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A Study on Status and Performance of Rice Mills as Agro-industries in Odisha

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Abstract

Entrepreneurship is considered as an important parameter for economic development of a state. It not only boosts the organization but also it promotes the economic development of the sector. In late 1960-70's due to green revolution the agriculture scenario came with a drastic change with huge production and productivity of food grains specially paddy and wheat. It makes our country self -sufficient in food grains. This was also a time where agri-entrepreneurs from different states of India came into timeline. It accelerates the processing of paddy to make it consumable for the population. Odisha in latter 80's became self- sufficient in paddy production and dominates other crops. This era brought revolution in the paddy milling industries of Odisha. In late 90's there were around 796(OSCSC) No's of rice milling units in Odisha which in 2010-15 reduced by 24%. Many mills are closed and some are running in loss due to certain constrains and challenges. The main objective of this paper is to analyze the constrains and the challenges faced by the rice millers. For this study Bargarh, Cuttack, Jagatsinghpur and Sambalpur are taken as the area for research as the paddy production is higher than that of other districts of Odisha. About 95 No's samples mill owners have been contacted to complete this paper. Then the data are analyzed and interpreted. From study it is found that the situation of the early 90s and now has changed in respect of various factors such as stringent rules regulations of government enforcement of licensing part, delay in payment to the millers, infrastructure availability quality of the paddy procured and different schemes formed by govt. This study tried to understand the constraints and enlighten ideas to those upcoming entrepreneurs who want to build their career in rice milling sector in Odisha.

***Key words*:** Milling units, Licensing, Infrastructure, Quality, Agro-industries

The green revolution in India started in the late 1960s and with its success India attained food self-sufficiency within a decade. On the contrary, the agricultural growth in the 1980s (the second 'wave' of the Green Revolution) involved almost all the crops including rice and covered the whole country. It makes our country self -sufficient in food grains. This was also a time where agri- entrepreneurs from different states of India came into timeline. It accelerates the processing of paddy to make it consumable for the population [1].

Present study would offer a comprehensive analysis of this crucial sector, recognizing rice as the state's primary crop and staple food. Such an investigation would initially map the current landscape, detailing the number and geographic distribution of rice mills across key paddy-growing districts like Bargarh, Sambalpur, and Cuttack, alongside an assessment of their varying capacities (e.g., from small 1.5 TPD units to larger, more modern setups) and the prevalent technologies, noting the persistent use of less efficient hullers by many smaller operators despite the availability of advanced rubber-roll shellers [2]. The study would then pivot to performance evaluation, meticulously examining key metrics such as milling efficiency and head rice yield (aiming for 68-72% in modern mills versus 60-68% in traditional ones), energy consumption patterns with an eye towards identifying savings through modernization, and the extent of by-product utilization (husk for fuel/power, bran for oil extraction, broken rice for various uses). A critical component would be the financial viability assessment, involving detailed analyses of investment, operational costs, revenue streams from rice and by-products, and profitability metrics like NPV, BCR, IRR, and PBP, often revealing the feasibility of even small-scale units under efficient management [3]. Furthermore, the study would meticulously document the myriad challenges confronting these mills, including the recurring storage crisis due to procurement delays, the pervasive issue of obsolete technology hindering efficiency and quality, limited access to finance for modernization, intense market competition, inconsistent raw paddy quality, and significant labor-related concerns such as skill gaps, poor working conditions, and occupational hazards. Environmental impacts, particularly from parboiling effluents and husk ash disposal, would also be a focus, alongside the difficulties posed by unreliable power supply and the limited adoption of value-added product lines. Simultaneously, the research would acknowledge and evaluate the impact of various government initiatives like the Mukhyamantri Krushi Udyog Yojana (MKUY) and the Odisha Food Processing Policy, which offer capital subsidies and other incentives aimed at bolstering the sector's growth and modernization [4]. Finally,

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the study would conclude by underscoring the vital economic impact of rice mills in terms of rural employment and value addition, before proposing actionable recommendations for sustainable development, including enhanced financial support for modernization, improved logistics for paddy and rice movement, promotion of energy-efficient technologies, and the fostering of better market linkages and product diversification to ensure the long-term prosperity and food security contributions of Odisha's rice milling industry [5].

Odisha in latter 80's became self- sufficient in paddy production and dominates other crops. Many mills are closed and some are running in loss due to certain constrains and challenges. The processing of paddy is carried out in our country in a variety of mills like huller mills, battery of huller mills, huller-cum-sheller mills, sheller mills and modern rice mills. It is a fact that the modern mills give the highest yield of rice with least broken and better quality of byproducts [6]. Milling is a general term used for the processing of food grains into consumable form keeping in mind the nutritive quality of the product as well as the consumer's preference. It facilitates storage of food grains and reduces wastages. Paddy is milled in order to remove husk, bran, germ and aleuronic layer. Government regulation can provide both risks and benefits to business. However, unpredictable government policies force business decision-makers to receive risks in investment. Governments influence regional development in agricultural production, and their approaches have changed remarkably over the years including the milling performances. The objectives of the present study are as:

- To study the status and performance of rice mills in Odisha.
- To analyze the constrains and the challenges faced by the rice milers
- To give suggestions for smooth functioning of rice mills and sustainable development

MATERIALS AND METHODS

Study design

Quantitative research methods attempt to maximize objectivity:

Sampling design

Sample unit	:	Rice Millers
Sampling procedure	:	Non-random convenience sampling
Sample size	:	95 millers
Sampling area	:	Bargarh, Jagatsinghpur, Cuttack, Sambalpur

Data collection

Data is collected through Scheduler and mailed questionnaire

Data analysis

Data are analyzed by using various statistical tools. Mostly MS excel and SPSS are used to analyze the data.

Hypotheses

H_1: Licensing and Registration put impact on performance of rice mill

H_2: Storage space and infrastructure facilities available have relation on performance of rice mill

H_3: Fair Average Quality of paddy and rice are important performance indicators of rice mill

H_4: Government policies decide the performance of rice mill

H_5: Proper processing of paddy decides the performance of rice mill

H_6: Timely Payment and mode of payment have relationship on performance of rice mill

RESULTS AND DISCUSSION

As depicted in (Fig 1), the distribution of rice mills reveals distinct categories. 28% represent modern rice mills, outfitted with up-to-date equipment for efficient processing. Conversely, 39% are small-scale operations, predominantly relying on simple hullers to de-husk paddy. These hullers are commonly situated in rural and village areas, addressing the immediate milling requirements of local farmers. The final 33% are traditional mills, a significant portion of which are formally registered and actively involved in custom milling services [7].

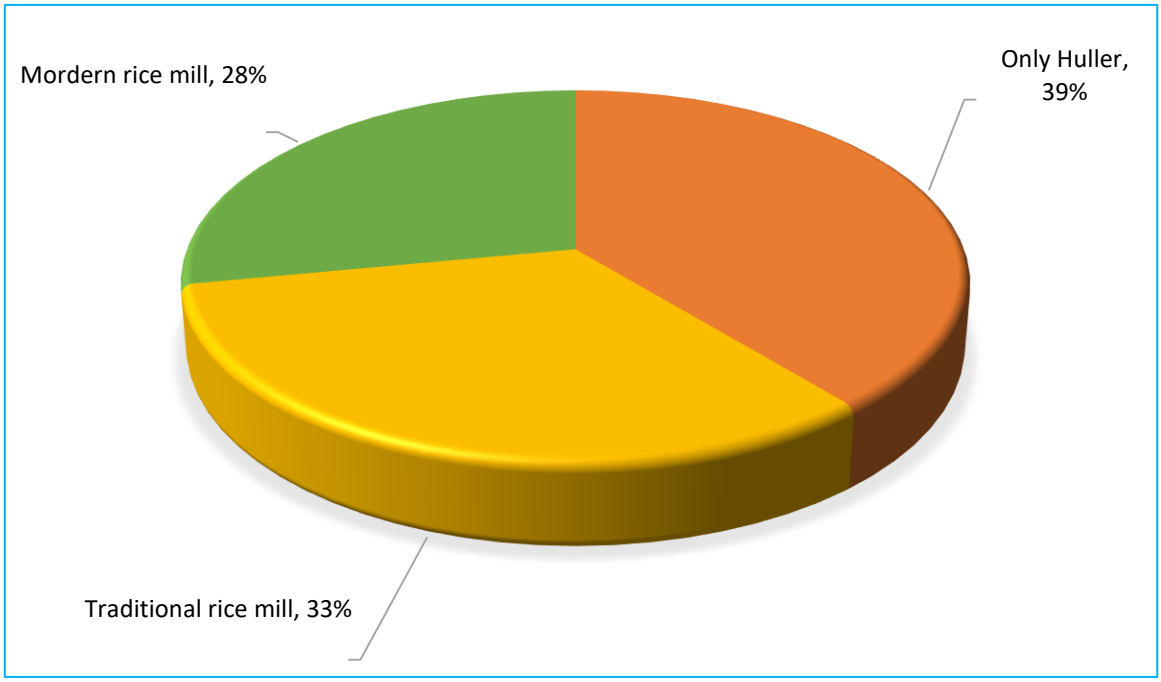

Fig 1 Status of rice miller in Odisha

Table 1 Constraints affecting the performance of rice mill in Odisha

Model	Un standardized coefficients		Standardized coefficients	t	Sig.
	β	Std. Error	Beta		
(Constant)	3.733	1.138		3.234	0.001
Licensing and registration put impact on performance of rice mill	0.465	0.079	0.238	3.228	0.029
storage space and infrastructure facilities available have relation on performance of rice mill	0.499	0.078	0.324	1.674	0.015
Fair average quality of paddy and rice are important performance indicators of rice mill	0.308	0.076	0.242	1.446	0.023
Government policies decide the performance of rice mill	0.840	0.032	0.468	2.671	0.039
Proper processing of paddy decides the performance of rice mill	0.391	0.050	0.237	2.092	0.033
Timely payment and mode of payment have relationship on performance of rice mill	0.404	0.047	0.238	3.012	0.045

a. Dependent Variable: Performance of rice mill

Data in (Table 1) shows the regression analysis of Licensing and Registration, storage space and infrastructure facilities, Fair Average Quality of paddy and rice, Government policies, Proper processing of paddy, Timely Payment and mode of payment have impact on the overall performance of Rice mills in the context of Odisha.

The Regression analysis based on the data collected from the respondents participating in the performance in Odisha we found that, Licensing & Registration part has impact on performance of rice mill and had significantly positive effect ($p<0.05$; ß =.238). Thus, H1.a, proposing that Licensing & Registration put impact on performance of Rice mill Odisha by this study. As the small rice millers specifically due to different clearance and license from different department which becomes tedious to them for registration.

Similarly, on proper storage space and infrastructure facilities available had significantly positive effect on performance of rice mill ($p<0.05$; ß =.324). Hence the hypothesis H2 was also supported by the study. The storage structure influences the supply chain of paddy in all the part starting from the supply side, processing part and the demand side. In the supply part the storage structure and infrastructure is very much essential in the mandi in order to store the paddy from the rainfall and security regions. In the processing side there should be adequate storage facility near the processor for storing both the unprocessed paddy for milling properly and the processed paddy safely with quality until it is lifted by the government agencies [8]. The government should also have the adequate ware house for storage in his control both by the state government and the central government so that they can store the processed paddy(rice) properly without any quality deterioration and in right time so that the miller would not affect by it and the processing.

Fair Average Quality of paddy and rice had significantly positive effect on performance of rice mill ($p<0.05$; ß = .242). Hence the hypothesis H3 was also supported by the study. The Fair average quality (FAQ) of the paddy and the rice that is processed paddy, both are very important. In the case of paddy, the farmers who are selling their paddy in the mandi have to sell with proper FAQ as fixed by the government. in order to get the minimum support price (MSP). So, this FAQ plays a vital role upon the procurement. Similarly, when the millers are processing or miller the paddy to rice, they also have to take care of the quality as per the standards fixed by the government or else it creates problem while lifting the processed paddy by the government. as it is to be distributed by the government to the beneficiaries through different schemes. But due to unavoidable circumstance they are bound to lift below FAQ which has impact on the processing [9].

From the above (Table 1) it is also confirmed that government policies had significantly positive effect on performance of rice mill ($p<0.05$; ß =.468). Hence the hypothesis H4. was also supported by the study. The whole process is mostly affected by the government. policy as government plays a key role to decide the price and guidelines for millers. Government also fixed the target for procurement by considering the demand side that is the distribution of paddy to beneficiaries' government also decides the time of procurement, Fixing target for the miller and also the overall supervisions.

Proper processing of paddy and timely delivering to the concerned dept. had significantly positively effect on performance of rice ($p<0.05$; ß =.237) Hence the hypothesis H5. was also supported by the study. Processing plays as an intermediary between the supply and demand of the supply chain. The processor processes the paddy into raw rice which is to be distributed to the beneficiaries through various schemes. So, paddy processors have to uplift as per the target assigned to them and same has to process in time with maintaining the quality as per guideline. The processor also has to maintain the milling capacity and the store house for storing the paddy and rice in proper condition so that it would not break the flow of supply chain [10].

Similarly, Timely Payment and mode of payment have relationship on performance of Rice mill ($p<0.05$; ß =.238). Hence the hypothesis H6 was also supported by the study. As the supply chain of paddy running in Odisha is a demand driven so mostly the target is fixed taking the amount of paddy to be consumed by the beneficiaries. In this supply chain of paddy in Odisha mostly OSCSC plays a major role as primary agency of state government. First it fixed the target of the rice required for various schemes in PDS distributed to beneficiaries in each month. Then decide the target for procurement. The OSCSC then retain the amount of paddy and rest FCI lift for the central pool and for mitigating further emergency situation also plays a major role in fulfilling the demand for mid-day meal and any shortage in PDS for state of Odisha [11-12].

Findings

- Milling capacity decides the target for milling mostly the miller who are having the milling capacity more than12-60 tons are participating in both for custom milling and levy rice.
- The policy regarding the quality which they have to deliver to the government is not at par to the guideline of the standard FAQ of what they procure from PPC.
- Miller, many times are facing the problem of gunny bags which are used to pack the milled rice and delivered to the government agencies.

- Govt is charging 68% of the total paddy milled to the paddy procured.
- Payment for the particular season is delayed and held up to the next season.
- Open market is not allowed as a result miller only stick to the custom milling rice and many small millers prefer milling illegally rather than getting registered
- Many small millers are interested to participate but due to different license and certification they are not interested for registrations.
- Lifting of the processed paddy is mostly delayed by the Govt. agencies which ultimate result in pilling of the processed paddy in the miller storage yard. This finally breaks the flow of further processing as there are no other spaces for storage with miller.

Suggestion

- Small millers and the new entrepreneurs should avail the schemes and benefits provided by govt. They should follow the minimum registration and licensing needed for running a rice mill. In this era of innovative agribusiness, a miller should also try to focus on value addition.
- Miller should also concentrate on the by products
- The husk ash, which can be used as organic fertilizer in agri-farming. It can also be used in manufacturing of cement and extraction of silicon. husk board industry, building material, refractors and ceramic industries.
- Bran can be used for extraction of Bran oil is edible having low cholesterol. This bran after extraction can also be used in poultry and cattle feed for its high protein content.
- Broken rice which comes out during processing are not accepted which can be used by diff. processed food industries for preparation of RTS products.
- Government must allow millers for open market with certain guidelines. The millers who are small and traditional miler mostly sell the processed paddy illegally as they are not registered to participate in custom milling. They should be allowed to participate with some legal guidelines so that at least they will get some profit and run their rice mill without closing it.
- Licensing and registration should be hassle free and easy going for the millers to handle.

CONCLUSION

Rice mills are the important agro-industry of Odisha. It not only reduces the post-harvest loss of rice but also helps in eradicating surplus rice and reduces fluctuation of price of rice. Rice mills have a strong forward and backward linkage starting from lifting paddy from farmers, processing to delivering processed rice to concerned organization. The rice mills have triggered development process in terms of improvement agriculture practices Mills are to be established where facilities for storage, drying of cereals are available. Existing modern millers and new agri – entrepreneurs should not emphasis on the milling only, rather should look for the marketing of the byproducts and add value to the paddy so that they can make the business a sustainable and profit oriented. Government being the controlling body also need to reform all the policy for miller (new & existing small) in such a way that the flow of the Paddy in the supply chain should not break at any point starting from the production, milling by millers till the lifting of the processed paddy by government agencies. This not only will help in running the mills smoothly but also create employment opportunity for the upcoming generation.

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