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Financial analysis (Costs and returns) of tapioca processing units in Salem district of Tamil Nadu state

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Abstract

The present study on costs and returns of tapioca processing units in Salem district of Tamil Nadu state attempts to examine the profitability of the processing units. In the study, the units were classified into small, medium and large processing units based on the the capacity of the processing units. The study was carried out by different financial ratios where the costs and returns profitability of the units was analysed. From the study, large units fixed capital and working capital was more compared to small and medium processing units. The profitability of the units was high in large units because of the processing of byproducts. The main conclusion obtained from the study is to increase the capacity utilization of the firm to increase the profitability of the units.

Keywords: Financial ratios, costs and returns

Introduction

Tapioca is a starch extracted from the root of the plant species. Cassava, (*Manihot esculenta*), which belongs to Euphorbiaceae family. Tamil Nadu stands first in respect of processing of tapioca into starch and sago. In India, the cultivation of cassava is mainly concentrated in states like Kerala, Tamil Nadu, Andhra Pradesh, Nagaland, Meghalaya and Assam. Tamil Nadu stands first both in area and production followed by Kerala and Andhra Pradesh. Tamil Nadu stands first in processing of tapioca into starch and sago. The yield of tapioca is about 25-30 t/ha in and around Salem. About 387 tapioca processing units are engaged in tapioca processing under the membership of SAGO SERVE in Salem district (2016).

Objectives

1. To examine the costs of the processing units
2. To estimate the returns and profitability of the processing units.

Materials and Methods

The Salem District was purposively selected for the study because 34, 000 hectares of land is under tapioca cultivation and there are 387 registered as tapioca processing units. Currently, 163 units are under operation. This reduction was observed mainly after the introduction of GST in 2016 as many small firms failed to produce financial statement. The list of tapioca processing units was obtained from District Industrial Centre (DIC), Salem.

Sample Selection

Small enterprises (0-500 tonnes)/Year	Medium enterprises (501-1000 tonnes) /Year	Large enterprises (Above 1001 tonnes) /Year
101	51	11
6	6	3

a) Tabular analysis

The investment pattern, cost of processing, and overall cost and return structure in the processing business was presented in the form of tabular analysis. The data was summarized with the help of statistical tools like averages and percentages to obtain results.

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b) Financial ratios analysis

The various financial ratios were used for the analysis of the data collected from the tapioca processing units. In ratio analysis, the test of solvency, liquidity, profitability and turnover of the tapioca processing units were analysed.

1. Test of Solvency

The solvency ratios of the tapioca processing units would indicate the ability of the unit to meet its medium term and short term obligations. Two solvency ratios was worked out. They were,

a) Ratio of total liability to owned funds

This ratio would reflect the total commitments of the tapioca processor to creditors as compared to its owned funds. Higher ratio would indicate higher dependence of the processing unit on the external funds. Ratio value unity for a non banking indicates poor financial structure.

$$\text{Total liability to fund ratio} = \frac{\text{Total liability}}{\text{Owned funds}}$$

b) Fixed assets to owned funds ratio

This ratio would indicate the extent of owned funds invested in fixed assets. Here the ratio of 1:1 is considered to be in the acceptable limits. The steep increase in this ratio is no doubt a sign of progress which results in increase in production and sales.

$$\text{Fixed assets to owned ratio} = \frac{\text{Fixed assets}}{\text{Owned funds}}$$

2. Test of Liquidity

The liquidity ratios measure the ability of the tapioca processing unit to immediate maturing obligations. Three types of ratios was calculated in the study. They were,

a) Ratio of liquid assets to total assets

This ratio shows the liquidity preference of the tapioca processing unit. The minimum norm for this ratio is 0.5. Higher the ratio, higher will be the liquidity preference of the processing unit.

$$\text{Ratio of liquid assets to total ratio} = \frac{\text{Liquid assets}}{\text{Total assets}}$$

b) Ratio of current assets to current liabilities

This ratio is a barometer of the short term solvency of the working capital of the tapioca processing unit. If this ratio happened to be greater than one, it should be presumed that the processing unit had sufficient current assets to meet its current obligations. A current ratio of around two is considered to be at satisfactory level.

$$\text{Current liabilities} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

3. Test of Profitability

The profitability ratio is a meaningful measurement used to diagnose the financial status of the tapioca processing units and overall efficiency. Following ratios was adopted to study

profitability.

a) Net profit to total assets ratio

This ratio indicates the rate of profit earned the total assets employed. An increase in this ratio over years showed improvement in the efficiency of the processing unit. It will be computed as under,

$$\text{Net profit to total asstes} = \frac{\text{Net profit}}{\text{Total assets}}$$

b) Net profit to owned funds ratio

This ratio indicates the profits earned by the processing unit on the funds invested in the business.

Higher ratio would indicate higher stage of income generated on the equity.

$$\text{Net profit to owned fund ratio} = \frac{\text{Net profit}}{\text{Owned funds}}$$

Results and Discussion

Fixed capital investment in tapioca processing units

The expenditure incurred on the establishment of a tapioca processing units was treated as fixed capital investment. It included the expenditure on land, buildings, machinery, equipments, Infrastructure facilities. The fixed capital investment in different categories of tapioca processing units are presented

Table 1: Fixed capital investment in tapioca processing units (in Rs. lakhs)

Sr. No	Particulars of investment	Size of the processing units			Overall
		Small	Medium	Large	
1.	Land	18.33 (63.53)	11.20 (21.35)	27.35 (7.11)	13.47 (12.76)
2.	Building	3.99 (13.84)	13.53 (25.79)	52.87 (13.76)	17.58 (16.65)
3.	Machinery	6.53 (22.63)	27.71 (52.84)	30.39 (79.12)	74.49 (70.57)
	Total	28.85 (100)	52.44 (100)	384.20 (100)	105.55 (100)

(Figures in parenthesis indicate percentages to total)

The data presented in the Table 1 clearly indicated that at the overall level, total fixed investment was Rs.105.55 lakhs. The investment in Machinery was the highest i.e.,70.57 per cent, followed by building (16.65 per cent), and land (12.76 per cent) in the total fixed investment.

The comparison between the small, medium and large size processing units revealed that, the total fixed capital investment increased with the increase in size of the tapioca processing units. In all the three size groups, the fixed capital investment on machinery, buildings accounted for a major share followed by land

Working capital investment

Actual expenditure incurred on purchase of raw tapioca, salary, wages, packing material, taxes, rent, fuel, etc., were included in the working capital. The information of the same is presented

Table 2: Working capital investment in Tapioca processing unit (in Rs. lakhs)

Sr. No	Items of cost	Size of processing			Overall
		Small	Medium	Large	
1	Raw tapioca	2.30 (51.95)	4.38 (53.19)	7.27 (58.69)	4.65 (55.69)
2	Wages	0.68 (15.36)	1.15 (13.96)	1.22 (9.84)	1.01 (12.17)
3	Bonus	0.12 (2.71)	0.21 (2.61)	0.280 (2.26)	0.20 (2.45)
4	Fuel charges	0.13 (2.93)	0.48 (5.8)	0.62 (5.00)	0.41 (4.91)
5	Packaging material	0.08 (1.80)	0.21 (2.5)	0.32 (2.58)	0.20 (2.43)
6	Labels strapping	0.02 (0.45)	0.04 (0.55)	0.06 (0.50)	0.04 (0.51)
7	Transportation charges	0.75 (16.94)	0.90 (11.78)	1.42 (11.46)	1.04 (12.53)
8	Taxes	0.22 (4.96)	0.52 (6.31)	0.75 (6.05)	0.49 (5.94)
9	Electricity	0.09 (2.07)	0.22 (2.67)	0.39 (3.20)	0.23 (2.83)
10	Telephone	0.03 (0.79)	0.04 (0.52)	0.04 (0.38)	0.04 (0.50)
10+	Total	4.42 (100)	8.23 (100)	12.38 (100)	8.34 (100)

(Figures in parenthesis indicate percentage to total)

It is observed that, that at the overall level the per unit working capital investment was accounted to be Rs.8.34 lakhs. Major amount was spent on the purchase of raw tapioca which was Rs.4.65 lakhs (55.69 per cent). Similarly, it was found that purchase of raw tapioca shared Rs. 2.3 lakhs for small size processing units (51.95 per cent), Rs. 4.38 lakhs for medium size processing units (53.19 per cent) then, Rs. 7.27 lakhs for large processing units (58.69 per cent). At the overall level, expenditure on other items include transportation charges Rs. 1.04 lakhs (12.53 per cent), wages Rs. 1.01 lakhs (12.17 per cent), rent or taxes Rs. 0.49 lakhs (5.64 per cent), fuel charges Rs. 0.41 lakhs (4.91 per cent), electricity Rs. 0.23 lakhs (2.83 per cent), bonus to employees Rs. 0.21 lakhs (2.45 per cent), packing materials Rs. 0.20 lakhs (2.43 per cent). Same trend of working capital investment was observed in all size groups.

Cost of processing

The cost of processing is the most important factor on which the success or failure of the unit depends. More the cost of processing, lesser has the profit margin to the unit and vice versa. The total processing cost includes fixed cost and variable costs.

Interest on fixed capital, Depreciation, Electrification, Interest on borrowing are the items of fixed cost in processing units. Wages of permanent labour, Interest on working capital, Transportation, Repairs and maintenance are the major cost of variable cost in processing units. As it was observed from the Table 3, that at overall level fixed cost is Rs.11.40 lakhs. Interest on fixed capital contributes more in fixed cost which contribute about 7.75 lakhs (40.85 per cent). In Large size processing units, it was Rs. 27.01 lakhs, medium size processing units Rs. 4.56 lakhs, and in small processing units Rs. 2.67 lakhs and the overall variable costs ranges about Rs.7.57 lakhs. Regarding the variable cost, the overall cost

contributes about 7.57 lakhs (39.90 per cent). In Large size processing units, it was Rs. 12.05 lakhs, medium size processing units Rs. 7.37 lakhs, and in small processing units Rs. 3.31 lakhs. At the overall level, the total cost was more in total fixed cost which accounted for 11.4 lakhs (60.09 per cent).

Table 3: Size groupwise per unit annual operating cost (in Lakh rupees)

Sr. No.	Item of cost	Size groups			Overall
		Small	Medium	Large	
I Fixed cost					
1	Opportunity cost of land	0.33 (5.51)	0.54 (4.52)	0.94 (2.40)	0.61 (3.16)
2	Depreciation on buildings@5%	0.14 (2.34)	0.31 (2.59)	2.07 (5.2)	0.84 (4.42)
3	Depreciation on machineries@10%	0.73 (12.20)	1.01 (8.46)	3.67 (9.39)	1.81 (9.48)
4	Electrification	0.03 (0.50)	0.08 (0.67)	1.12 (2.86)	0.41 (2.16)
5	Interest on fixed capital@ 10%	1.44 (24.08)	2.62 (21.96)	19.21 (49.18)	7.75 (40.85)
	Total fixed cost	2.67 (44.64)	4.56 (38.22)	27.01 (69.15)	11.4 (60.09)
II Variable cost					
1	Casual labour charges	0.68 (11.37)	1.15 (9.63)	1.22 (3.12)	1.01 (5.32)
2	Repair and maintenance	0.59 (9.86)	2.70 (22.63)	4.20 (10.75)	2.49 (13.12)
3	Electricity	0.09 (1.50)	0.22 (1.84)	1.13 (2.89)	0.48 (2.53)
4	Transportation	0.75 (12.54)	0.90 (7.54)	1.42 (3.63)	1.02 (5.37)
5	Expenditure on permanent employee	0.38 (6.35)	0.42 (3.52)	0.52 (1.33)	0.44 (2.31)
6	Interest on working capital	0.82 (13.71)	1.98 (16.59)	3.56 (9.11)	2.12 (11.17)
	Total variable cost	3.31 (55.35)	7.37 (61.77)	12.05 (30.84)	7.57 (39.90)
	Total cost	5.98 (100.00)	11.93 (100.00)	39.06 (100.00)	18.97 (100.00)

(Figures in parenthesis indicate percentage to total)

Tapioca processing Cost

The cost of processing per tonne of tapioca in processing incurred by the processors is shown in Table 3. Raw material purchasing, Handling charges, drying, salary, wages, bonus, packing material, label, electricity, telephone, fuel charges, taxes and rent, depreciation, interest on fixed and working capital were the items of cost of processing.

It was observed from the Table 3, that the overall per tonne cost of processing was Rs. 4313.74. The major cost was on taxes and rent which was Rs. 1926.96 (44.67 per cent) mainly due to the implication of GST and Taxes on effluent discharges. The other important items were salary and wages which was Rs.736.04 (17.06 per cent), interest on working capital and fixed capital Rs. 741072 (17.19 per cent) and Rs. 281.10 (6.52 per cent) respectively, electricity Rs. 108.81 (2.52 per cent), fuel charges Rs. 100.33 (2.33 per cent), bonus Rs. 73.60 (1.71 per cent), depreciation Rs. 292.25 (6.78 per cent), Raw material Rs. 25.55 (0.59 per cent), packing material Rs. 15.20 (0.35 per cent), label Rs.8.64 (0.20 per cent).

Table 4: Per tonne cost of tapioca processing. (in Rs)

Sr. No	Items of cost	Size of processing			Overall
		Small	Medium	Large	
1	Raw material handling charges	23.77 (0.51)	24.49 (0.58)	34.45 (1.05)	25.55 (0.59)
2	Wages	930.83 (19.87)	565.64 (13.46)	480.27 (14.57)	736.04 (17.06)
3	Bonus	93.08 (1.99)	56.56 (1.35)	48.03 (1.46)	73.60 (1.71)
4	Fuel charges	107.81 (2.30)	97.99 (2.33)	80.00 (2.43)	100.33 (2.33)
5	Packaging material	15.40 (0.33)	15.00 (0.36)	15.00 (0.46)	15.20 (0.35)
6	Labels strapping	8.75 (0.19)	8.67 (0.21)	8.21 (0.25)	8.64 (0.20)
7	Electricity	109.91 (2.35)	109.99 (2.62)	102.00 (3.09)	108.61 (2.52)
8	Telephone	3.76 (0.08)	3.80 (0.09)	2.00 (0.06)	3.52 (0.08)
9	Taxes	2020 (43.12)	1941.67 (46.2)	1564.55 (47.47)	1926.96 (44.67)
10	Depreciation	314.02 (6.70)	328.81 (7.82)	124.66 (3.78)	292.25 (6.78)
11	Interest on				
	a) Fixed capital	324.79 (6.93)	288.08 (6.86)	110.77 (3.36)	281.10 (6.52)
	b) Working capital	732.03 (15.63)	761.53 (18.12)	726.12 (22.03)	741.72 (17.19)
	Total	4684.14 (100.00)	4202.25 (100.00)	3296.06 (100.00)	4313.74 (100.00)

(Figures in parentheses indicate percentage to total)

In case of all categories of processing units, the cost of processing per tonne of tapioca was Rs.4684.14 in Small group, Rs. 4202.25 in Medium group and Rs. 3296.06 in Large group. The small unit spend more on wages due to lack of large number of machineries which accounted for Rs. 930 (19.87 per cent) and it was less compared to medium and large size units which accounted for Rs.565 (13.64 per cent) and Rs. 480 (per cent). It was also observed that the per quintal cost of processing exhibited inverse relationship with the scale of production. As the size of units increasing, the per tonne cost of tapioca processing was decreasing due to economies of scale.

Returns from processing of tapioca Processing units

The returns from processing of tapioca is given below

Table 5: Returns from processing of tapioca (in Rs. lakhs)

Sr. No	Particulars	Size of units			Overall
		Small	Medium	Large	
1	a) Main product (Starch & Sago)	8.38 (98.58)	38.82 (97.13)	98.38 (94.25)	31.52 (95.48)
	b) By product	0.12 (1.41)	0.85 (2.86)	14.50 (5.74)	1.49 (4.51)
2	Total returns	8.50 (100.00)	49.67 (100.00)	112.88 (100.00)	57.01 (100.00)

(Figures in parentheses indicate percentage to total)

The items of cost included were working expenses, Marketing charges, Interest on capital and depreciation charges. The returns from the processing of tapioca is given
The value received from starch and sago was considered as total returns. In case of different categories, the total returns were observed to be Rs. 8.50 lakhs for small units, Rs. 49.67 lakhs for medium size units and Rs. 112.88 lakhs for large

size processing units. At the overall level, the net returns worked out to be Rs. 73.60 lakhs. Considering the gross returns and total cost, the benefit cost ratio was also worked out. At the overall level it was 1.65. It is observed that the benefit cost ratio was high in Large processing units (2.07), followed by medium size processing units (1.86). Hence it was observed that large processing units are more profitable than other processing units.

Table 6: Size groupwise economics of Tapioca processing (in lakhs)

Sr. No	Particulars	Size of processing units			Overall
		Small	Medium	Large	
1	Gross returns	11.55	51.57	171.06	78.06
2	Fixed cost	2.67	4.56	27.01	11.4
3	Variable cost	3.31	7.37	12.05	7.57
4	Total cost	5.98	11.93	39.06	18.97
5	Net returns over total fixed cost	8.88	47.01	144.05	66.64
6	Net returns over total variable cost	8.24	44.2	159.01	70.48
7	Net returns over total cost	5.57	39.64	132.02	59.07

Financial performance of Tapioca processing units

The financial performance of the tapioca processing units was studied by using different ratios viz., solvency ratios, liquidity ratios, and profitability ratios

Solvency ratio Liquidity ratio and Profitability ratio of processing units

The solvency ratios of the tapioca processing units would indicate the ability of the unit to meet its medium term and short term obligation. The results of solvency ratio and liquidity ratio of processing units are presented.

a) Solvency ratios

To determine the solvency position of the tapioca processing units, two ratio namely total liabilities to owned funds and fixed assets to owned fund ratio were worked out. The ratio of total liabilities to owned funds reflected the amount of money the processing units owes to its creditors as against the money invested by the owners of the enterprise, that is extent of debts per rupee of owned funds. the ratios liabilities to owned funds and fixed asset to owned funds were considered. At the overall level, the ratios was observed to be 0.61 for the small size processing units the average ratio was 0.80, while the medium units was 0.49 and in the large units it was 0.46 during the same period. The values of the ratio here meant that claims of the creditors on the fixed assets of the processing units due dependence on external borrowing. The ratio of fixed assets to owned funds was observed to be 0.87 at an overall level. Similarly, the average ratio for small, medium and large scale processing units was observed to be 0.75, 0.88, 0.91 respectively.

Table 7: Tests of Solvency

Sr. No	Particulars	Size of units			Overall
		Small	Medium	Large	
a)	Total liabilities to owned funds	0.80	0.49	0.46	0.61
b)	Fixed asset to owned fund	0.75	0.88	0.91	0.87

b) Liquidity ratio

Tests of liquidity were framed to test the ability of the processing units to meet the current financial obligations. liquidity plays a prominent role in business enterprises through its sensitive characters of meeting immediate financial demands. Thus, the test of liquidity was worked out

by using two ratios viz., Liquid asset to total asset and Current asset to current liabilities.

At the overall level, the liquid assets to total assets the ratio was 0.53, which was acceptable for a processing industry, which indicated that they maintained 53 percent of their total assets in the liquid form during the study period, in order to meet immediate financial requirements, for purchase of raw materials, payment of wages and other expenses. Similarly, the said ratio in small units was 0.49, indicating only 49 percent of liquid assets maintained in liquid form. However, medium and large processing units maintained 53 percent and 58 percent of their total fixed assets in the form of liquid asset. Hence, the performance of medium and large units with respect to liquidity was found to be satisfactory. So, the small processing units should increase their strength.

The current condition of the business is indicated by the current ratio, it is the ratio between current assets and current liabilities. Average of this ratio at an overall level worked out to be 1.93, which indicated that for every rupee of current liability. The amount of current assets available was 1.93. This showed that the processing units were not much dependent on short term borrowings and hence possessed a good liquidity position.

Natarajan (1980) observed that a current ratio of 2 was ideal. However, the ratio was very low that is 1.34 in small units, which indicated that these units were highly dependent on short term borrowings. Hence there was a need to improve the liquidity position in small processing units for sound performance. whereas, medium and large processing units had the ratio more than 2, indicating better performance.

Table 8: Tests of Liquidity

Sr. No	Particulars	Size of units			Overall
		Small	Medium	Large	
a)	Liquid asset to total asset	0.49	0.53	0.58	0.53
b)	Current asset to current liabilities	1.34	2.13	2.33	1.93

c) Profitability ratio

The profitability ratio is a meaningful measurement used to diagnose the financial status of the tapioca processing units and overall efficiency.

The liquidity analysis of the processing units reveals the ability to meet its financial obligation and as such do not reflect the profitability aspect. Hence the profitability ratios were used to analyze the overall profitability or efficiency of the business organizations. Two different profitability ratios namely, Net profit to total assets and Net profit to owned funds ratio were worked out and compared for different sizes of processing units.

Net profit to total asset ratio was used to examine the extent of net profit gained for each rupee of investment. At the overall level, the average ratio for the processing units was found to be 0.33, indicating 33 per cent rate of return on assets. It meant that the processing units at the overall level were able to generate 33 per cent profit on total assets. However, the rate of return on assets in small, medium and large units was 25 per cent, 32 per cent, 44 per cent, respectively.

Table 9: Tests of Profitability

Sr. No	Particulars	Size of units			Overall
		Small	Medium	Large	
a)	Net profit to total assets	0.25	0.32	0.44	0.33
b)	Net profit to owned fund	0.25	0.33	0.48	0.35

The ratio of net profits to owned funds, the overall level was positive (0.35). Similarly it was positive in all the size groups of large processing units. It was 0.25 in small, 0.33 in medium, and 0.48 in large processing units. This indicated that all the processing units were in a position to protect their equity and generate income on equity.

In the above analysis a combination of financial ratios was used to study the various phases of financial positions and relative business performance in small, medium and large processing units. It revealed the strong and weak points of the business and thus provided clues to the management of the problems occurring, and to undertake suitable remedial measures such as increase in owned funds and current liabilities in small and medium processing units for efficient functioning of the industry.

Conclusion

1. The average fixed capital investment was Rs. 105.55 lakhs and average working capital investment was Rs. 8.34 lakhs.
2. The solvency ratios were better in Medium and Large processing units because of high net profit and equity participation. Similarly liquidity ratios were higher in Medium and Large processing units employing satisfactory position with good velocity of conversion of current assets into cash particularly in case of large processing units.
3. All the profitability ratios indicated the efficient use of total assets, as well as increasing profits by decreasing expenditure. This indicated that all the processing units in study area were in a position to protect their equity and generate income on equity.

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