

## Financial performance of food processing industries of Assam

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### Abstract:

*As per the identification of the Government of India, Food Processing Industries is one of the thrust areas for industrial development of Assam. The geographical and climatic condition of Assam is favorable for the production of various food crops. It provides a wide scope for the expansion of Food Processing Industries of the state. But the actual status of these industries in the state can be realized in terms of their performance. Therefore, this paper makes an attempt to study the financial performance of the Food Processing Industries of Assam in terms of the calculation of the different financial ratios. The study found that the ratios revealed a poor performance of FPI in the state. Moreover it has also found that there is a long term association between profitability ratio and liquidity ratio of FPI of Assam.*

**Key words:** Food Processing Industries, Financial Performance, Liquidity Ratio, Activity Ratio, Structural Ratio, Profitability Ratio

### INTRODUCTION

In the line of the definition given by Ministry of Food Processing Industries, Food Processing Industries(FPI) as

those industries in which the item pertaining two processes- (1)Manufactured processes :if any raw product of agriculture, animal husbandry or fisheries is transformed through a processes (involving employees, power, machines or money) in such a way that its original physical properties undergo a change and if the transformed product is edible and has commercial value, then it comes within the domain of food processing industries and (2)If there is significant value addition (increased shelf life, shelled and ready for consumption etc.) such produce also comes under food processing ,even if it does not undergo manufacturing processes. Thus the ministry has included Dairy, fruits and vegetable processing; Grain processing; Meat and poultry processing; Fisheries and Consumer foods including packaged foods, beverages and packaged drinking water within the domain of food processing industry

Across India food processing is considered to be a sunrise sector because of its large potential for its growth. Assam being an agrarian economy has also large potentiality in this sector. As per the identification of the Government of India, Food Processing Industry is one of the thrust areas for industrial development of Assam. The geographical and climatic condition of Assam is favorable for the production of various food crops. It provides a wide scope for the expansion of Food Processing Industry in the state. As per the Profile of Agri- Horti sector of Assam, February 2013 total area of the state under horticulture crops is 5.65 lakh hecter (15percent of gross cropped area) which produces 16.45 lakh million tonnes of fruits, 44.70 lakh metric tonnes of vegetables and 2.47 lakh metric tonnes of spices annually besides flowers, nut crop. Presently Food processing has the potential of providing employment to young people of the State. In most cases the fruits and vegetables grown in Assam have been sent by rail or road to other parts of the country for different purposes. Now a beginning has been made to process them in Assam itself

(Bhattacharyya, 2013). Already Six processing units of pineapple and orange have been set up with assistance from Ministry of Food Processing Industries (MoFPI). Construction of a food processing plant in Boko (Kamrup district) is also under progress. Moreover Agro-Economic Zones (AEZs) for fresh and processed ginger have been proposed in Kamrup, Nalbari, BARPETA and Nagaon district of the state. Other than this MoFPI has approved one Mega Food Park project in Nalbari district and is currently under implementation. A banana park has also been set up at Industrial Growth Centre, Matia to facilitate value addition and marketing of fresh Banana and Banana derivatives. To encourage commercial cultivation of Banana A Banana Export Development Centre is being set up in the state and to facilitate production of fresh and processed Banana. Furthermore MoFPI has sanctioned one cold chain project in the State under its 'Scheme for Cold Chain, Value Addition and Preservation Infrastructure'. Again, with the objective of providing adequate infrastructure for the Food Processing industry of the region along with value chain from farm to the market, a "North East Mega Food Park" is under implementation at Tihu, Nalbari in Public Private Partnership model with assistance from the Ministry of Food Processing, Government of India in an area of 50 acres. The total project cost is Rs.75.97 Cr and it is located on NH-31 at a distance of 90 Km from Guwahati. The project is likely to be completed by end of March, 2014 and will accommodate 27 Food processing units in the Park. A Food Processing Park at Chaygaon with the financial assistance from MoFPI is functioning, which is about 60 km from Guwahati. To promote the Food Processing sector in Assam and also to provide storage facilities to the farmers, Marketing Infrastructure for Agro Food processing is being created at 5 locations , viz. Silapathar (Dhemaji), Dalgaon (Darrang), Raniganj ( Dhubri), Samaguri ( Nagaon) and Pawoii (Tinsukia). Construction of these centres is going on and is likely to be completed by December, 2014. In this paper an

attempt has been made to study the financial performance of food processing industries in the state in terms of various financial ratios.

## **CONCEPTUAL FRAMEWORK**

The financial ratios are used in industrial economics to study the various phases of financial positions and business performance. The ratios 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 for efficient functioning of the industry. On this backdrop Gurav *et al.* (2012) had investigated the financial performance of cashew processing units of Ratnagiri district of India in terms of financial ratios. Moreover the study has also focused on the capital investment pattern and capacity utilization of cashew nut processing units. Again the study of Desai and Namboodiri (1992) the four different criteria have been selected to assess the development of food processing industries. Out of that one criterion is efficiency in liquidity and solvency management. Rationale for 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. Moreover, the study have also calculated considering four indicators viz, net profit to value of production/sales; net profit to equity (return on equity, i.e., ROE); net profit to total capital (return on investment, i.e., ROI), and net operating surplus to total capital (surplus on investment, i.e., SOI).

Datta (2013) in his paper stressed that accounting ratios used by financial analysts to assess financial health of a company may help to develop a finer understanding about financial performance of an industry group. It is important to calculate the financial ratios for an industrial unit that performs well in terms of productivity growth, should also

maintain a good financial status. On the other hand the empirical approach in the research undertaken by Conway, J. and Wingender, J. uses factor analysis to investigate the importance of various financial ratios in selected industries from 1972 through 1981 as reported in the compustat database. One of the main conclusions is that financial ratios do not differ significantly in importance among the industries studied. However their relative importance is not consistent within industry group overtime.

From the existing literature survey it has been cleared that the calculation of financial ratios are very much important of an industry to judge its financial performance. Therefore, at macro level it is an attempt to analyze the growth and performance (in terms of financial ratios) of FPI in Assam as it one of the thrust areas by the Government of India and also to check if there is any long run association among these financial ratios.

## **MATERIALS AND METHODS**

The study is based on secondary data. Data are collected basically from the reports and publications of the Central Statistical Office; Government of India. The data source as well the reports and concerning years are presented in the following tabular form-

Report/publication	Source	Year
1.Time Series data on Annual Survey of Industries	Central Statistical Office, Ministry of Statistics and Programme Implementation, Government of India.	1998-99 to 2007-08
2.Annual Survey of Industries (Factory Sector),Volume-I	-do-	2008-09
3.Annual Survey of Industries (Factory Sector),Volume-I	-do-	2009-10
4.Annual Survey of Industries (Factory Sector),Volume-I	-do-	2010-11
5.Annual Survey of Industries (Factory Sector),Volume-I	-do-	2011-12

## METHODOLOGY

The time period considered in the study is from 1998-99 to 2011-12. This is because from Annual Survey of Industries (ASI) 1998-99 to ASI 2003-04, National Industrial Classification (NIC)-1998 has been followed. From ASI 2004-05 the new series of classification i.e. NIC-2004 has been introduced. But in both the classification code-15 (i.e. 2 digit level) represents the Manufacture of Food products and Beverages.

Analysis of financial ratio will tell us about the resourcefulness, ability to earn a fair return on its investment, its ability to meet the current obligations effectively etc. In this study five financial ratios have been calculated which are represented in the table-1.

**Table-1 Financial ratios under consideration in the study**

Broad Category	Ratio Under Consideration	Formula for Computation	Calculation of different variables from ASI data
Structural ratio	Debt-Equity Ratio	$DER = \frac{\text{Fixed capital} + \text{working capital} - \text{outstanding loan}}{\text{outstanding loan}}$	
Profitability Ratio	Rate of Return on investment ratio	<p>1. Rate of gross return on Net Asset = <math>\frac{\text{Gross profit}}{\text{Net Asset}} \times 100</math></p> <p>2. Rate of net return on Net Asset = <math>\frac{\text{Net profit}}{\text{Net Asset}} \times 100</math></p>	<p>Gross profit = R-D                      R= (Total output+ Changes in the value of stock of finished goods.)                      D= ( Total Input+ Total Emolument)                      Net Asset = K                      K = Total productive Capital                      Net profit = R-C                      C= ( Rent paid+ Interest Paid)+( Total Input + Total Emolument)</p>
Liquidity Ratio	Current Ratio	$\text{Current ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$	<p>Current Asset = (Working capital + Physical Working Capital)                      Current Liabilities= Outstanding Loan.</p>
Activity Ratio	Inventory cost turn-over ratio	$ICTOR = \frac{\text{Cost of good sold}}{\text{Average Inventory}}$	<p>Cost of goods sold = (Income – Profit)                      Avg. Inventory = <math>\frac{1}{2}(\text{Beginning PWC of</math></p>

			the year( i.e. the ending of the previous year) + Ending PWC of the year } / 2
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Further this study adopts the Augmented Dicky Fuller Test (ADF) to test the stationarity of Profitability ratio and liquidity ratio. Secondly Johansen test of Co-Integration is applied to find out the presence of association between Liquidity ratio and Profitability ratio as they are one of the most important indicators of financial performance of an industry.

## RESULTS AND DISCUSSION

### a) Performance of FPI in terms of financial ratios

One of the most efficient ways to analyze the performance of an industry is the financial analysis. The basic purpose of financial analysis is to assess objectively the performance of a firm on a number of aspects such as its resourcefulness and ability to earn a fair return on investment, its ability to meet its current obligations effectively, the true worth of its various assets, the extent and character of its liabilities etc. (Barthwal, 2010).

### Structural Ratio

#### ***Debt-Equity Ratio (DER)***

Debt-Equity Ratio (DER) is one of the structural ratios for the financial analysis of a firm or an industry. DER will reflect the extent of owner's own money in the total capital of the firm. It is an important index for the evaluation of the credit-worthiness of a firm. From operational size of the firm the DER is also important. If the earnings of a firm are high and stable, it may go for higher debt equity ratio, otherwise not as it may lead to insolvency due to poor earnings and high interest charges.

**Table 2: Debt-equity ratio for FPI of Assam and India**

Time period	debt-equity ratio(Assam)	debt-equity ratio(India)
1998-99	1.881304717	0.901189566
1999-00	1.969444982	0.967966851
2000-01	0.731797697	0.746971618
2001-02	1.147299387	0.675802985
2002-03	0.940558102	0.523572743
2003-04	0.886121074	0.477511603
2004-05	0.663432153	0.548148603
2005-06	0.453660457	0.674720809
2006-07	0.564203311	0.766524765
2007-08	0.648851884	0.729555555
2008-09	4.093921808	0.773144193
2009-10	0.602180485	0.943990927
2010-11	1.06582887	0.212141703
2011-12	1.628373466	1.082289962

Source: calculated from ASI data

Table-2 shows that the DER is not very much satisfactory for both Assam and India. But in the year 2008-09 the DER in Assam was the highest. This is because in that particular year the outstanding loans of FPI in Assam were the lowest (i.e. Rs 45836 lakh). Now the low DER indicates the poor earnings and high interest charges of the FPI in Assam and the nation as a whole. It also reflects the picture of the lack of credit-worthiness of the FPI which is not a good sign.

## **Profitability Ratio**

### ***Rate of Return on Investment Ratio***

For the purpose of financial ratio analysis at first we have considered the profitability ratio by calculating Rate of Return on Investment ratio. This ratio reflects the long term profitability of a firm. The profitability ratios show the overall performance of a firm measured in different ways. In general, for any profitability index, higher the ratio greater the efficiency of the firm judge by it. Table-3 shows the value of the Ratio of Return on investment ratio for the respective years.



**Table 3: Rate of return on investment ratio for FPI of Assam and India**

year	Assam		India	
	gross return on net asset	net return on net asset	gross return on net asset	net return on net asset
1998-99	59.89541432	54.65391909	43.56727671	31.19179461
1999-00	50.12403422	44.77842574	43.00147002	30.74850321
2000-01	31.05932094	25.17477575	42.18731999	29.05488132
2001-02	26.27538874	21.14015631	31.44943458	19.36695836
2002-03	22.55466466	17.043654	28.54505943	15.54207263
2003-04	19.75123113	13.98804707	-19.38921543	-29.00544958
2004-05	28.21878053	22.40230295	70.74767246	59.93357495
2005-06	27.08168479	21.6301906	37.54386995	29.22315519
2006-07	26.12978488	18.9928539	43.45606943	35.49161869
2007-08	27.52718807	19.77632964	39.54051794	31.09272748
2008-09	53.01968007	45.00674562	31.64511419	21.90206392
2009-10	36.77719509	32.33181881	32.17173197	24.57620429
2010-11	39.49632597	34.93040161	57.73040857	44.75990384
2011-12	37.2415603	31.56599389	36.72135155	28.1261721

Source: calculated from ASI data

Depending upon the general perception about the profitability ratio we can say that the performance of FPI under the profitability criteria is worsening both at the state level as well as in the national level. This is because the value of the Ratio of Return on investment ratio is low in several years. It reflects the low long term profitability of the FPI.

## Liquidity Ratio

### *Current Ratio*

The current condition of business is indicated by the current ratio (CR). It is the ratio between current assets and current liabilities. Over the years it has been seen that in case of Assam the CR is not good. As per the norm the CR of 2:1 is considered as a good sign.

**Table 4: Current Ratio of FPI of Assam and India**

year	current ratio(Assam)	current ratio(India)
1998-99	1.911708094	1.867787006
1999-00	1.838522529	2.023274839
2000-01	1.1162299	1.998271841
2001-02	1.19516483	-0.245621449
2002-03	1.185322272	1.658787745

2003-04	1.148982328	1.510767645
2004-05	1.069744808	1.731856847
2005-06	0.940208287	1.709188922
2006-07	0.851087323	1.712412835
2007-08	0.906765995	1.770487438
2008-09	2.761388428	1.687031571
2009-10	0.856780212	1.872948357
2010-11	1.506634494	3.439879368
2011-12	1.495721609	2.075709049

Source: calculated from ASI data

But from the table-4 it is seen that except the year 2008-09 when the CR is 2.76:1, FPI industry of the state has not been possessed a good liquidity position. It indicates that the FPI of Assam has been highly dependent on short term or long term borrowings to meet the current obligations. On the other hand India as a whole relatively in a better position than Assam but not good at all. In the year 1999-00, 2010-11 and 2011-12, the CR of FPI of the nation as a whole in a good liquidity position.

### Activity Ratio

#### *Inventory-cost turnover ratio (ICTOR)*

The ratio shows the frequency with which the average level of inventory investment has been “recouped” or “turned over” through operations. A high turnover from smaller average level of inventory investment is an indication of better performance. A high turnover from smaller average level of inventory investment is an indication of better performance.

**Table 5: Inventory-Cost Turnover Ratio for Assam and India**

year	In-Cs turnover ratio(Assam)	In-Cs turnover ratio(India)
1998-99	8.53	4.3
1999-00	8.18	4.58
2000-01	7.95	6.53
2001-02	7.21	20.25
2002-03	7.06	15.92
2003-04	7.85	4.66
2004-05	7.88	3.96
2005-06	7.57	4.63
2006-07	7.59	5.04

2007-08	7.77	4.89
2008-09	10.01	5.21
2009-10	9.27	4.32
2010-11	7.02	3.41
2011-12	7.44	3.72

*Source: calculated from ASI data*

In case of Assam it is seen that since 1998-99 to 2011-12 the average inventory has been increasing with almost the same trend of ICTOR on an average of 7.5 times. But as per the norm it will be an indication of better performance iff the level of average inventory is smaller over the years. In the national level the case is almost the same as it reflected by the table. The ICTOR is very high in the year 2001-02 and 2002-03. This is because in these two years the average level of inventories is low and it is better for the industry as a whole. Except these periods ICTOR is although low since the level of average inventory is increasing over the years, so it can't be said that the operational efficiency of FPI of India is very good.

## **LONG TERM RELATIONSHIP BETWEEN PROFITABILITY RATIO AND LIQUIDITY RATIO**

Among various financial ratios profitability Ratio and Liquidity Ratio are very much important. This is because the profitability ratio shows the overall performance of a firm measured in different ways. Similarly Liquidity Ratio reflects the current liquidity position posses by a firm. It indicates the capability of a firm to meet its current obligations. In this case Rate of returns to investment is used for profitability analysis and current ratio is considered for Liquidity analysis.

### **Unit Root Test**

The pre-requisite of a time series analysis is the stationarity of each individual time series over the sample period. The study uses ADF unit root test to investigate stationarity of each time

series as proposed by Dickey and Fuller (1981). The ADF unit root test requires the estimation of the following regression

$$X_t = \alpha + \beta t + \rho X_{t-1} + \xi_t$$

Where,  $\alpha$  is the intercept,  $\beta$  is the co-efficient of lagged term,  $\rho$  is the number of lagged term chosen to ensure that  $\varepsilon$  is white noise. The optimal lag length is chosen by using the Akaike Information Criteria (AIC). Based upon this estimate the hypotheses of the test are

$H_0$ : the time series is non-stationary.

$H_1$ : the time series is stationary.

**Table-6 Unit Root Test Results**

Series	ADF test statistics (1 <sup>st</sup> difference)	Critical Values	Accept/Reject	Stationarity	Order of integration
Profitability Ratio	-3.879**(1)	-3.600	Reject	Stationary	I(1)
Liquidity Ratio	-6.131**(1)	-3.600	Reject	Stationary	I(1)

*\*\*means significance at 5% level. It indicates the rejection of null hypothesis of unit root at 5% of the critical value. The figures in the brackets are lag length. The lag selection is compliance with Akaike Information Criteria.*

The results of ADF unit root test show that the null hypothesis of the presence of a unit root is rejected for both the variable of study when they are transformed into their first differences. That is, both the series are stationary on first differencing. Therefore profitability ratio and liquidity ratio are integrated of order one, i.e. they are I(1). After confirming stationarity of the two series, next step is to conduct co-integration test to examine that the variables are cointegrated.

### Co-integration Test

The co-integration test is done to examine whether there is a long term relationship between profitability ratio and liquidity

ratio or not. For this test Johansen co-integration test is applied. For the Johansen co-integration test –

Null hypothesis is-  $H_0$ : No co-integration between profitability ratio and liquidity ratio.

And the alternative hypothesis is-  $H_1$ : There is cointegration between profitability ratio and liquidity ratio

**Table 7: Results of the Johansen’s Test of Cointegration- Results for Liquidity ratio and profitability ratio {Assuming intercept (constant) } (for trace statistics)**

Maximum Rank	Parms	LL	eigenvalue	Trace statistic	5% critical value
0	2	-56.82151	-	25.6765	15.41
1	5	-47.521124	0.76089	7.0757	3.76
2	6	-43.98328	0.41974		

**Table 8: Results of the Johansen’s Test of Cointegration- Results for Liquidity ratio and profitability ratio {Assuming intercept (constant) } (for Max statistics)**

Maximum rank	Parms	LL	Eigen value	Max Statistic	5% critical value
0	2	-56.82151	.	18.6008	14.07
1	5	-47.521124	0.76089	7.0757	3.76
2	6	-43.98328	0.41974		

From the results of Johansen Co-integration test it is clear that at maximum rank 0 the trace statistic is greater than 5% critical value and also max statistic is greater than the critical value. Therefore null hypothesis of no co-integration is rejected and alternative hypothesis is accepted. It means that there is a long term association between the profitability ratio and the liquidity ratio and in the long run they will move together.

## CONCLUSION

In the above analysis various financial ratios have been used to study the various phases of financial position of FPI in Assam. A comparison with the national figures has also been made.

The ratios revealed something from their own and in conjunction with other ratio. 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 for efficient functioning of the industry. Furthermore the co integration test shows that the profitability ratio and liquidity ratio has a long term relationship, therefore it is suggested that the liquidity position of FPIs of the state should be made favorable as it will move together with profitability ratio. Otherwise there is a chance that the profitability ratio will be affected by the unfavorable status of liquidity ratio. In this body of study the causes of the unfavorable status of the financial ratios couldn't be find out. But this should be done for proper policy formation so that the hardles and obstacles can be effectively tackled.

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