ECONOMICS OF PROCESSING OF PADDY INTO RICE FLAKES

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ABSTRACT

Rice flakes (Poha) is a very common processed form of paddy. Very few empirical studies on economics of processing of paddy into rice flakes were witnessed so far. Quantity of paddy processed was 2373 quintals, the recovery of rice flakes was 60.87 per cent of the total quantity of paddy processed. At the overall level the total annual cost of an average rice flakes mills was Rs 2,84,347.91, of which the total fixed cost contributed 24.31 per cent, while the total variable cost, shared 75.69 per cent. The per quintal total cost of rice flaking in an average rice flaking mill was Rs 119.84, of which total fixed cost was Rs 29.13 and total variable cost was Rs 91.71. The net return received by the average rice flaking mill was Rs 123.41 per quintal over the total cost while that on variable cost Rs 156.17. At the overall level, the operating ratio of rice flaking was 0.35, while the fixed ratio was 0.11 and gross ratio was 0.46. All the three ratios were less than one indicated that rice flaking was a profitable activity to the processors. On an average, the benefit cost ratio in rice flaking was 1.12 and the profits for the average rice flaking mill would increase at their full capacity utilization.

Key words : Rice flakes, ownership, cost, returns, ratios, capacity utilization.

India the second largest rice producer in the world with a 20 per cent global share is having total rice milling capacity of 186 million tones. From sixty five per cent of rice production milled in the sheller-cum-huller mills operating give low recovery (1). Paddy processing units in Maharashtra consist of very basic processing. These units largely convert paddy into rice and there is evidence of few mills which convert paddy into rice flakes and puffed rice. Although the quantum of paddy converted into rice flakes is very less, being the common breakfast item, it has gained importance in Indian diet. In Maharashtra specifically in paddy producing district like Raigadh, some agro-processing industries are playing vital role. Hence, the costs and returns of processed commodities are of vital importance to all the players in economy. Therefore, the economics of rice flaking was verified empirically to examine the ownership structures, cost involved in processing, economics of scale, optimal size of processing unit, in processing of rice flakes in Maharashtra.

MATERIALS AND METHODS

As the main focus of the study was on economic analysis of processing of paddy into rice flakes, location specific industrial cluster was identified for rice flakes. In Maharashtra, as Raigadh district is prominently a paddy growing area nearer to the trade city like Mumbai, was selected to identify the availability of rice flakes mills. The available rice mills were categorized on the basis of per day rice flaking capacity into three size groups viz; small (5Q), medium (10 Q) and large (15 Q). In all 15 rice mills, 5 from each size groups were selected for the study. The economical and financial analysis was performed on the data collected from the sample mills. The economic analysis was inclusive of the ownership structure, capacity utilization, recovery of products and processing cost, etc.

The financial test ratios viz; operating ratio, fixed ratio, gross ratio and capital turn over ratio and the break-even volume of output were computed to study the viability of rice flakes mills. The benefit :cost ratio was worked out to identify the return obtained per rupee of investment.

RESULTS AND DISCUSSION

Ownership structure, capacity utilization and recovery of main and byproducts in rice flakes mills:

From Table-1, it was observed that all the five mills in each size group were owned by individuals. The details of the installed capacity and present capacity utilization level of rice flakes mills presented in Table 1, revealed that at the overall level the installed capacity of an average rice flakes mill was observed to process 2725 quintals of paddy during the year with 268 working days, while the actual quantity of paddy processed by the mill was 2373 quintals which was 87.08 per cent of the installed capacity. On an average the actual quantity processed by these mills was 1050, 2186, 3882 quintals with 268, 266 and 282 working days per year, respectively, in small, medium and large size of rice flakes mills. It was observed that the per cent capacity utilization in small and medium size group of rice flakes mills was at par (82%), while that of large size group was much higher and was more than 91 per cent. It was due to the fact that the large size group succeeded to pool the raw material to the greater extent than the small and medium size group of mills.

Table-1 Size groupwise ownership structure, capacity utilization and functioning of rice flakes mills:

At the overall level, the recovery of rice flakes and other byproduct viz, rice husk and bran was 60.87, 29.96 per
cent and 5.06 per cent of the total quantity of paddy processed, respectively. The out-turn of rice flakes was the highest in large sized mills followed by medium and small sized mills and was to the tune of 61.53, 61.00 and 60.09 per cent. It was observed that the out run of main product, viz; rice flakes was increasing over the size group. The out-turn of main product i.e. rice flakes was found increasing over the size groups and that was 631 quintals, 1334 quintals and 2389 quintals, respectively in small, medium and large size group of mills. The out-turn of by-products such as rice husk was 314 quintals, 653 quintals, 1169 quintals respectively and that of rice bran was 52 quintals, 110 quintals, 198 quintals, respectively over the size groups.

**Capital investment in rice flakes mills**: Table-2, indicated that at the overall level, the total investment in capital assets inclusive of land worked out to Rs 339704, of which capital investment in machinery was the major contributing factor to the tune of 31.14 per cent.

The total investment in capital assets found to be increased and was Rs. 213914, Rs. 353298 and Rs. 451900, respectively over the size groups.

**Annual cost structure of rice flakes mills**: Annual cost depicted in Table-3, indicated that at the overall level the total annual cost of an average rice flakes mills was Rs 2.84 lakh, of which the total fixed cost was Rs 69,126 contributed 24.31 per cent, while the total variable cost was Rs 2.15 lakh, shared 75.69 per cent. Over the size groups, the total fixed cost was contributing to 29.65, 26.50 and 21.12 per cent, respectively. While the total variable cost was sharing 70.35, 73.50 and 78.88 per cent in the total annual cost of flaking per mill. The total annual fixed cost found to be decreasing over the size groups while, the total annual variable cost found to be increasing over small, medium and large size groups led to increase in the total annual cost over the small, medium and large size groups. It is, thus quite evident that the proportionate share of fixed cost in the total cost of rice flaking showed
the decreasing trend which could be related with the pattern of capacity utilization.

Annual costs, returns and profitability of rice flakes mills: All the rice flaking mills were procuring paddy, processing it and selling the finished product, rice flakes and by product such as rice bran. The rice husk derived in the rice flaking process is used by the rice flaking mills as fuel for roaster along with coal. None of them performed the job of customer’s processing.

The receipts from sale of finished products of paddy for different sized rice flakes mills in Table 4, indicated that at the overall level, the total returns amounted to Rs 3.75 lakh per rice flake mill during the year. About 97.35 per cent of the total returns were contributed by the rice flakes and remaining 2.65 per cent contribution was made by the value of by-product i.e. rice bran. Among the different size group of rice flakes mills, per rice flake mill total returns amounted to Rs. 0.82 lakh, Rs. 2.95 lakh and Rs. 6.11 lakh, respectively, showed an increasing trend over the size groups of rice flakes mills. The magnitudes of the profitability of rice flakes mills were increasing over the size groups and is in accordance with the results reported earlier by (2).

In the case of small sized rice flakes mills, net returns over total variable cost and over total cost were comparatively much lower than those of the large and medium sized rice flakes mills.

### Economics of Rice Flaking

Based on the evidence from Table 5, it was observed that the per quintal cost of rice flaking, increased with the increase in the installed capacity of rice flakes mills. The per quintal fixed cost of rice flaking was Rs. 41.82, Rs. 32.85 and Rs. 23.61 in respect of the small, medium and large sized mills. Also, for the similar sized rice flaking mills the per quintal total variable cost of rice flaking was Rs. 99.25, v 91.09 and Rs 88.18 respectively. The per quintal total cost of rice flaking came to Rs 141.07, Rs 123.94, Rs 111.80, respectively, for the small, medium and large sized flakes mills.

The decreasing total cost per quintal over the size groups was due to economies of scale and is in accordance with the study reported earlier by (3) in processing of paddy in Rajasthan.

The per quintal net returns over total cost were Rs. 77.84, Rs 134.94 and Rs 157.44 for small, medium and large sized rice flakes mills, respectively. The estimates of per quintal returns over total variable cost as well as total cost thus, confirm that the small and medium sized rice flakes mills were relatively less efficient than the large flakes mills in economizing the costs of rice flaking (4).

### Financial Viability of Rice Flakes Mills

The results of financial test ratios viz; operating ratio, fixed ratio, gross ratio and capital turn over ratio, respectively for different sized flakes mills given in Table-6 revealed that at the overall level, the operating ratio of rice flaking was 0.35, while for the small, medium and large size group of rice flakes mills.
flakes mills, it was 0.45, 0.35, and 0.33 respectively. The fixed ratio in small, medium and large size group of rice flakes mills was 0.19, 0.13 and 0.09, respectively and was the least in large size group of rice mills. The gross ratio in small, medium and large size group was 0.64, 0.48 and 0.42, respectively in small, medium and large sized rice flakes mills. The gross ratio revealed that the large sized rice flakes mills are financially more viable, followed by the medium and small sized rice flakes mills. The less than one operating, fixed and gross ratio indicated the profitability of the mills.

At the overall level, the capital turn over ratio was 1.81. The capital turn over ratio was the least (1.07) in small sized rice flakes mills and was the highest (2.31) in the large sized rice flakes mills, this confirmed the fact that the large sized rice mills are able to turn their investments into income to the larger extent.

Break even analysis of rice flake mills: The break-even quantity of paddy (Table-7) was 34.95, 19.58 and 13.04 per cent of the actual quantity handled by these mills, respectively and was less than the actual quantity processed by those mills.

The break even analysis reveals that the actual
quantity of paddy handled by the flake mills under study was much higher than the one required for recovering the total annual costs of paddy processing units. All the size groups of rice flakes mills no doubt operate at a level higher than their break-even quantity but at a level lower than their intake capacity, are due to less availability of raw material for processing.

**Benefit : cost ratio in rice flakes mill :** On an average, the benefit cost ratio in rice flaking was 1.12. The benefit cost ratio’s for average rice flakes mills for individual size groups of sample flakes mills were 1.07, 1.12 and 1.13 for the small, medium and large sized rice flakes mills, respectively (Table-8).

**CONCLUSION**

The study concluded that the ownership in rice flakes mills was confined to the individual proprietorship which indicated the less availability of the capital to the rice flakes units. The less availability of paddy for processing to small and medium sized flake mills led to under utilization of installed capacities (82 per cent) which in turn increased the per quintal costs of processing (App. Rs 120). The estimates of per quintal returns over total variable cost as well as total cost concluded that the small and medium sized rice flakes mills were relatively less efficient than the large flakes mills in economizing the costs of rice flaking. This underlines the need for increased utilization of installed capacities to observe the economies of scale to a greater extent. Although, the less than one operating (0.35), fixed (0.11) and gross (0.46) ratio indicated the profitability of the mills, the lowest gross ratio (0.42) revealed that the large sized rice flakes mills are financially more viable. The least capital turnover ratio (1.07) in small sized rice flakes mills and the highest (2.31) capital turnover ratio in the large sized flakes mills, confirmed the fact that the large sized rice mills are able to turn their investments into income to the larger extent.

**Policy Implications :** Rice flaking in Maharashtra is confined to individual ownership having limited capital availability. The small scale domestic processing units dominating the rice flake processing industry are less cost efficient and are not able to convert the investment into the income to the greater extent, therefore to provide the cost efficiency and the greater capital turnover ratio, there is need to strengthen the small units by providing them the financial support, technological support by initiating the co-ordination between the processors, research and development institutes. Moreover, the promotion of vertical integration among processing co-operatives, self-help group through initial investment subsidies is needed to cater the capital needs of small scale industries in paddy.

**REFERENCES**


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