

RICE SUPPLY CHAIN AND RELEVANT ISSUES OF THE RICE MILLS: A STUDY IN BIRBHUM DISTRICT AND BURDWAN DISTRICT OF WEST BENGAL

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ABSTRACT

Agriculture is one of the most important sectors contributing in the growth of Indian Economy. West Bengal ranks at the top regarding rice production which is more of a staple crop of this state, not a cash crop. Thus rural economy of West Bengal is dependent on the performance of the rice mill industries and on the income of the farmers. Besides the rice mills and the farmers, the other important members, evolved since years, of the rice supply chain are the brokers. Associated logistics and other relevant issues regarding the management of the rice mills are also of concern regarding the profitability and better performance of the industry. Both the backward and forward linkages of this paddy-rice supply chain involve numerous activities. Birbhum and Burdwan being the top two rice productive districts as well as having plenty of rice mills hold the lion share in this market. Thus enumerating the typical supply chain aspects of the rice mills and highlighting the probable betterment needs enlighten on the scope of farther improvements of the current market scenario. Hence opportunities for more economic development of the rural areas as well as necessary supply chain management aspects of the rice mills for more productive and profitable business are envisaged.

Keywords: Paddy, Farmers, Rural Economy, Industry, Management.

Introduction

The Indian Economy is segmented into three different sectors namely Primary, Secondary and Tertiary sectors. So many factors contribute to the Indian Economy which, now a days is being considered as one of the largest economies of the world. The tertiary sector is mainly the 'services sector' including Financial, Real Estate & other Professional services, Public administrations, broadcasting etc. Today the service sector accounts for almost 54% of Indian GVA (Gross Value Added) of 179.15 lakh crores. The Industry sector lags behind it with 25.92% contribution. The primary sector which includes Agriculture and Allied sectors, fishing and forestry used to be the biggest contributor in Indian GDP. The share of agriculture in gross domestic product (GDP) has reached almost 20 per cent for the first time in the last 17 years, making it the sole bright spot in GDP performance during 2020-21, according to the Economic Survey 2020-2021. Employment in agriculture (% of total employment) (modeled ILO estimate) in India was reported at 41.49 % in 2020, according to the World Bank collection of development indicators, compiled from officially recognized sources.

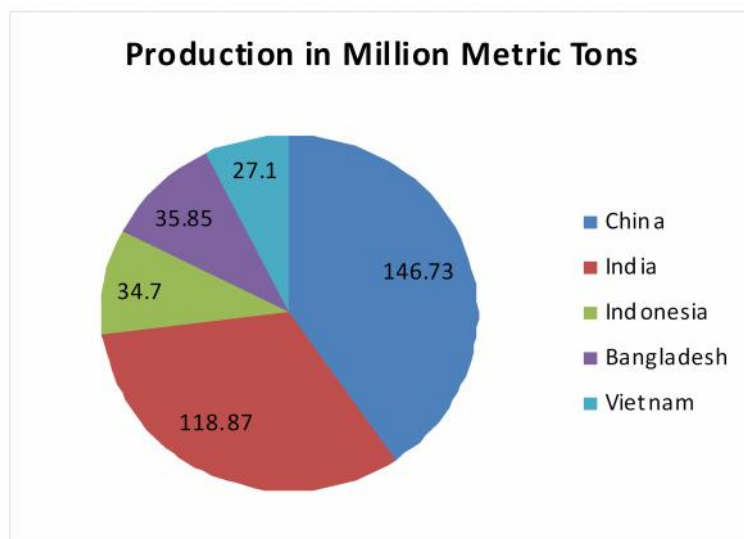
Several economic surveys opined that, the agricultural research and developments help in innovating ways for sustaining the growth of agricultural productivity. In 2016-17, India's food grain production reached 275.68 million tonnes and the estimation for 2017-18 had been 274.55 million tonnes (HussainAnam,toppr.com, March 28,2018). In the 2019-20 crop year (July-June), the country's food-grain output (comprising wheat, rice, pulses and coarse cereals) stood at a record 297.5 million tonnes. India's foodgrain production is estimated to rise 3.74 per cent to a new record of 308.65 million tonnes in the crop year 2020-21, on the better output of rice, wheat and pulses amid good monsoon rains last year. The major cash crops of India are sugarcane, tobacco, cotton, jute. Cash crops are mainly for

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commercial purposes rather than for the usage of producer whereas major food crops are consumed by the citizens of the nation and excess amount can be exported too. Major food crops in India are rice, maize, pulses and millets. There are two agricultural seasons in India in general namely 'Kharif', (July – October) and 'Rabi', (October –March). In the kharif season, the main crop grown is rice and in rabi season, it is wheat. In the 2019/2020 crop year, China produced some 146.7 million metric tons of milled rice, a higher volume than any other country. India came in second place with 118.9 million metric tons of milled rice in that crop year.

Top Five Rice Producing Nations



Source: statista.com

Thus, production of rice is very much important for Indian national economy as it is one of the most important major crops produced in India. According to a report published in 'Business Standard', India has been world's largest rice exporter. Due to India's competitive cost advantage regarding rice production, India had the highest export volume of rice worldwide, at 15.5 million metric tons as of 2020/2021. Vietnam was the second largest rice exporter, with about 6.4 million metric tons of rice worldwide in that year. In India, among all other states, West Bengal is the largest producer and consumer of rice.

The top 10 States Ranking According to Rice Production

Rank	State	Rice Production ('000 tons)
1	West Bengal	15,881.44
2	Uttar Pradesh	15,517.80
3	Punjab	11,779.28
4	Andhra Pradesh	8,658.88
5	Orissa	8,360.37
6	Telangana	7,427.77
7	Tamil Nadu	7,171.14
8	Chattisgarh	6,774.77
9	Bihar	6,297.99
10	Assam	4,984.63

Source: National Horticulture Board 2019-20

So, as far as the Indian scenario is concerned, as well as for West Bengal, the betterment of paddy farming and performance of the rice mills of Bengal is very much important for economic growth, particularly for the rural areas. Generally the rice mills are concentrated and set up surrounded by agriculturally fertile villages engaged in paddy farming.

The farmers supply their produced paddy to the rice mills either directly to the mills, or by some middlemen and earn against that. Sometimes the rice mills buy paddy from farmers from Central Purchase Centers (CPCs) run by the State Government where the farmers are paid with MSP (Minimum

Support Price). Huge numbers of rural people earn their livelihoods working as skilled and unskilled laborers, supervisors or managers in the rice mills. Thus, the better the performance of the rice mill industries, the better for the rural economy be it for West Bengal or as national concern. The better performance of the rice mills depends on the way the typical supply chain management aspects of the mills are taken care of and efficiently managed. Supply chain is nothing but the network involving individuals, organizations, all the related resources, different activities and certain technologies while creating a product or offering a service and trading that. It starts from the delivery of resource materials from the suppliers to the manufacturer or processors, through to its ultimate delivery to the consumers in the end. It also includes the associated logistics aspects, hence, all the members of this entire chain. Thus supply chain management is the execution of efficient management efforts regarding all these. These days, the success and failure of any business depends on its supply chain management and like any other industry, the rice mills also are dependent on its proper supply chain management efforts to run profitably. This research study makes an effort to go through the existing supply chain management efforts of some of the rice mills of West Bengal to identify the specific problems and haunches that affect the profitability and productivity of the rice mills and to suggest possible solutions and policy alternatives to ensure better performance and growth of rural economy.

Sampling and Methodology

Rice is generally cultivated in 18 districts of West Bengal. Out of which 4 districts come under high productivity group, 9 districts are under medium productivity group, 3 districts are under medium-low productivity group and 2 districts are considered under low productivity group.

High Productivity Districts	Medium Productivity Districts	Medium - Low Productivity Districts	Low Productivity Districts	Very Low Productivity Districts
Burdwan	North 24 Pgn.	South 24 Pgn.	Jalpaiguri	-
Birbhum	Murshidabad	Purulia	Darjeeling	
Nadia	Bankura	Coochbehar		
Hooghly	Malda			
	West Midnapore			
	North Dinajpur			
	East Midnapore			
	South Dinajpur			
	Howrah			

Source: Directorate of Rice Development, Government of India, Ministry of Agriculture & Farmer's Welfare, Patna, Bihar

In 2014-15, top three districts, which have shown highest dry yield rate of Aman (clean rice), are Birbhum, Bardhaman and Malda (Source: Bureau of Applied Economics and Statistics Department of Statistics and Programme Implementation Government of West Bengal 2016). According to the report of (Primary research) Department of Food Supplies, Govt, of West Bengal- WBPDS (West Bengal Public Distribution System), considering the productivity (k.g. per Hectare) of paddy; the top two Districts in West Bengal are Birbhum and Burdwan respectively in 2018 as well.

District-wise per Hectare production of paddy and average production by a farmer			
Sl No.	District	District-wise per Hectare production (K.G.)	District-wise production of paddy by farmers (Quintal) (Per Hectare Production x 0.77 Hec. as average holding)
1	Darjeeling	3145	24.2165
2	Jalpaiguri	3629	27.9433
3	Coochbehar	3547	27.3119
4	Uttar Dinajpur	3884	29.9068
5	DakshinDinajpur	4237	32.6249
6	Malda	4822	37.1294
7	Murshidabad	4565	35.1505
8	Nadia	4213	32.4401
9	North 24 Pgn	4284	32.9868
10	South 24 Pgn	3663	28.2051
11	Howrah	3573	28.8981
12	Hooghly	4574	35.2198

13	Burdwan	4868	37.4836
14	Purulia	3213	24.7401
15	Bankura	4100	31.57
16	Birbhum	4884	37.6068
17	Purba Medinipur	3233	24.8941
18	Paschim Medinipur	4048	31.1696
	Average	4098	31.5546

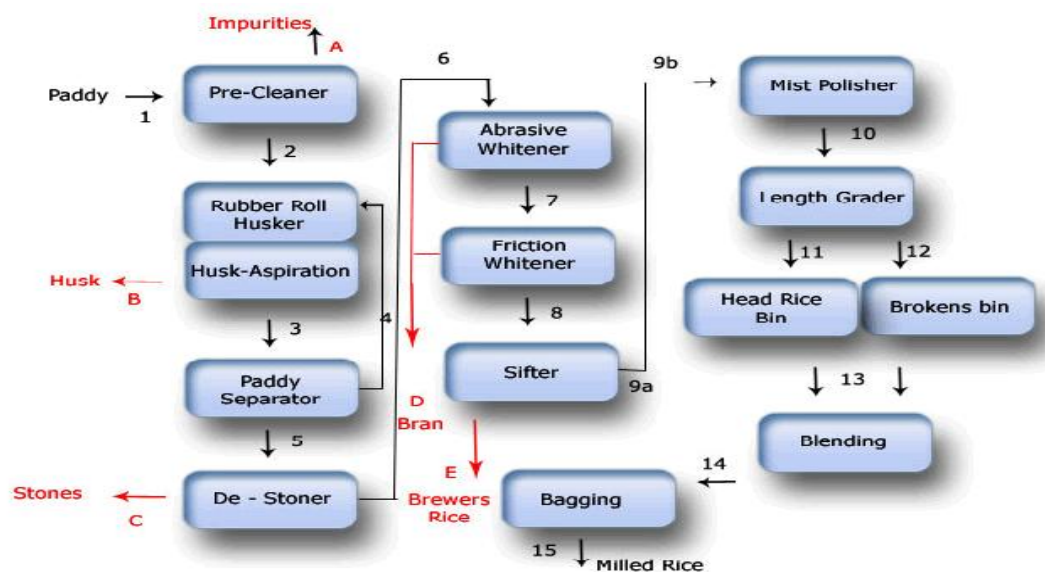
Thus, Birbhum and Burdwan districts were selected to conduct the study.

Respective blocks of these two districts were selected according to the concentration of the rice mills to visit the rice mills. Some of the gram panchayats and villages of these two districts were purposively selected to interview some farmers, to be precise, 10 from each village. Besides that, some of the middlemen/traders of paddy trading were also interviewed to get an idea about the existing supply chain.

To analyze the existing supply chain activities of the rice mills, some rice mills of Bolpur-Sriniketan Block and Sainthia Block of Birbhum district were visited. Farmers and commission agents/paddy traders/ middlemen being members of the supply chain were also scheduled. Same procedures were followed in Khandagosh Block and Galsi II Block of Burdwan district.

Observations

A rice mill has some typical units through which paddy are processed into edible rice. Each and every step of this entire process needs some sort of expertise labor. Besides that, overall management of the mill, supervising, loading – unloading of sacks etc. are the numerous works that require a taskforce in every rice mill. Although, the management hierarchy differs from rice mill to rice mill, e.g. a rice mill may not have a designated supervisor as such, but a skilled laborer can manage it himself. The following diagram shows the steps involved in milling rice:



Source: International organization of Scientific Research

The hierarchical level and numbers of employees engaged in the visited rice mills gives an idea about the taskforce that generally remains active in a rice mill.

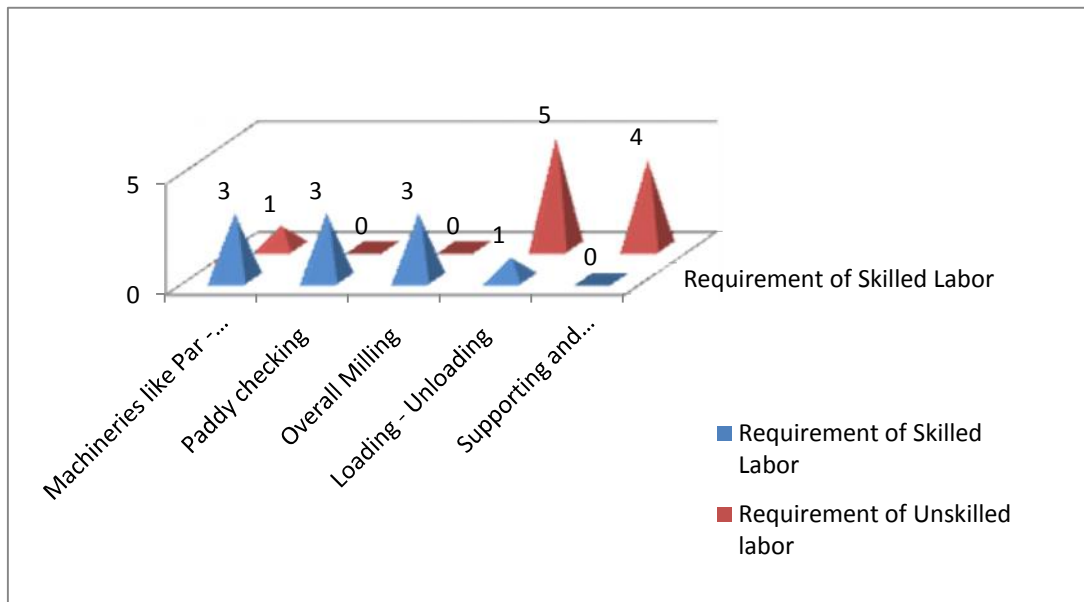
Employees' hierarchy of the rice mills & no. of employees in the rice mills								
District	Block	Rice Mill	Managers	Supervisors	Skilled Laborers	Unskilled laborers	Daily laborers	Auxiliary staffs
Birbhum	Bolpur Sriniketan	Bhagabati Ceral Pro. Ltd	4	3	15	20	0	0
Birbhum	Bolpur Sriniketan	Ramakrishna Rice Mill Pvt. Ltd	3	5	17	23	0	0

Birbhum	Bolpur Sriniketan	SHREE GOPAL RICE MILL	1	0	25	50	25	30
Birbhum	Sainthia	SARDA RICE & OIL MILLS	1	2	5	20	60	7
Birbhum	Sainthia	JOY MA DURGA RICE MILL	1	20	10	70	30	20
Burdwan	Khandaghosh	Nilachal Food Product	3	2	25	7	12	4
Burdwan	Khandaghosh	Maa Avaya Food Processing	1	2	10	26	0	2
Burdwan	Khandaghosh	M/s Adam Rice Product Industries	1	1	10	25	8	4
Burdwan	Galsi II	GopalGobindo Rice Mill	1	1	16	40	5	26
Burdwan	Galsi II	Uma Agro Industries	1	4	6	25	30	4

Following this hierarchical structure, it has been evident from the survey that, the skilled laborers play the most important roles in a rice mill. Generally some of them are promoted to or act as supervisors or even managers as per their experience. Separate management staffs as managers remained employed for clerical and accounting works. The unskilled ones, daily laborers and auxiliary staffs help in providing assistance to the skilled laborers in different departments. Some of the rice mills do not even employ daily laborers or auxiliary staffs additional to the skilled laborers.

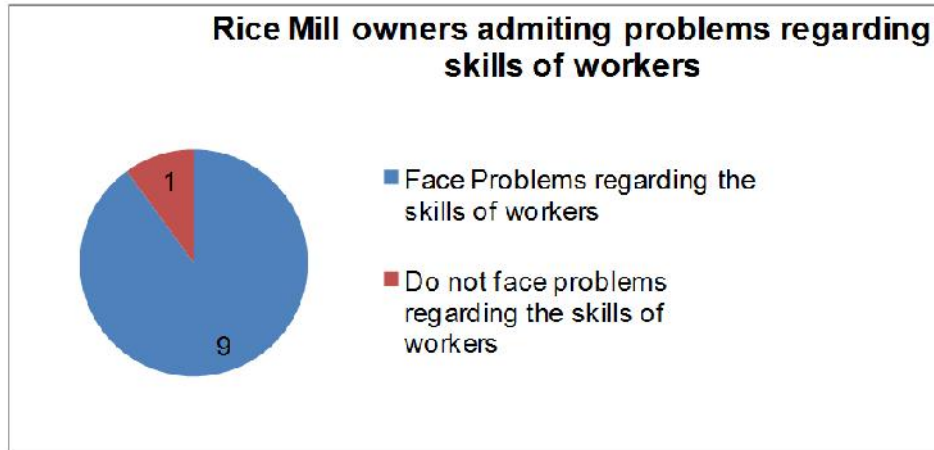
The following diagram shows the involvement of skilled and unskilled laborers (as support staffs or auxiliary ones) in these 10 rice mills visited in these two districts

Quite evidently from the survey, it has been observed that paddy checking is the first and foremost important thing for a rice mill. After that, overall milling process engaging the operations of numerous machines like boiling, par-boiling, drying, operating the sortex machine etc. comes into consideration as important. These are the areas where skilled workers and expertise are needed.

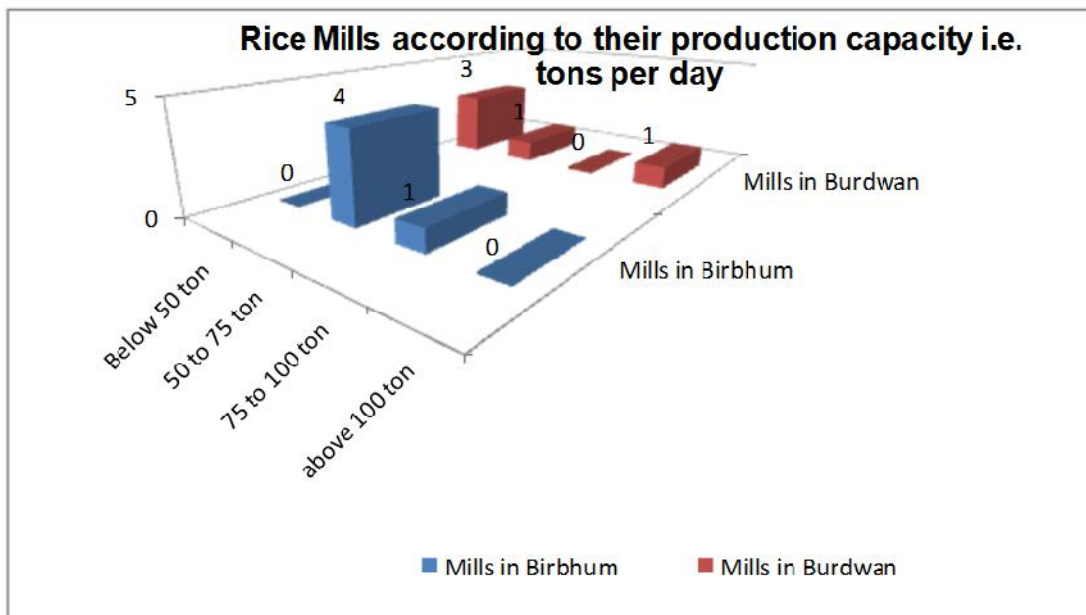


"Paddy checking is so important that if one fails and continues to fail in detecting the actual quality of paddy before milling that, his business can shut down in future." - opined Mr. Sushil Chowdhury, the owner of Shree Gopal Rice Mill of Birbhum District. Perhaps this is the reason why he himself checks the quality of paddy being brought in his rice mill to process. The activities of the unskilled or daily laborers are limited in loading-unloading works and in other assistance works in different sections of a rice mill unit. The workers learn operating different machines and achieve expertise through experience

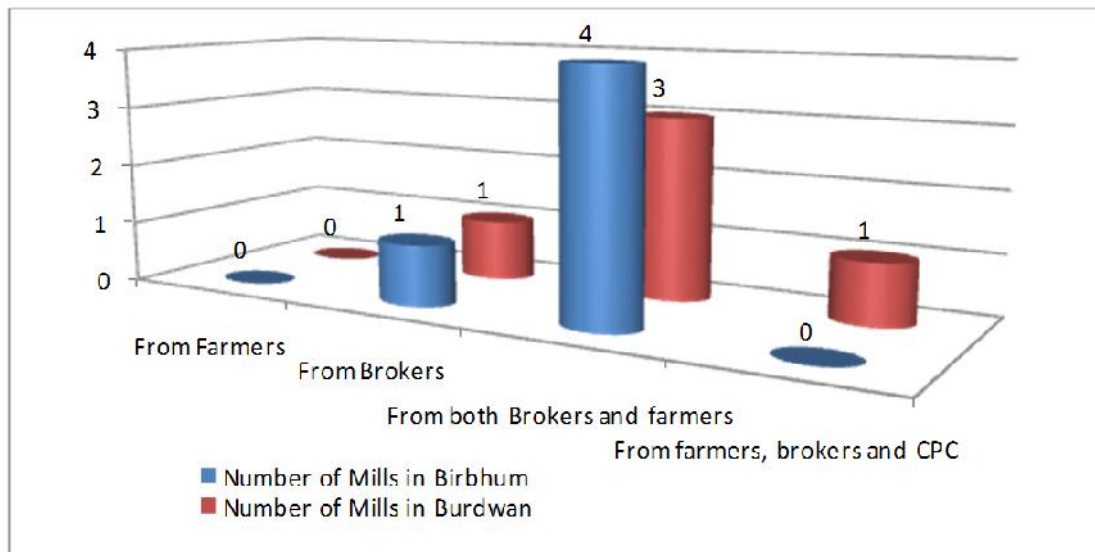
while working since years. Demonstrations are given by different companies while installing different machines in the mill. Neither any regular training to the workers is given, nor is any such workshop to train them organized. But problems regarding the skills of the workers have been evident when the owners of these rice mills were asked about that. Nine of the ten owners reported that they do face different problems like break downs, more amount of broken rice, wastages, hamper in production and discolored rice etc.



The need of taskforce depends on the production capacity of the rice mill and usually a 'shift' is of eight hours work. The production capacity varies from rice mill to rice mill and usually is measured by 'Tons per Day'. Based on this production capacity the demand for paddy from the suppliers i.e. the farmers or the Brokers who are the members of the backward linkage of the supply chain is assessed.



Some of the rice mills buy paddy from the brokers or the middlemen. Some buy paddy directly from the farmers. But most of the mills rely on both the farmers as well as the brokers. The owners of the ten rice mills visited in Birbhum and Burdwan explained the pros and cons of the paddy supply prevailing in the industry where actually there are excess rice mills in number than the actual supply of paddy in this state. Thus paddy is brought from other states like Bihar and Jharkhand too. Thus, there is more demand of paddy for the mills than the current supply. The diagram below shows the paddy buying practice of the rice mills.



No rice mill buys paddy only from the farmers. Thus the involvement of brokers is evident for paddy supply to the rice mills. The reasons are like continuous and uninterrupted flow of paddy supply, quality of paddy and most importantly - the quantity of paddy demanded by the rice mill. A farmer has limited capacity of paddy quantity to sell, but a broker usually has huge network of farmers to collect paddy from and thus more capacity that suits the need of the rice mills. Another issue is the quality of paddy being produced in Birbhum and Burdwan, in fact in West Bengal as a whole. In Burdwan District, production of the 'Govind-Bhog' rice is quite more which makes the mills of Burdwan to look for other types of paddy from different districts as processing of Govind - Bhog or 'Atap' rice needs different milling techniques as boiling or Par-boiling is not applicable like other common rice milling techniques. In Birbhum district, the paddy is of inferior quality compared to the paddy being produced in Bihar. "Quality of paddy of Bihar is better and one, who knows about it, can see the difference easily." - Opined Mr. Rajiv Bhattacharya, the owner of Joy Ma Durga Rice Mill of Sainthia Block in Birbhum. So to get paddy from Bihar- Jharkhand region, the rice mills are dependent on Brokers. So, most of the rice mills buy paddy from both, the farmers directly and brokers. Only one mill in Burdwan reported buying paddy from the Central Purchase Centers (CPC) of the state govt. of West Bengal besides buying from brokers and farmers separately. In the CPC, the farmers can sell paddy against Minimum Support price (MSP) to the procurement department of the State Government. More or less, the supply belt remains the surrounding villages or blocks of Burdwan and Birbhum as Birbhum and Burdwan are the top two districts as far as the productivity of paddy is concerned and Burdwan is renowned for rice production since years. Burdwan district is famous for rice production and paddy farming. Rice from Burdwan has its dominance in nation-wide markets of other states and even gets exported internationally. Scheduling some of the farmers of Bolpur-Sriniketan and Sainthia block of Birbhum and also of Khandaghosh and Galsi II block of Burdwan, preciously 30 farmers from each district, actual scenario of their paddy farming and trading practice had been prominent.

Number of farmers according to their Cultivable landholdings for paddy			
Acreage	Number of farmers in Birbhum	Number of farmers in Burdwan	Grand total
0 - 1	4	1	60
1 - 2	11	3	
2 - 4	10	12	
more than 4	5	14	
Total	30	30	

In Burdwan most of the farmers have acreage of more than 4 acres of lands but in Birbhum most farmers i.e. 11 out of 30 have acreage between 1 to 2 acres. Not all the farmers of these two districts grow both kharif (Aman) and summer (Boro) paddy. Some produce only Aman due to lack of irrigation facilities and other issues like fertility of land, labor problem etc.

District	Block	Number of farmers not growing Boro (summer) paddy
Birbhum	Bolpur-Sriniketan	5
	Sainthia	0
Burdwan	Khandaghosh	3
	Galsi II	10

In galsi II Block of Burdwan district no farmer opts for Boro paddy farming due to the lack of irrigation facilities. All the 10 farmers surveyed in Sainthia block of Birbhum opts for both Aman and Boro paddy. Apart from this Babuia village of Srinidhipur panchayat in Sainthia, farmers were found in other places who do not grow Boro paddy but opts for only Kharif paddy farming.

Production of paddy throughout a year by farmers (in Quintal)		
Production Range	% of farmers in Birbhum	% of farmers in Burdwan
below 50	40	10
50 - 100	26.67	23.33
100 - 150	26.67	26.67
150 - 200	0	26.67
200 - 250	6.66	6.67
250 - 300	0	6.66
more than 300	0	0

Most of the farmers surveyed in Birbhum produce paddy of below 50 Qtl. in a year while in Burdwan most of the farmers' production is ranging between 100 Qtl. to 200 Qtl. In Burdwan, 6.66% farmers produce paddy ranging between 250 Qtl. to 300 Qtl., but in Birbhum no such farmer falls in these range or more than that. In these surveyed villages, no farmer is being able to produce more than 300 Qtl. of paddy in a year.

Some of the farmers of these surveyed areas keep some of their produce for own family consumptions while some sell the entire amount of paddy produced and buy rice from market.

District	Block	Number of farmers keeping parts of their produce for self- consumption
Birbhum	Bolpur-Sriniketan	13
	Sainthia	8
Burdwan	Khandaghosh	1
	Galsi II	1

The tendency of keeping paddy for self-consumption is quite less evident in Burdwan compared to the farmers of Birbhum. Only two farmers out of the surveyed farmers in Burdwan keeps some parts of their produced paddy for own consumption purpose. Most of the farmers in these areas sell their produced paddy to the local middlemen or brokers who are popularly known as "Aratdars". These brokers have evolved as important members in the paddy supply chain of the entire rice processing industries.

District	% of farmers selling their paddy to the middlemen/ brokers	% of farmers selling their paddy to rice mills or CPC	% of farmers considering selling paddy to middlemen or brokers is convenient	% of farmers considering selling paddy to rice mills or CPCs is convenient
Birbhum	100	0	100	0
Burdwan	100	0	100	0

It has been very clear from the survey in the villages of these blocks in Birbhum and Burdwan that, the farmers consider selling their produce to the brokers or middlemen even against lower market price or against lower price compared to MSP (Minimum Support Price) is beneficial. Thus they sell paddy to them. The middlemen or local aratdars sometimes provide loans to the farmers and often it becomes a long term relationship between these middlemen and farmers that helps in trading. Carrying the paddy to the CPCs or to the mills themselves often becomes hazardous for the farmers. Mills or CPCs often rejects paddy due to impurities or improper quality issues. These are some of the reasons behind the farmers considering selling their produce to middlemen or aratdars are more beneficial. These middlemen or brokers then, after collecting paddy from the farmers from different villages, sell that in

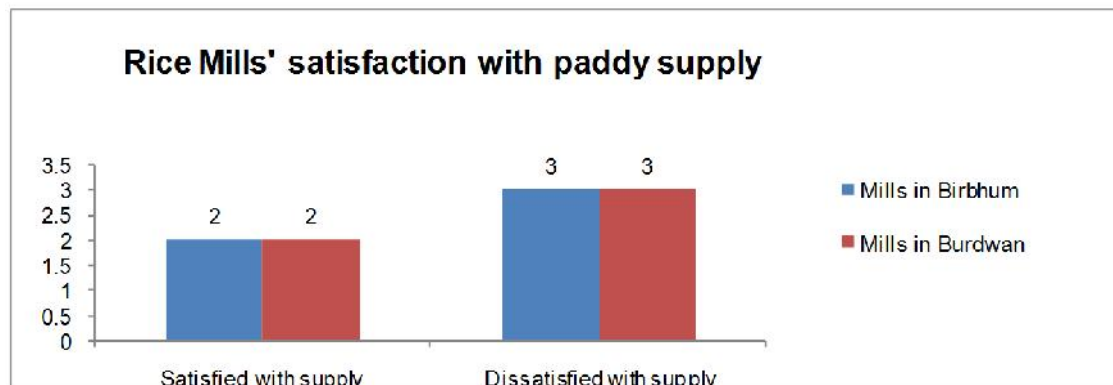
different Rice Mills adding some 'brokerage' amount in the selling price for their own profit. That is why most of the Rice Mills in these surveyed areas are buying paddy mostly from the brokers or middlemen besides buying directly from the farmers sometimes. Total six middlemen or brokers were scheduled to get an idea about their trading with the farmers. Some of the middlemen or 'aratdars' sell paddy to other brokers and rice mills as well, while some sell only to rice mills. Buying paddy from other brokers is comparatively less evident than buying from farmers.

District	Block	Number of Brokers	Buying paddy from farmers/ other brokers/ from both	Average quantity while buying paddy from farmers (Qtl.)	Selling paddy to Rice mill/ Other Brokers/ to Both	Avg. quantity of paddy while selling (Qtl.)
Birbhum	Bolpur Sriniketan	2	Farmers	65	Both	80
	Sainthia	1	Farmers	115	Rice Mills	225
Burdwan	Khandaghosh	2	Both	76	Both	95
	Galsi II	1	Farmers	6.5	Rice Mills	400

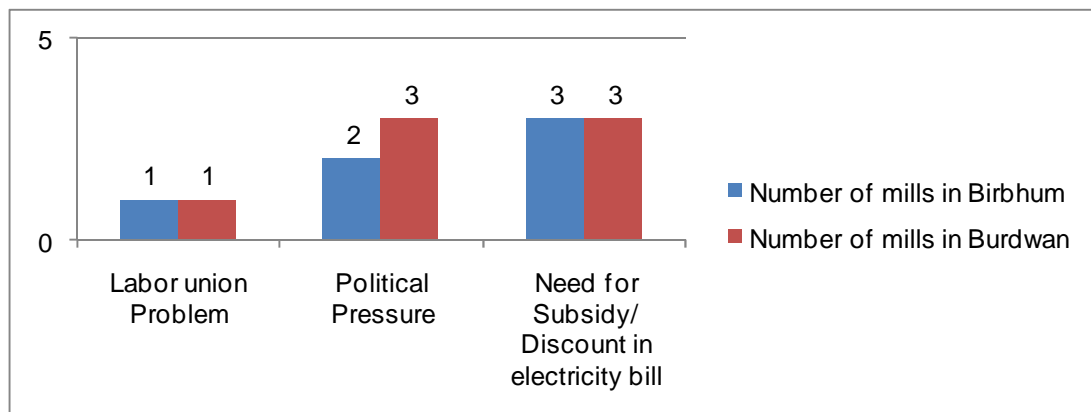
The table below shows the quantity of paddy that the rice mills usually buy from the farmers and brokers at times in both of these districts:

District	Block	Rice Mill	Quantity range while Buying paddy from farmers (Ton)	Quantity range while buying paddy from Brokers (Ton)
Birbhum	Bolpur Sriniketan	Bhagabati Ceral Pro. Ltd	Less than 10	10 – 20
		Ramakrishna Rice Mill Pvt. Ltd	Less than 10	10 – 20
		SHREE GOPAL RICE MILL	10 – 20	50 – 100
	Sainthia	SARDA RICE & OIL MILLS	0	10 – 50
		JOY MA DURGA RICE MILL	10 – 20	20 – 50
Burdwan	Khandaghosh	Nilfachal Food Product	10 – 20	50 – 100
		Maa Avaya Food Processing	0	10 – 20
		M/s Adam Rice Product Industries	Less than 10	Less than 10
	Galsi II	GopalGobindo Rice Mill	Less than 10	10 – 20
		Uma Agro Industries	0	Less than 10

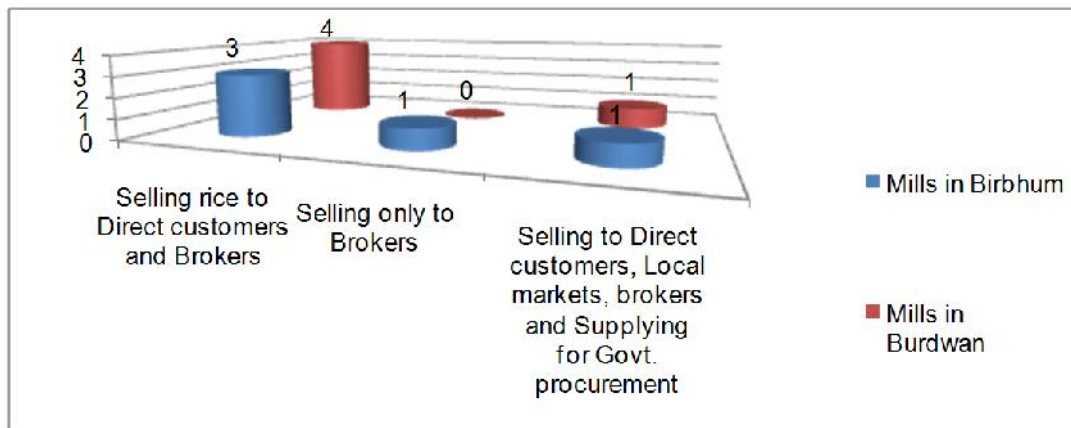
But when the question of being satisfied with the current supply of paddy was asked, difference in opinion from the rice mills became evident. Most of the mills expressed dissatisfaction due to poor quality of paddy being supplied.



The main reason of being dissatisfied is the poor quality of the paddy being brought. Either there are so many impurities and dusts, not properly graded or it is of so poor quality that becomes tough to mill and process. That's why rice mills, mainly in Birbhum these days are buying paddy from other districts like Jharkhand and Bihaar. Because the mills are not being satisfied with the quality of paddy being supplied from these rural areas of Bengal and they are even paying higher price and brokerage to buy paddy from other states. The market rate of paddy is going high. But the farmers of Bengal are not being able to get enough income shares out of that. In practice it becomes a kind of obligation for the farmers to sell their produce to the commission agents as they help them with money when needed. The farmers prefer selling the paddy to these commission agents as they pay the price in cash on spot, whereas in CPC either it's NEFT or Cheque payment involving further formal or banking works. Farmers have to bear the cost of additional Rs.30 per 60 k.g. sack of paddy that includes Rs. 20 on an average carriage cost and Rs. 10 labor cost for carrying the paddy in faraway CPCs. there are many farmers who have limited or less capacity of paddy production. For some, after own consumptions, the quantity that remains for sale becomes very less compared to the hazards of carriage costs, labor costs etc. If the farmers sell their produced paddy to the commission agents or the middlemen, the other associated things like packaging, arranging the laborers, weighing the paddy and even transportation also remain the responsibility of the buyer i.e. the agents themselves. The farmer has to bother about nothing of these hazards or headaches. The Central Government has benchmarked the process of quality analysis of paddy following FAQ i.e. that is Fair Average Quality policy. In addition to that, in the mandis or in the Central Purchase Centers the farmers get dissatisfied when huge quantity of paddy gets rejected for added impurities or if it is wet paddy. Many farmers are there who do not want to go through the apparently complex documentations and formal paper works while dealing through the CPCs. Although in very less numbers, there are some farmers who sell their paddy directly to the rice mills. But in the rice mills also they get a price of their produce which is lower compared to MSP. **These are broadly the reasons why these farmers, either willingly or unwillingly, sell the paddy to the commission agents or middlemen and get lesser price than MSP or market rate and their income generation or profit remains on a lower side.** The progress and boost of rural economy is facing resistance. On the other hand, the other reasons of problem for the mills include lack of sufficient supply of paddy as more often there remains excess demand than the actual supply and transportation hazards. These are the things that add on the internal problems and management issues of the rice mills and create hurdles on the smooth running of the system. Labor union problems, political pressures and turmoil and huge electricity consumption - hence huge payment for electricity charges are of major concern for the rice mills. Most of the rice mills need discounts or subsidies in the electricity bills. When asked about specific problems to run the units smoothly and about any specific needs, the five rice mills from each district expressed their concerns:



Transport and logistics cause so much problems for the rice mills that they do not opt for own logistics while buying paddy. Although sometimes while dealing with the State Government's procurement procedures and rice milling for that purpose makes the rice mills use own transportations against proper charges. Unless any rice mill uses own 'Brand' while processing and selling rice, while selling the rice also, the rice mills avoid own transportation and logistics hazards. Thus transportation remains the headache of the suppliers of paddy to the mill and of the customers who buy the milled rice either for consumption or for farther trading.



Trading of rice by the Rice Mills

The above diagram shows the trading scenario in the forward linkage of the paddy- rice supply chain. The milled rice from different mills thus gets sold to different local markets, to individual customers; sometimes it is distributed to the State Governments distribution Department for the Govt. procurement purpose and mostly it is sold to the brokers or agents. These agents then sell the rice in different markets and sometimes the rice gets exported to other countries also. Usually rice from this region gets exported to nations like Bangladesh, South Africa, Nigeria, Sri Lanka, UAE etc. But besides the local markets of Birbhum and Burdwan - Maldah, Murshidabad, Kolkata, Howrah and some parts of Northern Regions of West Bengal are the areas where the rice is being sold. Among the other states, Bihar has a huge market for this rice being processed in the mills of Birbhum and Burdwan. In this way through wholesalers and retailers, finally the rice gets consumed by people in different parts of the nation and world as well.

This gives a glimpse of the actual scenario of the rice supply chain existing in this industry, where it is quite evident that, the brokers or traders (middlemen) play a major role in regulating the market. Marginal landholdings being less, overall saleable quantity after own consumption being on the lower side and evident constraints of selling paddy in CPCs are the reasons of paddy farmers remaining dependent on the commission agents. And eventually they get much lesser price than MSP (Minimum Support Price) or the Market Rate of paddy. Thus, due to lower income, neither the socio economic conditions of the farmers are improving, nor the quality of farming is improving. They are not being able to upgrade themselves with improved farming techniques and quality of paddy farming is hampered. And thus, cyclically the problems are being matters of concern. The quality of paddy supply is getting affected, rice mills are opting for paddy from other states paying more brokerage and more price. So, the selling price of rice due to more production cost is going high and the customers are bearing more cost. The solution stands in better organized system in the backward linkage of the paddy rice supply chain. Problem can be solved by mutually benefiting both farmers and the rice mills following a better structured and systematic approach. The commission agents, sometimes being farmers themselves besides running this small scale business can form Self Help Groups and each group then can have their secretaries as representatives in a Federation where the rice mills association will be placing paddy demands. Representatives of middlemen and the middlemen themselves usually have networks in different villages. So farmers will be able to sell their paddy in a better structured way and can have better price for their produce. The supply of paddy of desired quality and price will be ensured which will help the rice mill industries to operate in a better way. Thus, through broader policy perspectives, better supply chain management will be ensured. Better execution of these supply chain management efforts will be fetching farmers good price for paddy, improved farming will be possible. Rice mills will also be able to function in a better way with better supply and less production-cost and thus overall rural economic development is both possible and sustainable.

The well-being and income share of the farmers of different villages of these two districts, who are the actual producers, depends on the market of rice and on the performance of the rice mills of the rice processing industry. So, the overall economic growth of the state and nation as a whole, and of course the economic development of the rural areas look for the good performance of the rice mill industries and agricultural industry growth demanding a sustainable growth and development of paddy production. Thus, proper and efficient supply chain management efforts in this industry are very important.

Conclusion & Recommendation

Like any other industry, the better performance and a sustainable growth of the rice milling industry depends on its supply chain aspects and their proper management efforts. It is evident from this research study that, in the supply chain of paddy and rice, the involvement of brokers or traders (middlemen) has evolved since years. They do play major roles in controlling the demand and supply of paddy and rice in markets. The overall development of the industry, improvement of the socio economic status and increase in income share of the farmers becomes tough if the industry remains so much dependent on the brokers. The better performance of the rice mills regarding their functioning and productivity is very important considering the economic development, especially for the rural areas. And this better performance can be ensured considering some specific issues. Better and improved quality of paddy is always demanded and a steady growth in demand of paddy is important for the increment of farmers' income. The reason of farmers getting lesser than market price or even lesser than Minimum Support Price (MSP) for their produce is the quality of paddy being supplied to the mills. If the farmers get price of paddy that is equal or even more than MSP from the rice mills or from the brokers, they will be eager to produce more and to sell paddy in the rice mills. Even if selling paddy to the mills becomes difficult for the farmers themselves due to transportation and other hazards, selling to the brokers will not deprive them much if they get more prices. But for that, improvement of quality of the produce is important. That can result in a steady growth in demand ensuring more income for the farmers. Thus economic development of rural areas can be possible. Regular training and community development initiatives can help. Farmers have to be made aware about the problems of inferior quality of paddy that becomes hazardous for processing in the rice mills. Collaborative efforts from the rice mill associations and the Government to organize such community development programs can bring fruitful results. Formation of monitoring committees involving Block level and other State level Govt. officials regarding the Fair Average Quality (FAQ) of paddy and rice can ensure better prospect. Workshops and demonstrations regarding the operating of machines in the rice mills for the laborers and workers are also needed to train the workers of the mill regularly. This can reduce breakdowns of machines and hampering of production. Not only for the newly establish mills, subsidies and discount facilities, especially for electricity charges should be allowed for the established rice mills that really are in the need for that. These can help the rice mills to reduce production cost and hence a consequent fall in selling price can be expected. This indeed can make the customers and consumers happy as the market price of rice may fall. Thus, the better the supply chain management efforts, better for the industry.

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