

# Use Of Financial Ratios To Measure The Performance Of Food Processing Industries Of Andhra Pradesh

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## Abstract

The goal of this article is to use financial ratios to assess the performance of food processing sub-sectors in Andhra Pradesh. The efficiency of an industrial unit is measured by its productivity. However, it also emphasizes that a firm that performs well should maintain good financial health. Profitability, Liquidity, Debt- servicing capacity, leverage, and working capital management efficiency of sub-sectors of the Food processing industry of Andhra Pradesh are measured. This empirical analysis considers the four digit-level of disaggregation ASI data over the study period 2008-09 to 2018-19. Finally, an attempt was made to identify them and group them into four different categories with similar characteristics.

**Keywords:** agriculture, development, efficiency, financial, food, health, income, performance, sector, service

## Introduction

People in the country can enjoy a better quality of life and better social services with faster economic development. Economic development necessitates a shift from agriculture's dominance to that of the industrial sector. The most major structural shift linked with an increase in per capita income, according to United Nations Industrial Development Organization (UNIDO) research, is a decrease in agricultural production and a rise in manufactured output. Development nations are thus aiming for a more rapid industrialization and economic growth. "The manufacturing sector is the most critical economic sector in size and contribution to income, employment, and foreign exchange gains. According to the ASI (Annual Survey of Industries) 2018-19, the food products sector contributes to the manufacturing sector in size, employment, and output. In the age of globalization, the expansion of food processing firms is crucial for establishing domestic self-sufficiency.

Indian Government, under the Ministry of Food Processing Industries (MOFPI), made it a top priority any period by offering tax breaks and incentives to promote the commercialization of value-added agricultural products, reducing pre- and post-harvest waste, creating jobs, and increasing export growth. Food security, food inflation, and the supply of safe, nutritious food to the general population are all issues that this business can address. Meat, fish, fruits and vegetables, oilseeds, dairy, grain mill goods, starch products, animal feeds, drinks, and other food items are all part of India's food processing business.

As an agrarian economy, Andhra Pradesh has enormous potential in this sector. The state's social, physical, and industrial infrastructure and virtual connectivity are well-developed and critical growth drivers for the food processing sector. According to the ASI 2018-19, Andhra Pradesh has the most factories (14.41 percent) in India's food processing industry, which employs 11.47 percent of the workforce, making it a labor-

intensive sector. At 10%, Andhra Pradesh ranks second nationally in net value added in the food and beverage industry and tops the South Indian states in this category. (source: ASI Reports 2018-19).

Andhra Pradesh's state government has issued an Industrial Investment Promotion Policy 2010-15, including several incentives and concessions for new enterprises set up in the state. To promote Andhra Pradesh an appealing destination for global and domestic investors, the Government is working to build high-quality infrastructure and a welcoming industrial environment. The very first state in India to take the initiative in implementing the India's National E-Government Plan has launched the "A.P. Single Window Clearances System" to help investors and industry get the clearances they need quickly and easily, convenient, transparent, and integrated electronic services.

It is the leading producer of mango, papaya, lemon, tomato, chili, turmeric, and eggs in India and one of the three top producers of banana, cashew, coconut, milk, and beef. The Government of Andhra Pradesh formed the Andhra Pradesh Food Processing Society (APFPS) in November 2012 under the Andhra Pradesh Societies Act to serve as a nodal body for the development of the state's food processing industry with a vision to be a global leader in Food Processing domain of Agri and allied produce by 2029. With an idea and tremendous opportunities, the food processing industry has a high scope for development. However, the state's actual status of these industries needs to be determined by their performance. Productivity, generally assessed in terms of capital and labor, is a widely used indicator of industrial unit efficiency. Productivity is a key indicator of development. A unit that excels at increasing production should also be financially sound.

The paper continues as follows. In Section 2, we discuss relevant previous studies related to study on financial performance of industries. In Section 3, we describe the selected sub-sectors for the study and their classification under National Industrial Classification (NIC). We

related the selected Financial Indicators to the ASI data for analysis in section 4. In Sections 5 we discuss the results obtained for the ratios and group the sub sectors accordingly. We conclude in Section 6.

In Industrial economics, financial ratios analyze an industry's financial conditions and business performance. Financial success may be measured by looking at things like solvency, liquidity, profitability, and turnover, among other things. Several researchers utilized this technique to examine the financial performance of dairy processing companies, agro-processing co-operatives, and private businesses, with varied results (Rao, 1984; Murthy et al., 1990; Vidya et al., 1993, Kumar, 2003; Deepa et al., 2009). The ratios indicated the business's strong and weak points, indicating the management about the difficulties occurring and how to take appropriate corrective action to ensure the industry's efficient operation.

Desai and Namboodiri (1992) have selected four distinct criteria to assess the food processing industry's success. One of such criteria is liquidity efficiency and solvency management. The food-processing businesses require a lot of working capital, which makes liquidity efficiency management a good idea. As a result, effective capital management is both essential and desired. Data from the Annual Survey of Industries (ASI) was used, Desai (1992) examined the financial performance of a chosen registered food processing industry at the national level from 1980-81 to 1984-85. He pointed out that registered dairy products' profit margins were shallow (0.30 percent). Net profit as a percentage of total capital yielded just 1.25 percent return on investment. K.D Sharma et al. (2010) investigated the financial viability of Himachal Pradesh's agro-processing industries by survey method for the year 2006-07. He analysed the liquidity position of the 900 small agro-processing enterprises by calculating the current ratio and quick (acid test) ratio. According to the acid test, most processing sectors had high current ratios but low quick ratios. This suggested that many companies had large amounts of unsold inventory rather than

receivable cash balances. The debt-to-equity, profitability, and sales turnover ratios were favorable to small units compared to large units. Overall, the agro-processing units performed admirably in liquidity, profitability, investment, and leverage. Gurav et al. (2012) used financial parameters to examine the financial health of cashew processing firms in India's Ratnagiri area. The study also looked at the cashew nut processing units' capital investment patterns and capacity utilization and found that they are essential for the proper working conditions of the firms.

Financial ratios can also compare a company's financial status and performance to others in different industries to identify issues or areas where improvements can be made (De, Bandyopadhyay, and Chakraborty 2010). Accounting ratios, which financial analysts use to determine a company's financial health, may aid in the development of a more detailed understanding of an industry group's financial performance. Dilip (2013) developed financial ratios at the macro level using ASI data, looking for a match between accounting data and underlying industrial characteristics.

Sanjib Dutta and Simismita Borah carried out a similar study (2016), The financial performance of Assam's food processing businesses was evaluated using data from 1998-99 to 2011-12 from ASI data for the production of food goods and drinks at the two-digit level. For both Assam and India, the Debt-Equity Ratio (DER) is unsatisfactory. The performance of FPI in terms of profitability is deteriorating at both the state and national levels. Over time, it has become clear that Assam's current ratio is unsatisfactory. Calculating financial ratios is critical for the industry to examine its financial performance, according to the available literature review. As a consequence, at the macro level, it is an effort to assess the performance of FPI in Andhra Pradesh (in terms of financial ratios), which is one of the Government of India's emphasis areas.

## Methodology

This study is based on secondary data that is currently accessible. The information comes mostly from the Central Statistical Office's reports and publications, which are published by the Indian government. The research used a reference period of 11 years, from 2008-09 to 2018-19. The National Industrial Classification 2008 (NIC-2008) is an upgrade to the National Industrial Classification 2004 (NIC-2004). Various "activity groupings" or "tabulation categories" are arranged in a hierarchical manner to classify all activities. Every section is split into a 'division,' which has a 2-digit numeric code, a 'group,' which has a 3-digit numeric code, a 'class,' which has a 4-digit numeric code, and a 5-digit sub-class, which has a 4-digit numeric code. The majority of the studies conducted earlier in India's manufacturing sector are up to the three-digit level of NIC. However, this study attempted to extend up to 4 digit-level of disaggregation of the Food Processing Industry (FPI) in Andhra Pradesh, keeping in view the importance of the contribution of each subsector to the economic growth of the state.

Food Products are divided into the following classes, according to NIC 2008. Class-1010 (Meat processing and preservation), Class -1020 (Fish, crustaceans, and mollusks, as well as their products, are processed and preserved.), Class -1030 (Fruit and vegetable processing and storage), Class -1040 (Production of vegetable and animal fats and oils), Class-1050 (Dairy product manufacturing), Class -1061 (Grain mill product manufacturing), Class -1062 (Production of starches and starch-based goods), Class -1071 (Bakery product manufacturing), Class-1072 (Production of sugar.), Class-1073 (Cocoa, chocolate, and sugar confectionery production), Class-1074 (Producing macaroni, noodles, couscous, and other related farinaceous foods), Class-1075 (Production of ready-to-eat meals and dishes), Class -1079 (Other food product manufacturing n.e.c.), Class-1080 (Production of ready-to-eat animal feeds), Class -1101 (Beverage manufacturing), Class -1102 (Making wines), Class-1103 (Malt liquor and malt production) and Class -1104 (Manufacturing of soft drinks, mineral water, and other bottled

fluids.)All the classes (1010 to 1104) are considered for the study except class 1102 - Manufacture of wines, as data is inconsistent for the study period.

### **The Financial Indicators:**

It is possible to quantify the profitability and liquidity of an industrial sector using financial metrics such as debt service capacity and working capital management efficiency. This paper followed the methodology developed by Datta (2013) in analyzing the use of financial ratios to measure the industries' performance. The return on invested capital (ROIC) is a statistic that determines how well a corporation allocates its resources to profitable initiatives. The constructed ROIC is defined as  $(\text{profit} + \text{interest}) / \text{invested capital}$ , measuring profitability. The OCF/IC ratio compares a unit's operational cash flow to its invested capital. The OCF/IC ratio compares a unit's operational cash flow to its invested capital.  $(\text{Profit} + \text{Interest} + \text{Depreciation}) / \text{Invested Capital}$  yields OCF/IC. The interest determines the Interest Servicing Capacity (ICR) as a percentage of the overall return, the sum of interest and profit. The ICR is calculated as follows:  $(\text{Profit} + \text{Interest}) / \text{interest}$ . It's possible to determine a company's debt service capacity by looking at its debt service coverage ratio (DSCR). Operating cash flow is defined as the amount of interest paid divided by the total amount of the loan balance.  $(\text{Profit} + \text{Interest} + \text{Depreciation}) / \text{Interest paid} + 20\%$  of loan balance. The leverage ratio (L.R.), often known as the equity-debt ratio, measures a company's dependence on external financing. It was estimated as follows:  $(\text{fixed capital} + \text{working capital} - \text{outstanding loan}) / \text{outstanding loan}$ . A ratio between working capital and invested capital was used to determine the working capital management efficiency ratio (WCMER). It is a measure of asset and liability management efficiency. WCMER was calculated as a proportion of working capital to invested capital. The composite ratio was calculated as the average of the above ratios.

Financial analysts typically use these measures to evaluate a company's performance.

We picked similar data from the ASI data to ensure definitional equality, conformance, and parity, while bearing in mind the standards for these ratios that have been provided by financial professionals. Profit, interest, invested capital; fixed capital, working capital, outstanding loan, and other macro parameters were all estimated using ASI data. Compare, for example, the ASI item "invested capital" with the balance sheet item "total assets." The balance sheet item "netblock" (gross fixed assets - cumulative depreciation + capital work-in-progress) was deemed as equivalent with the ASI item "fixed capital." Similarly, "working capital" was thought equivalent to "networking capital" or "net current assets" on the balance sheet (current assets - current liabilities).

The ASI figures do not contain net worth, and economists do not utilise it to evaluate an industry's success at the macro level. In terms of industry-level statistics, however, we consider "net worth" to be virtually similar to fixed capital + working capital - outstanding loan. Our approach of matching macro and microdata was based on certain fundamental ideas employed by economists in assessing industrial-economic activity; however, it had no effect on a financial analyst's conceptual framework. The wholesale price index (WPI) has been used as the base year for deflating these variables, except for labour costs. The Consumer Price Index (CPI) was used to deflate employee costs.

### **Sub-Sector level performance of FPI in**

#### **A.P. in terms of Financial Ratios:**

Based on the values of the seven ratios for each of the 17 sub-segments of FPI sectors in this section, the chosen ratios may aid in grouping industries with similar ratio values. The purpose is to construct a self-contained industry grouping based on the set ratios.

We investigated whether these ratios may indicate heterogeneity or homogeneity in sub-segment performance and identify which FPI sub-segments are functioning well and which are not. However, there is a snag: a composite notion known as industrial characteristics is not available.

Some attributes, on the other hand, could be derived using the best presently available quantifiable business level standard. A company's ROIC, for example, should be greater than the weighted average cost of borrowed money. The firm's yearly cash flow should equal at least one-third of the existing loan, resulting in a minimum DSCR of 1.33. Since net working capital should account for at least 25% of total assets, the WC/MER should be set at 0.25. When analysing a company's financial performance on a micro level, financial analysts use these firm-level standards. Because an industry group comprises many firms, the results cannot be compared to these firm-level standards to get a sense of the overall characteristics of the sub-sectors of the FPI industry. To do this, we first compute the mean value and CV of seven ratios calculated over 11 years in Andhra Pradesh for sub-segments of the FPI (2008-09 to 2018-19). (Table 1). Each of the seven ratios has a set of quartiles that may be calculated for it. Quartiles are numbers that are used to split a large number of observations into equal sections. The observations were divided into four groups using three quartiles, with the first quartile (lower quartile), second quartile (middle quartile), and third quartile (upper quartile) in increasing order. These can be found in Table 2. The sub-sectors with ratios below Q1 are "Below average performers." Sub-segments with ratio values in the middle of Q1 and Q2 are "Average performers." The sub-sectors with ratio values between Q2 and Q3 are "Good Performers," whereas those ratio values of sub-sectors above Q3 are "Excellent Performers" concerning a particular ratio.

### Discussion of Results

The chosen financial ratios have demonstrated their representational power in dividing FPI into groups. We also get a basic concept of the profitability, liquidity, capital structure, operating management efficiency, working capital management efficiency, and debt and interest servicing capacity of each sub-sector. The grouping of sub-sectors of FPI under NIC -2008

classification was done on the bases of financial ratios obtained (Table 3).

From the study, it is found that Class 1010 (Meat sub-sector), 1074 (macaroni, noodles, couscous and similar farinaceous products sub-sector), 1080 (Animal feed sub-sector), 1101 (Beverage sub-sector) and 1103 (malt liquors and malt sub-sector) as Excellent Performers in Andhra Pradesh FPI during the study period. NIC 1020 (Fish sub-sector), 1050 (Dairy sub-sector), 1062 (starches and starch products sub-sector), 1071 (bakery products sub-sector), and 1104 (soft drinks; mineral water and other bottled water manufacture sub-sector) are Good performers in Andhra Pradesh FPI. During the study period, the manufacturing sub-sectors of FPI in Andhra Pradesh with NIC 1030 (Fruits and Vegetable sub-sector), 1040 (oil Sub sectors), 1061 (starch sub-sectors), 1075 (prepared meals and dishes sub-sector) and 1079 (other food products n.e.c. sub-sector) were found to be Average performers and whereas 1072 (sugar sub-sector) and 1073 (cocoa, chocolate and sugar confectionery sub-sector) found to be Below Average Performers.

### Data Source:

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**Table 1: Mean values of Selected Financial Ratios of Food Processing Industry in Andhra Pradesh**

NIC CODE (2008)	ROIC	OFC	DSCR	ICR	LR	WCMER	CR
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1010	0.46	0.52	16.51	382.42	12.33	0.67	68.82
1020	0.30	0.35	2.80	53.09	2.24	0.43	9.87
1030	0.14	0.20	1.96	31.18	2.50	0.33	6.05
1040	0.20	0.24	1.82	14.64	1.50	0.39	3.13
1050	0.44	0.51	8.78	53.31	5.82	0.61	11.58
1061	0.18	0.22	1.44	27.72	1.08	0.45	5.18
1062	0.11	0.17	1.39	111.26	1.09	-0.02	19.00
1071	0.20	0.29	2.28	95.07	1.06	0.19	16.51
1072	0.00	0.03	0.26	-3.47	0.35	0.05	-0.46
1073	0.10	0.16	3.26	-385.73	2.19	0.01	-63.33
1074	0.26	0.32	1.98	1161.59	2.75	0.47	194.63
1075	0.32	0.41	36.98	-38.09	23.36	-0.36	8.21
1079	0.25	0.29	3.37	37.04	2.80	0.35	7.35
1080	0.37	0.42	3.14	247.26	1.55	0.26	42.17
1101	0.39	0.44	2.52	893.66	1.04	0.18	149.71
1103	0.35	0.43	7.83	265.25	9.29	0.69	47.31
1104	0.20	0.29	7.86	80.264	7.52	0.09	16.10

**TABLE 2: Quartiles and Medians for Selected ratios of Food Processing Industry in Andhra Pradesh:**

	<b>Q1</b>	<b>Q2 (Median)</b>	<b>Q3</b>
<b>ROIC</b>	0.09	0.20	0.34
<b>OFC</b>	0.14	0.27	0.41
<b>DSCR</b>	1.17	2.08	5.48
<b>ICR</b>	11.77	45.09	125.89
<b>LR</b>	0.79	1.64	3.43
<b>WCMER</b>	0.06	0.26	0.45
<b>CR</b>	2.77	8.83	22.27

**Table 3: Grouping of 17 sub segments based on value of Quartiles**

	<b>ROIC</b>	<b>OFC</b>	<b>DSCR</b>	<b>ICR</b>	<b>LR</b>	<b>WCMER</b>	<b>CR</b>
<b>Excellent Performer (&gt; Q3)</b>	NIC-1010	NIC 1010	NIC 1010	NIC 1010	NIC 1010	NIC 1010	NIC 1010
	NIC 1050	NIC 1050	NIC 1050	NIC 1074	NIC 1050	NIC 1061	NIC 1074
	NIC 1101	NIC 1075	NIC 1075	NIC 1080	NIC 1075	NIC 1074	NIC 1080
	NIC 1103	NIC 1080	NIC 1103	NIC 1101	NIC 1103	NIC 1103	NIC 1101
		NIC 1101	NIC 1104	NIC 1103	NIC 1104		NIC 1103
		NIC 1103					

<b>Good Performer (Q2-Q3)</b>	NIC 1020 NIC 1074 NIC 1075 NIC 1079 NIC 1080	NIC 1020 NIC 1071 NIC 1074 NIC 1104	NIC 1020 NIC 1071 NIC 1073 NIC 1080 NIC 1101	NIC 1020 NIC 1050 NIC 1062 NIC 1071	NIC 1020 NIC 1030 NIC 1076 NIC 1074 NIC 1079	NIC 1020 NIC 1030 NIC 1040 NIC 1079 NIC 1080	NIC 1020 NIC 1050 NIC 1062 NIC 1071 NIC 1104
<b>Average Performer (Q1-Q2)</b>	NIC 1030 NIC 1040 NIC 1061 NIC 1062 NIC 1071 NIC 1073 NIC 1104	NIC 1030 NIC 1040 NIC 1061 NIC 1062 NIC 1073	NIC 1030 NIC 1062 NIC 1040 NIC 1061 NIC 1074	NIC 1030 NIC 1040 NIC 1061 NIC 1079 NIC 1104	NIC 1040 NIC 1061 NIC 1062 NIC 1071 NIC 1080 NIC 1101	NIC 1071 NIC 1101 NIC 1104	NIC 1030 NIC 1040 NIC 1061 NIC 1075 NIC 1079
<b>Below average Performer (&lt;Q1)</b>	NIC 1072	NIC 1072	NIC 1072 NIC 1079	NIC 1072 NIC 1073 NIC 1075	NIC 1072	NIC 1050 NIC 1062 NIC 1072 NIC 1073 NIC 1075	NIC 1072 NIC 1073