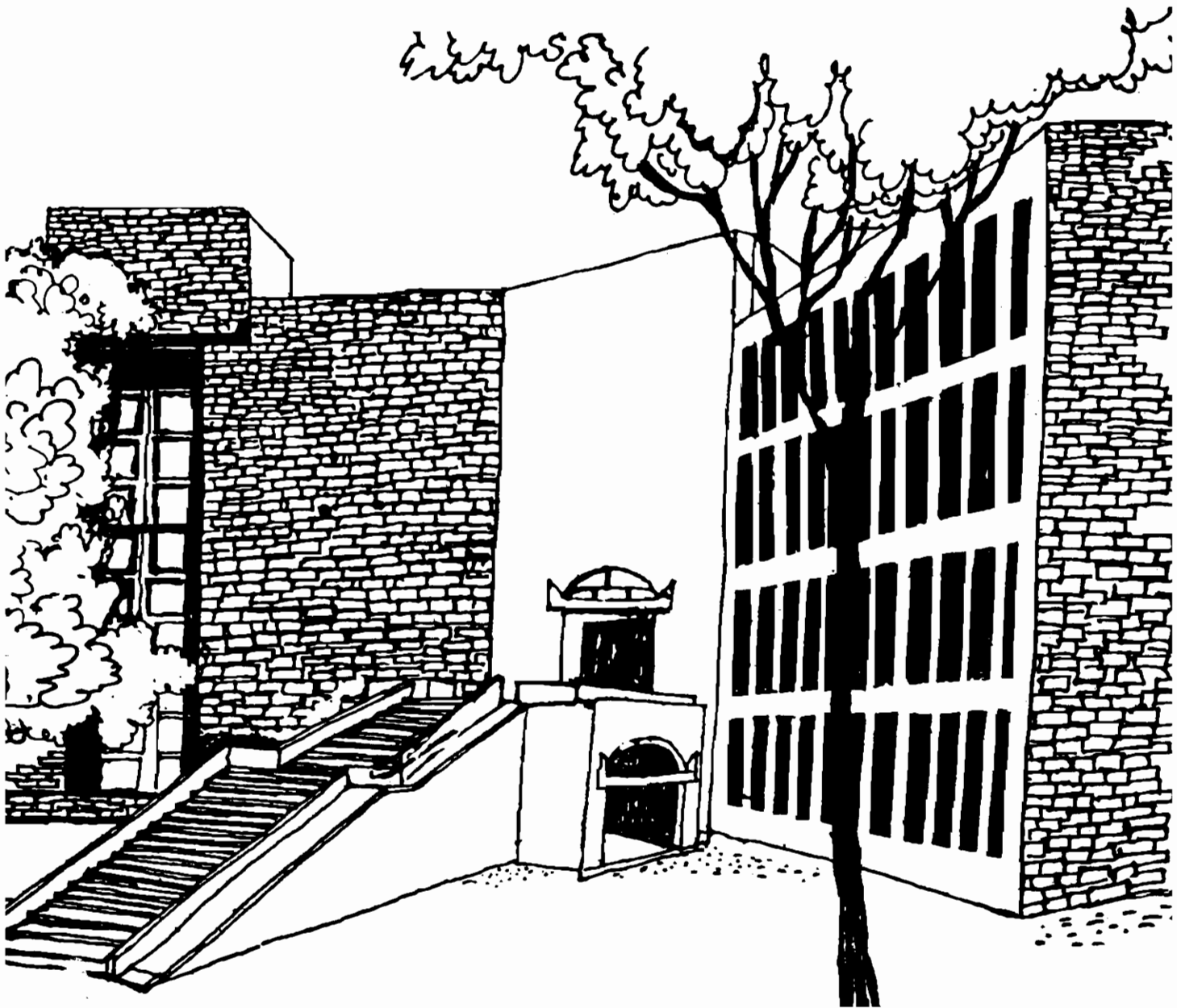




Working Paper



DEVELOPMENT OF FOOD-PROCESSING INDUSTRIES

By

Bhupat N. Desai

N. V. Nambodiri

WP951



WP
1991/951

J P No. 951
August 1991

The main objective of the working paper series of the IITFA is to help faculty members to test out their research findings at the pre-publication stage.

INDIAN INSTITUTE OF MANAGEMENT
AMALNAD-300 015
INDIA

PURCHASED
APPROVAL
GRAT:EXCHANGE
PRICE
ACC NO.
YORK UNIVERSITY LIBRARY
100 UNIVERSITY AVE

Abstract

This paper has analysed development and financial, with special reference to working capital management, performance of the selected food-processing industries. It prioritizes these industries for their development based on these performance criteria. It also discusses strategy for accelerated development of these industries. Food-processing industries selected for the study are foodgrains milling, edible oilseeds processing, sugarcane processing, and milk processing. The paper also discusses the rationale for selection of these industries.

DEVELOPMENT OF FOOD-PROCESSING INDUSTRIES

Bhupat M. Desai
N.V. Namboodiri*

Introduction

This is a study on formulation and application of criteria for the development of food-processing industries. Two purposes behind this are: (a) to prioretize various basic food-processing industries for their development, and (b) to draw broad policy implications for the development of these industries in future. Food-processing industries selected for the study are foodgrains milling, edible oilseeds processing, sugarcane processing, and milk processing. In the next section rationale for selection of these industries is discussed. In the third section criteria for prioretizing these industries are conceptualized. Fourth section discusses the results, while fifth section discusses strategy for accelerated development of the selected food-processing industries. The last section summarizes the study.

Rationale for Selection of Food-processing Industries

The four selected food-processing industries still occupy a dominant position in all food-processing industries. These industries account for over 71 percent of output, and capital

* Professor and Research Associate, respectively, at the Indian Institute of Management, Ahmedabad.

employed in all food-processing industries in the organized sector. Their share in value added was close to 60 percent. Similarly, their share in working capital and employment was over 65 percent.

Another reason is that these four industries produce products for mass consumption. Moreover, the incremental demand for their products is very large especially from low and middle income classes in both rural and urban areas. Thus, their development would contribute to human welfare.

Third, the development of these industries would relax wages goods constraint to economic growth by enhancing supply of their products which enables promoting larger employment-oriented growth. Four, these food-processing industries unlike others are relatively more labour intensive. This suggests that development of these industries would generate employment opportunities. Since these industries tend to be in rural areas these opportunities would be available to the rural sector where they are needed most.

Fifth, these four food-processing industries through their high raw material intensity are intimately dependent on the performance of the agricultural sector which provides their raw material. Development of these industries therefore provides a forward linkage to this sector.

Sixth, these industries being highly working capital intensive require larger such capital than fixed capital on a continuing basis. Financial institutions thus have a clear and

sustained clientele from these industries.

Seventh, these food-processing industries have achieved growth rates which are much higher than the growth rates of the industrial sector. In the Fifth Five Year Plan period output and value added of these industries grew at the rate of 12 and 11 percent, respectively. The corresponding growth rates in the Sixth Five Year Plan were 9 and 16 percent.

Notwithstanding the importance of all of these, it is expected that as per capita real national income increases, the percentage share of food-processing industries in the value added from manufacturing industries would decline. But this has not occurred in India, despite a rise in per capita real national income at the rate of 3.6 percent during 1974-1978. This suggests that until growth in per capita real national income attains a certain threshold, the share of food-processing industries in value added from all manufacturing industries would not decline. And this threshold may be beyond 3.6 percent achieved in the past. Since these industries are critically dependent on agriculture, this sector itself has to also grow at certain threshold rate. And this rate is also higher than 4.7 percent which was achieved during the Fifth Plan period. Thus, agriculture's accelerated growth is essential. It is so because growth of agriculture relaxes raw material constraint. It also simultaneously relaxes demand constraint by placing purchasing power in the hands of those whose income elasticity of demand for the products of these industries is high. Moreover, Engle's Law

states that consumers' budget share on food decreases only when growth in per capita income is above certain minimum. It appears that this minimum has not been attained in India. This Law further states that the absolute amount of food consumption increases. Thus, development of the food-processing industries under study would contribute to human welfare and rural led employment-oriented economic development.

Criteria for Development

Unlike other industries food-processing industries are raw material, labour and working capital intensive. It is therefore essential that suitable criteria related to these three resources are formulated to develop understanding on these industries. Four different criteria may be formulated. These are -

1. Potential for resource use
2. Efficiency in resource use
3. Efficiency in liquidity and solvency management
4. Liquidity and solvency cushion management

Each of these is elucidated in what follows. First criterion of potential for resource use addresses the question of what is the intensity of resource use in these industries. Resources considered are raw material, labour, and working capital. Raw material intensity is defined as material consumed to total inputs. Labour intensity is defined as mandays/emoluments to Rs.1000 of total capital. And working capital intensity is defined as working capital to total capital.

The second criterion of resource use efficiency is an important indicator of management performance of any industry. Two types of indicators are considered. One of these is partial factor/resource productivity. And the other is profitability of all resources used. Four types of resources are considered; namely, raw material, labour, working capital, and total capital. Partial productivity/efficiency is measured as value of output per unit of these resources. The underlying question is how much output is produced from every unit of these resources.

To examine profitability four indicators are considered. These are (a) net profit to value of production/sales, (b) net profit to equity (Return on Equity i.e. ROE), (c) net profit to total capital (Return on Investment i.e. ROI), and (d) net operating surplus to total capital (Surplus on Investment i.e. SOI). The fourth indicator is utilized to analyse the influence of interest and other employees expenses in reducing net profit. If ROI is negative or very low and if SOI is positive or very high, then it can be concluded that these two types of costs have reduced the net profit. Furthermore, between these two types of expenses if the share of interest costs is very high and if the unit is efficient in working capital management, then the low net profit is largely due to high interest rates for external funds.

Rationale for the third criterion of liquidity efficiency management lies in the fact that the food-processing industries are working capital intensive. Hence, efficient use of this capital is both necessary and desirable. While this is

important, long run considerations also require understanding of how efficient is the industry in its management of fixed assets and related long term resources. This, thus, requires studying efficiency in solvency management.

Liquidity efficiency is examined by studying five financial ratios, namely, inventory, receivables, cash, and payable turnover ratios and operating cycle ratio. While first four of these five are self-explanatory, the fifth one needs to be explained. Operating cycle ratio is given by 365 divided by the length of the operating cycle which normally consists of four stages, namely, inventory of raw material, book debt, finished goods inventory, and trade credit. Not only this ratio needs to be studied, but these various stages of operating cycle must be understood. The latter is because it provides a basis to determine working capital requirement and also to ascertain which of the four stages contribute maximum in the length of the operating cycle. Understanding of both of these is important for any financial institution which finances food-processing industries.

Efficiency in solvency management can be measured as net sales to each: (a) net assets, (b) net worth, and (c) net fixed assets.

The discussion so far has addressed to the issues of efficiency. A study of the indicators related to this is absolutely necessary to understand the management performance. Often financial institutions, however, pay inadequate attention

to this and overemphasis security criterion. While such practice is undesirable, it is necessary to study security-oriented criterion. This needs to be studied for the utilization of both short-term as well as long-term resources. For this purpose fourth criterion of liquidity and solvency cushion management is identified. While the former is measured by current and quick ratios, the latter is measured by debt to equity, debt to net-worth, net fixed assets to fixed debt, and net fixed assets to net worth ratios.

Analysis of Results

At the outset it may be mentioned that the above criteria are applied by utilizing data from three different sources. These are: large scale sample survey data of the Annual Survey of Industries (ASI), small scale sample survey data of the Reserve Bank of India (RBI), and the data from unit/micro level case studies. Thus, sample survey as well as case study methodologies are employed.

ASI data perhaps covers various forms of industrial organization--proprietorships, partnerships, private and public limited companies. RBI data are on public and private limited companies. And the case studies are exclusively on cooperatives. Further, while the ASI data are on foodgrains milling, sugar, vanaspati and other edible oils industries, and dairy products, the RBI data are for only three product categories--foodgrains processing, sugar, and edible oils including vanaspati. The case

studies are on rice, edible oils, and dairy products. ASI data refer to an average of 1980-81 to 1984-85, while RBI and case studies data refer respectively, to an average of 1978-79 to 1980-81 and 1984-85 to 1986-87. Three or five years averages are utilized because industries under study are subject to fluctuations on account of their dependence on agriculture for their raw materials. This lack of uniformity in years covered was unavoidable as the collection of data on common years was not feasible. Despite this limitation, a comparison of different basic food-processing industries would be useful in two respects. One, it would form a basis to validate the results based on large, and small samples, and those based on micro-level case studies. And two, it would also make possible understanding development of a given type of basic food-processing industries under different settings. Indeed, these two are the primary concern rather than making projections or developing norms for financial performance of these industries.

Results on each of the four criteria are discussed first and then all the four criteria are simultaneously applied. Prioritization among the selected food-processing industries is derived on the basis of simple rank each industry obtained for the criteria under study.

Priority based on Potential for Resource Use : Table 1 provides the results. According to ASI data, edible oil industry is most raw material intensive, followed by grain mills, dairy products,

and finally sugar. RBI as well as case studies data, however, show that grain mills are most raw material intensive, followed by edible oil mills.

The above finding for ASI data also holds for identifying potential for working capital use (Table 1). Both RBI and case study data reveal that edible oil industry is most working capital intensive, followed by sugar/dairy products and then grain mills.¹

As regards potential for labour use both ASI and RBI data show that it is the maximum in grain mills, followed by sugar, edible oils, and dairy products in that order of importance (Table 1). The case studies, however, show that dairy industry is most labour intensive, followed by rice milling and then edible oils. Since ASI data permit examining this intensity as mandays of employment per Rs.1000 of total capital, results based on that data may be considered more acceptable.

Considering all the three resource intensities simultaneously, Table 1 gives an average of ranks based on all the three indicators by adding the rank for each industry in each of the three data sources divided by 3. Based on this, grain mills may be accorded the highest priority for development. This may be closely followed by edible oils, then sugar and lastly dairy products.

¹ Lower working capital intensity of OILFED is because of recent fixed capital investment for plant expansion.

Table-1

Raw Material, Working Capital and Labour Intensities

Details	ASI				RBI			Case Studies			
	Dairy Products (291)	Grain Mills (7269)	Sugar, Sur & Khand-sari (2331)	Hydro-generated & other Edible Oils (2668)	Grain Mills (24)	Sugar (72)	Edible & Vanaspati Oils (33)	Dairy Products (DS) (1)	Rice (MCRB) (1)	Edible Oils (GROFED) (1)	Edible Oils (DILFE) (1)
1. Raw material intensity (X)											
Materials consumed to total inputs	84.3 (3)	84.9 (2)	66.3 (4)	86.5 (1)	88.8 (1)	63.6 (3)	79.3 (2)	81.1 (3)	93.3 (1)	85.8 (2)	81.1 (3)
2. Working capital intensity (X)											
net/gross working capital to net/gross total capital	40.6 (3)	45.8 (2)	34.8 (4)	54.5 (1)	47.7 (3)	54.8 (2)	68.8 (1)	63.5 (2)	na	65.8 (1)	45.8 (3)
3. Labour intensity											
mandays/ emoluments to Rs.1000 of total capital	17.8 (4)	26.8 (1)	22.8 (2)	18.8 (3)	111.3 (1)	111.1 (2)	81.7 (3)	58.5 (1)	36.2 (2)	34.3 (3)	19.8 (4)
Average Rank	3.3	1.7	3.3	1.7	1.7	2.3	2.8	2.8	1.5	2.8	3.3

Legends
 DS = Dudhsagar Dairy i.e. The Mehsana District Cooperative Milk Producers' Union, Gujarat
 MCRB = The Muluknoor Cooperative Rural Bank, Andhra Pradesh
 GROFED = The Gujarat State Cooperative Oilseeds Growers' Federation
 DILFED = The Madhya Pradesh Cooperative Oilseeds Growers' Federation

Figures in () are sample sizes, while figures () are ranks

Priority based on Resource Use Efficiency : Table 2 gives the results. It reveals that sugar mills were the most raw material efficient, followed by grain mills, and dairy products/edible oils, according to the ASI data. In RBI data, sugar mills retain this rank but grain and edible oil mills interchange their positions. According to case studies, edible oil mills are most raw material efficient, followed by dairy products and then rice mills (Table 2).

As regards working capital efficiency, ASI data reveal that edible oil mills are most efficient, followed by grain mills, dairy products and sugar in that order of importance. According to RBI data, however, grain mills are most efficient, followed by edible oils and then sugar (Table 2). Case studies show that dairy products are most efficient, followed by edible oils.

Labour efficiency was highest in edible oils, followed by dairy products, then grain mills and lastly sugar, according to ASI data (Table 2). When labour productivity is compared from RBI data and case studies, it shows that labour employed in edible oil mills is most productive, followed by that in grain mills and then sugar/dairy products.

Capital efficiency was highest in edible oils, followed by grain mills, dairy products and then sugar, according to ASI data (Table 2). But RBI data reveal that grain mills were most capital efficient, followed by edible oils and then sugar. Case studies show that edible oil mills were most capital efficient, followed by dairy products and then rice mills (Table 2).

Table-2

Efficiency in Resource Use and Profitability
(Figures in parantheses are ranks)

Details	ASI				RBI			Case Studies			
	Dairy Products (291)	Grain Mills (7269)	Sugar, Gur & Khand-sari (2331)	Hydro-generated Vanaspati & other Edible Oils (2668)	Grain Mills (24)	Sugar (72)	Edible & Vanas-pati Oils (33)	Dairy Products (DS) (1)	Rice (MCRB) (1)	Edible Oils (GROFED) (1)	Edible Oils (DILFED) (1)
1. RESOURCE EFFICIENCY											
(a) Raw material efficiency (ratio)											
Value of output to material consumed	1.19 (3)	1.20 (2)	1.48 (1)	1.19 (3)	1.14 (3)	1.57 (1)	1.27 (2)	1.20 (2)	1.19 (3)	1.32 (1)	1.32 (1)
(b) Working capital efficiency (ratio)											
Value of output to net/gross working capital	10.01 (3)	12.05 (2)	6.48 (4)	13.52 (1)	7.42 (1)	1.84 (3)	4.77 (2)	3.38 (1)	na	2.62 (2)	1.88 (3)
(c) Labour efficiency (ratio)											
Total output to emoluments/mandays	232.0 (2)	214.0 (3)	183.0 (4)	538.5 (1)	32.6 (2)	9.13 (3)	35.86 (1)	41.93 (4)	47.85 (2)	55.94 (1)	46.75 (3)
(d) Capital efficiency (ratio)											
Total output to total capital	4.11 (3)	5.58 (2)	2.29 (4)	9.37 (1)	3.53 (1)	1.80 (3)	2.89 (2)	2.22 (2)	1.73 (3)	6.25 (1)	8.94 (4)

contd..

Table-2 (contd.)

Details	ASI				RBI			Case Studies			
	Dairy Products (291)	Grain Mills (7269)	Sugar, Gur & Khand-sari (2331)	Hydro-generated & other Edible Oils (2668)	Grain Mills (24)	Sugar (72)	Edible & Vanaspati Oils (33)	Dairy Products (DS) (1)	Ice (IRB) (1)	Edible Oils (GROFED) (1)	Edible Oils (DILFE) (1)
2. PROFITABILITY											
(a) Net profit as a % of value of production/sales	0.30 (3)	1.46 (2)	-1.69 (4)	2.20 (1)	3.20 (1)	-0.64 (3)	1.05 (2)	0.34 (2)	3.09 (1)	-2.20 (4)	6.41 (3)
(b) Net profit as a % of equity (RDE)	na	na	na	na	30.94 (1)	-6.00 (3)	25.00 (2)	2.00 (1)	na	-14.47 (3)	-3.10 (2)
(c) Net profit as a % of total capital (RC)	1.25 (3)	0.05 (2)	-3.02 (4)	20.46 (1)	26.55 (1)	-5.03 (3)	12.24 (2)	2.18 (2)	4.79 (1)	-14.03 (4)	-0.40 (3)
(d) Net operating surplus as a % of total capital (SD)	0.09 (4)	19.27 (2)	14.30 (3)	35.91 (1)	36.29 (2)	37.94 (1)	28.23 (3)	6.66 (2)	na	na	7.59 (1)
Average Rank	3.00	2.14	3.12	1.29	1.50	2.50	2.00	2.00	2.00	2.29	2.50

Legends as in Table 1.

Figures in [] are sample sizes, while figures () are ranks.

So far partial resource efficiency is considered. Efficiency of all resources may now be studied. This is given by net profit each to value of production/sales, equity, and total capital. According to ASI data, net profit to value of production/sales was the highest for edible oil mills, followed by that for grain mills, dairy products, and then sugar industry (Table 2). Grain mills and edible oil mills interchange their ranks as per RBI data. Case studies reveal that rice mill is the most efficient, followed by dairy products and then edible oils (Table 2). Considering return on equity (ROE), grain mills are most efficient, followed by edible oils and then sugar according to RBI data. Case studies show that dairy products had the highest ROE, followed by edible oils. Results on return on investment (ROI) for the four food-processing industries covered under ASI are same as those based on net profit to value of production discussed earlier (Table 2). This is also the case from RBI data as well as case studies.

Considering operating surplus on investment (SOI) from ASI data, edible oil mills and grain mills retain their ranks, but the ranks of dairy products and sugar interchange. According to RBI data, SOI was the highest in sugar mills, followed by grain mills and lastly edible oils. But, according to case studies edible oil mills had the highest SOI, followed by dairy products (Table 2).

These findings reveal that the relative ranking of the selected food-processing industries in three different data

sources differed to some extent. Hence, the priority among them may be determined by applying all the eight indicators simultaneously. For this purpose average of ranks based on all the eight indicators is computed in Table 2.

According to ASI data, edible oil mills may be accorded the highest priority, followed by grain mills, dairy products and lastly sugar (last row in Table 2). The first two of these four industries interchange their priority in RBI data. Case studies show that grain mills may be accorded the highest priority, followed by dairy products and then edible oils. Two of the three data sources indicate that grain mills be accorded the highest priority, followed by edible oils, then dairy products, and lastly sugar.

Priority based exclusively on SOI indicates that sugar mills improve their position over dairy in ASI data, while they improve their position over both grain and edible oil mills in RBI data. But their efficiency in working capital use is least satisfactory as compared to the remaining food-processing industries. Hence, higher interest rates may be responsible for lowering the ROI of grain mills, edible oil mills and to some extent dairy-products (see case study result on dairy products in Table 2). Interest rates on loans could be lowered especially for grain mills and edible oil mills which have better working capital management.

Priority based on Efficiency in Liquidity and Solvency Management : This could be studied from RBI data and case studies only

as ASI did not give the required data for this analysis. Five different indicators for examining liquidity efficiency are inventory, receivables, cash, and payable turnover ratios, and operating cycle ratio, as mentioned earlier. Table 3 gives the results on these.

Three of these five ratios, namely, inventory turnover, payable turnover, and operating cycle ratios show that grain mills were the most efficient, followed by edible oils, and then sugar, according to the RBI data. Case studies show greater diversity in ranking of the food-processing industries based on liquidity efficiency related indicators (Table 3).

Simultaneous application of all the five indicators is attempted by computing average of ranks for these industries in Table 3. This shows that grain mills be given the highest priority, followed by edible oils and then sugar as per RBI data. Case studies on the other hand show that dairy products was most efficient in managing liquidity, followed by edible oils (OILFED), rice and then edible oils (GROFED) (last row in the first part of Table 3).

Discussion so far has addressed to the issue of efficiency in the use of short term assets and liabilities. Efficiency in the use of long run assets is also important. Three indicators for this are net sales to each: (a) net assets, (b) net worth, and (c) net fixed assets. The results given in Table 3 show that edible oil mills are most efficient, followed by grain mills and then sugar industry, according to the RBI data. This is so on

Table-3

Liquidity and Solvency Management Efficiencies

(Figures in parantheses are ranks)

Details	RBI			Case Studies				Desirable Norms
	Grain Mills	Sugar	Edible & Vanaspati oils	Dairy Products (DS)	Rice (MCRB)	Edible Oils (GROFED)	Edible Oils (DILFED)	
1. EFFICIENCY IN LIQUIDITY MANAGEMENT								
(a) Inventory turnover ratio	14.66 (1)	2.49 (3)	7.37 (2)	6.84 (2)	2.65 (4)	4.07 (3)	8.34 (1)	No specific norm, but the higher this ratio the more sales are produced and hence more liquid is the enterprise
(b) Receivables turnover ratio	53.19 (2)	112.88 (1)	33.29 (3)	22.88 (1)	9.07 (4)	18.38 (3)	18.52 (2)	12:1
(c) Cash turnover ratio	66.41 (2)	17.85 (3)	89.76 (1)	28.88 (3)	41.81 (1)	22.66 (2)	5.56 (4)	No specific norm, but the higher this ratio the more efficient is the cash management
(d) Payable turnover ratio	34.57 (1)	5.89 (3)	14.46 (2)	49.53 (2)	89.39 (1)	9.15 (4)	25.13 (3)	No specific norm, but the higher this ratio the more efficient is the use of sundry creditors
(e) Operating cycle ratio	22.18 (1)	4.66 (3)	18.43 (2)	6.64 (2)	2.25 (4)	4.48 (3)	7.93 (1)	Norm for vegetable and hydro-generated oils is 6.89*
Average Rank	1.48	2.68	2.88	2.88	2.88	3.88	2.28	

Contd....

Table 3 (contd.)

Details	RBI		Case Studies				Desirable Norms	
	Grain Mills	Sugar	Edible & Vanaspati oils	Dairy Products	Rice (MCRB)	Edible Oils (GROFED)		Edible Oils (DILFED)
2. EFFICIENCY IN SOLVENCY MANAGEMENT								
(a) Net sales to net assets ratio	8.92 (2)	6.77 (3)	11.79 (1)	6.36 (1)	na	6.86 (2)	1.85 (3)	2:1
(b) Net sales to net worth ratio	9.53 (2)	8.59 (3)	14.30 (1)	6.78 (2)	na	9.89 (1)	1.74 (3)	8:1
(c) Net sales to net fixed assets ratio	17.86 (1)	5.21 (3)	17.88 (2)	11.76 (1)	na	9.53 (2)	1.55 (3)	8:1
Average Rank	1.67	3.00	1.33	1.33	na	1.67	3.00	

* See Report of the Study Group to Frame Guidelines for Follow up of Bank Credit, Reserve Bank of India, Bombay, 1975.

Legends as in Table 1.

the basis of two of the three indicators, namely, net sales to net assets, and net sales to net worth ratios. Case studies show that the dairy unit is the most efficient, followed by edible oil units on the basis of net sales to net asset and net sales to net fixed assets ratios. Finally, considering the average of ranks based on all three indicators, RBI data show that grain mills are most efficient, followed by edible oils and then sugar. Case studies, however, show that a dairy unit is most efficient, followed by edible oil units (last row in the second part of Table 3).

Priority based on Liquidity and Solvency Cushion Management :

Again, this could be studied from RBI data and case studies. RBI data show that grain mills had the maximum cushion to meet their current and quick liabilities. Next in rank was edible oils, followed by sugar mills (Table 4). Case studies on the other hand show that edible oil units have the maximum cushion. The next rank is obtained by the dairy unit if the cushion is assessed to meet only current liabilities. But this unit has the least cushion if quick liabilities are to be honoured.

As regards solvency cushion, RBI data reveal that this was maximum for sugar, followed by edible oils and then grain mills based on debt to net worth and net fixed assets to net worth ratios. Case studies show that edible oil units are most solvent, followed by dairy products considering debt to equity and debt to net-worth ratios. The results on the remaining two

indicators, however, show exactly the reverse ranks. Finally, the average of ranks based on all four indicators shows that sugar industry be accorded the highest priority, followed by edible oils and then grain mills as per the RBI data. But case studies suggest that a dairy unit is most solvent, followed by oil mills (Table 4).

Priority based on all Criteria : Since many of the indicators studied so far have bearing on each other it would be useful to prioretize the food-processing industries by simultaneously considering all the four criteria and indicators related to them. For this purpose average of ranks based on all the indicators is computed and this rank is utilized to prioretize these industries for their development. Wherever necessary, other considerations are also taken into account.

According to ASI data, edible oil mills may be given the highest priority as they have the highest rank of 1.4. This is followed by grain mills with a rank of 2, then dairy product units with 3.1, and lastly, sugar units with 3.4 rank. RBI data reveal that the highest priority be accorded to grain mills which have a rank of 1.6. Next in importance is edible oil mills with a rank of 1.9 and lastly, sugar with a rank of 2.4. Case studies on the other hand show that the highest priority be accorded to dairy product units which obtained a rank of 1.9. Next priority be given to rice mills which have a rank of 2.3 and then edible oil units which have a rank of 2.42 for GROFED and 2.44 for

Table-4

Liquidity and Solvency Cushion Management

Details	RBI			Case Studies				Desirable Norms
	Grain Mills	Sugar	Edible & Vanaspati oils	Dairy Products (DS)	Rice (MCRB)	Edible Oils (GROFED)	Edible Oils (DILFED)	
1. LIQUIDITY CUSHION MANAGEMENT								
(a) Current ratio	1.78 (1)	0.92 (3)	1.17 (2)	1.32 (2)	1.23 (3)	1.18 (4)	1.92 (1)	2:1 to 3:1
(b) Quick ratio	0.88 (1)	0.26 (3)	0.42 (2)	0.68 (3)	0.64 (2)	0.31 (4)	1.43 (1)	1:1
Average Rank	1.88	3.00	2.88	2.58	2.58	4.00	1.88	
2. SOLVENCY CUSHION MANAGEMENT								
(a) Debt to equity ratio	0.21 (3)	0.68 (2)	0.88 (1)	0.68 (3)	na	2.87 (1)	1.12 (2)	Less than or equal to 2:1
(b) Debt to net worth ratio	0.15 (3)	0.57 (1)	0.43 (2)	2.27 (2)	na	3.88 (1)	0.85 (3)	No specific norm, but it is desirable to have 1:1
(c) Net fixed assets to fixed debt ratio	3.82 (1)	3.62 (2)	2.83 (3)	0.95 (1)	na	0.39 (3)	0.76 (2)	1.5 : 1
(d) Net fixed assets to net worth ratio	0.54 (1)	1.69 (3)	0.83 (2)	0.58 (1)	na	1.33 (3)	1.14 (2)	No specific norm, but such a higher ratio is viewed as dangerous
Average Rank	2.58	1.58	2.88	1.75	na	2.88	2.25	

Legends as in Table 1.

OILFED. But, considering the percentage distribution of frequency with which these four food processing industries obtained the first rank on various indicators rice mills get the highest priority, followed by dairy products, edible oils (GROFED) and edible oils (OILFED) in that order of importance.

The preceding shows that the priority from the three data sources do not converge. Therefore, other considerations need to be taken into account. This is discussed in what follows.

Policy priority may be first accorded to the grain mills, followed by edible oils, sugar and lastly, dairy products. There are several reasons for this. One, grain mills including rice mills get the first priority according to RBI data and case studies, both of which unlike ASI data permit application of more comprehensive criteria. Two, edible oil mills receive second priority in RBI data which facilitated more comprehensive performance analysis with a much higher average rank than from the case studies. Moreover, two case studies on edible oil units are for those which are in the initial stage of their development and hence their potential performance is yet to be adequately realized. Three, sugar industry may be given a higher priority than dairy products because in RBI data its rank is higher than the rank of the latter in ASI data. Moreover, percentage distribution of frequency with which sugar industry obtained the first two ranks on the seven common indicators was higher than for dairy units in ASI data which are drawn from a large sample

survey.² Four, scarcity of supply of products from grains, edible oils, and sugar mills is much more than from dairy units. The above suggested priority among the four selected food-processing industries is also justifiable on the ground of reducing trade and balance of payments deficits. This is because the country would save foreign exchange through reduction or complete elimination of imports of products produced by these industries, besides enhancing their export potential. Five, the above suggested priority is also consistent with the rural-led employment-oriented economic development that would get induced by the development of food-processing industries discussed at the outset of this paper. What may constitute the basic strategy for the future development of these industries is the concern of the next section.

Strategy for Accelerated Development of the Selected Food-processing Industries

The discussion in the preceding sections can form a basis to identify broad policy package that the Food-processing Ministry and the other concerned ministries can consider for adoption. This package can include (a) location of the food-processing industries under study, (b) public investment (both capital and current including subsidies) and institutional

² These seven indicators are raw material and labour intensities, raw material, labour, and capital efficiencies, net profit to value of output, ROI and SOI.

finance to develop these industries and their backward and forward linkages, and (c) forms of industrial organization that could be encouraged for these industries.

As regards the location policies, the selected food-processing industries tend to be located nearer their raw material and hence in rural areas. This in turn implies that such industrial location would be beneficial to the management performance and developmental concerns alike. The former because it would improve efficiency in raw material procurement as well as in sales/marketing operations. The management of these industries will have better knowledge about the availability and price of raw materials and also because large part of incremental future demand for their products would arise in the rural areas. While the latter facilitates fulfilling one of the developmental concerns, there will be other concerns that could also be satisfied from such location encouraging policies. This is the concern of generating productive employment in rural areas and diversifying occupational pattern of the rural populace. Possibilities of fulfilling these concerns are high because the selected food-processing industries are labour-intensive.

This suggestion about the rural-led industrial location policy is based on the study of the organized sector. But it need not be competitive to the decentralized sector of the food-processing industries. In order to realize this, conscious policies for involving the latter sector in ancillary

activities like subsidiary processing, repairs and other services especially trading/marketing of the product produced by the organized sector of the food-processing industries may be evolved. Such food-processing and agricultural growth would pave the path for rural-led economic development. Such development moreover cannot be sustained if policies conducive to accelerating growth in the primary food commodities produced by the farmers are not pursued.

As regards public investment and institutional finance related policies it may be first stated that tax concessions, and revenue subsidies may be kept to a bare minimum not only for these basic food processing industries but also for the so called non-conventional food-processing units. Further, public as well as private investment together with a small fraction of capital subsidy may be encouraged to modernize processing technology in those basic food-processing where the technology is obscelent. Public investment could also be relatively more encouraged in rural roads, transportation and electricity.

On institutional finance our suggestions are two fold. One, the interest rate may be reduced especially for those basic food processing units which show high performance in their efficiency in working capital management. What is emphasized here is that the financial institutions could follow more flexible and differential interest rates for their loans to food-processors as is the case for loans to rural households. In this context it is also important to consider lowering

interest rates on both banking and non-banking deposits, and refinance. This is because lower lending rates in isolation of revision in deposits and refinance rates would jeopardize the viability of financial institutions and also to some extent the profitability of basic food-processing and other industries who rely not only on institutional finance but also on deposits from their shareholders and the public at large. Moreover lower and differential interest rates would improve the investment climate. But, one may argue that the lower and differential deposits rates may discourage financial savings in the form of deposits. This, however, does not necessarily hold as in the early stage of development the preferences for such form of saving is relatively low among all classes except to some extent urban middle and upper income classes. Also supply response of deposits to interest rate is comparatively low in the early stage of economic development.

Our second suggestion is that institutional finance be vigorously promoted for these basic food-processing industries, and especially for grains and edible oil mills which have much lower access to bank credit than sugar and dairy industries. Moreover, such bank credit may be officially defined as 'indirect' rural credit. Since these industries are highly working capital intensive RBI and other apex level term lending and refinancing institutions may consider extending temporary credit facility to the field-level financial institutions. This is because both commercial and cooperative banks do not have

adequate loanable funds at the time at which demand for working capital loans especially in the rural sector arises. To a large extent, this is due to the fact that the time at which this demand arises does not match well with the time at which these banks can mobilize deposits.

We finally turn to the discussion on forms of industrial organization that may be encouraged for the development of foodgrains, edible oilseeds, sugarcane and milk processing industries.

Considering the results on efficiency in various inputs, liquidity, solvency, operating cycle and profitability management, it is found that for two of the four food-processing industries, cooperatives do not have an advantage over other forms of organizations (Tables 1 to 3). This conclusion is derived on the basis of percentage distribution of number of times these various forms of organizations achieved first two ranks on the above mentioned efficiency criteria. In the case of grain mills non-cooperative form of organizations achieved 81 percent as against 50 percent for cooperative. The corresponding percentages for edible oils were 90 and 49. Only in the case of dairy-product this percentage was in favour of cooperatives; 87 as against 17. Similar comparison for sugar could not be made as the case study did not include the cooperative form of organization. Such a situation may also arise due to government controlled environment under which most of these industries operate and where cooperatives enjoy lesser

degree of freedom to manage environment. Public policy under these conditions may have to be more clear on this issue. Wherever genuine bottom-up rather than top-down cooperativization in the selected food-processing industries emerges it should be encouraged. Moreover, tax concessions, revenue subsidy and other such policies should be kept to a bare minimum for all forms of industrial organization for these industries. Such neutral approach will encourage more competitive environment for the development of these industries. Lastly, all the various forms of industrial organization in these food-processing units must be encouraged to link their raw materials procurement through the existing vast network of primary agricultural cooperative societies. This has several advantages. One, this vast net-work would be more fully utilized. It can become more viable through increased scale of its operations, besides developing backward linkings for transfer of technology. Two, food-processing industries would secure farmer producer cooperation in matters of quality and adequacy of supplies and thus reduce their cost of procurement.

Summing-up

This paper has analysed development and financial, with special reference to working capital management, performance of the selected food-processing industries. Unlike many recent studies this study is concerned with those food-processing

industries whose products are for mass consumption instead of consumption by relatively better-off. These industries are foodgrains milling, edible oilseeds processing, sugar factories and dairy products. These industries account for more than two-thirds of output from capital and labour employed in all food-processing industries in the organized sector alone. Accelerated development of these industries would contribute to economic growth as they would relax wages goods constraint.

Based on criteria and considerations related to both development and financial performance, the study found that the order of priority among these four food-processing industries for their development be the same as stated above. The analysis suggests: (a) location of these industries be encouraged in rural areas from where basic raw materials, labour, and incremental demand would emerge; (b) encouragement of public and private investment especially for modernization of processing technology, besides public investment in rural roads, transportation, and electricity; (c) improving access to and lower interest rate on institutional finance especially for grain and edible oil mills which are more efficient in working capital management; and (d) more directed public policy towards the form of industrial organization--cooperatives and noncooperatives--for development of these industries. The study also stresses that since these industries are directly dependent on agriculture, its sustained development is central to their performance. And for this, strengthening backward and forward linkages for transfer of new

technology by institutional system for agricultural development is essential.

References

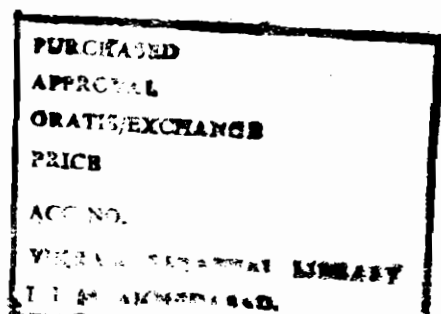
- [1] Austin, James E. Agricultural Project Analysis, EDI Series in Economic Development, The Johns Hopkins University Press, Baltimore and London, 1981.
- [2] Bhattacharya, S.K. "Determinants of Effective Working Capital Management," Second IFCI Lecture, Indian Institute of Management, Ahmedabad, April 1977.
- [3] Bhole, B.D., V.D. Galgalikar, and S.R. Kale. "An Approach to Planning for Location of Oil Mills in Rural Area," Indian Journal of Agricultural Economics, 54, 3, July-September 1989.
- [4] Chandrachud, M.G. "Cooperative Sugar Factories in Maharashtra State," Indian Journal of Agricultural Economics, 21, 4, October-December 1966.
- [5] Desai, B.M. "Objectives and Role of Institutional Finance for Agricultural and Rural Development," Vikalpa, 14, 2, April-June 1989.
- [6] _____, and John W. Mellor. Institutional Rural Finance for Agricultural Development: Cross-National Comparison of Some Critical Issues, International Food Policy Research Institute, Washington, D.C., U.S.A., 1990 (Forthcoming).
- [7] Gaikwad, V.R. "A Note on Potential for Integrated Processing Industries Utilizing Agriculture and Animal Based Raw Materials," Indian Institute of Management, Ahmedabad, 1983.
- [8] _____, and V.K. Gupta. A Guide to Management of Integrated Rice Cooperatives in Asia, Oxford & IBH, New Delhi, 1987.
- [9] Government of India. National Accounts Statistics, Various Issues, Central Statistical Organization, Department of Statistics, Ministry of Planning, New Delhi.
- [10] _____. Annual Survey of Industries: Factory Sector, Various Issues, Central Statistical Organization, Department of Statistics, Ministry of Planning, New Delhi.
- [11] Indian Society of Agricultural Economics. "Agro-processing Industries: Summaries," Indian Journal of Agricultural Economics, 54, 3, July-September 1989.

- [12] Gupta, V.K., and P.S. George. Modernization of Rice Processing Industry in Punjab, Monograph No.54, Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad, 1975.
- [13] _____, T.P. Gopaldaswamy, and D.P. Mathur. Studies on Modernization of Paddy Rice System, Monograph No.16, Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad, 1969.
- [14] Kindleberger, Charles P. Economic Development, McGraw Hill Book Company, Inc., New York, 1965.
- [15] Madappa, P.P. "Growth and Location of the Groundnut Solvent Extraction Industry," Indian Journal of Agricultural Economics, 21, 4, October-December 1966.
- [16] Mellor, John W. The New Economics of Growth: Strategy for India and the Developing World, Cornell University Press, Ithaca, New York, 1976.
- [17] Mujumdar, N.A. "Rapporteur's Report on Location and Role of Agricultural Processing and Supply Industries," Indian Journal of Agricultural Economics, 21, 4, October-December 1966.
- [18] Ramamoorthy, V.E. Working Capital Management, Institute of Financial Management and Research, Madras, 1976.
- [19] Reserve Bank of India. "Finances of Medium and Large Public Limited Companies," Reserve Bank of India Bulletin, 37, 7, July 1983.
- [20] _____. "Finances of Medium and Large Private Ltd. Companies," Reserve Bank of India Bulletin, 38, 10, October 1984.
- [21] _____. Report of the Study Group to Frame Guidelines for Follow-up of Bank Credit, Bombay, 1975.
- [22] Sarma, M.T.R. "Location of Plants Processing Foodgrains in India: Some Empirical Evidence," Indian Journal of Agricultural Economics, 21, 4, October- December 1966.
- [23] Singh Balwinder, and G.S. Mann. "A Study into the Locational Operational Aspects of Important Agro-based Industries in the Punjab," Indian Journal of Agricultural Economics, 54, 3, July-September 1989.

References

- [1] Austin, James E. Agricultural Project Analysis, EDI Series in Economic Development, The Johns Hopkins University Press, Baltimore and London, 1981.
- [2] Bhattacharya, S.K. "Determinants of Effective Working Capital Management," Second IFCI Lecture, Indian Institute of Management, Ahmedabad, April 1977.
- [3] Bhole, B.D., V.D. Galgalikar, and S.R. Kale. "An Approach to Planning for Location of Oil Mills in Rural Area," Indian Journal of Agricultural Economics, 54, 3, July-September 1989.
- [4] Chandrachud, M.G. "Cooperative Sugar Factories in Maharashtra State," Indian Journal of Agricultural Economics, 21, 4, October-December 1966.
- [5] Desai, B.M. "Objectives and Role of Institutional Finance for Agricultural and Rural Development," Vikalpa, 14, 2, April-June 1989.
- [6] _____, and John W. Mellor. Institutional Rural Finance for Agricultural Development: Cross-National Comparison of Some Critical Issues, International Food Policy Research Institute, Washington, D.C., U.S.A., 1990 (Forthcoming).
- [7] Gaikwad, V.R. "A Note on Potential for Integrated Processing Industries Utilizing Agriculture and Animal Based Raw Materials," Indian Institute of Management, Ahmedabad, 1983.
- [8] _____, and V.K. Gupta. A Guide to Management of Integrated Rice Cooperatives in Asia, Oxford & IBH, New Delhi, 1987.
- [9] Government of India. National Accounts Statistics, Various Issues, Central Statistical Organization, Department of Statistics, Ministry of Planning, New Delhi.
- [10] _____. Annual Survey of Industries: Factory Sector, Various Issues, Central Statistical Organization, Department of Statistics, Ministry of Planning, New Delhi.
- [11] Indian Society of Agricultural Economics. "Agro-processing Industries: Summaries," Indian Journal of Agricultural Economics, 54, 3, July-September 1989.

- [12] Gupta, V.K., and P.S. George. Modernization of Rice Processing Industry in Punjab, Monograph No.54, Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad, 1975.
- [13] _____, T.P. Gopaldaswamy, and D.P. Mathur. Studies on Modernization of Paddy Rice System, Monograph No.16, Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad, 1969.
- [14] Kindleberger, Charles P. Economic Development, McGraw Hill Book Company, Inc., New York, 1965.
- [15] Madappa, P.P. "Growth and Location of the Groundnut Solvent Extraction Industry," Indian Journal of Agricultural Economics, 21, 4, October-December 1966.
- [16] Mellor, John W. The New Economics of Growth: Strategy for India and the Developing World, Cornell University Press, Ithaca, New York, 1976.
- [17] Mujumdar, N.A. "Rapporteur's Report on Location and Role of Agricultural Processing and Supply Industries," Indian Journal of Agricultural Economics, 21, 4, October-December 1966.
- [18] Ramamoorthy, V.E. Working Capital Management, Institute of Financial Management and Research, Madras, 1976.
- [19] Reserve Bank of India. "Finances of Medium and Large Public Limited Companies," Reserve Bank of India Bulletin, 37, 7, July 1983.
- [20] _____. "Finances of Medium and Large Private Ltd. Companies," Reserve Bank of India Bulletin, 38, 10, October 1984.
- [21] _____. Report of the Study Group to Frame Guidelines for Follow-up of Bank Credit, Bombay, 1975.
- [22] Sarma, M.T.R. "Location of Plants Processing Foodgrains in India: Some Empirical Evidence," Indian Journal of Agricultural Economics, 21, 4, October-December 1966.
- [23] Singh Balwinder, and G.S. Mann. "A Study into the Locational Operational Aspects of Important Agro-based Industries in the Punjab," Indian Journal of Agricultural Economics, 54, 3, July-September 1989.



- [24] Srivastava, U.K. "Agro-processing Industries: Potential, Constraints and Task Ahead," Indian Journal of Agricultural Economics, 54, 3, July-September 1989.
- [25] _____, and S. Vathsala (ed). Agro-processing: Strategy for Acceleration and Exports, Oxford & IBH, New Delhi, 1989.
- [26] _____, and M. Dharma Reddy. Management of Marine Fishing Industry: An Analysis of Problems in Harvesting and Processing, Oxford & IBH, New Delhi, 1982.
- [27] State Bank of India and the Punjab National Bank. Training Manual for Managers (Credit) of District Industries Centres, Compiled by Programme Coordinators, Bombay.