard work for survey preparation, designed a questionnaire, collected data, tabulated, analyzed and wrote the manuscript.