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Effect of financial structure variable on Profitability of Soya Processing Units

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Abstract *- Soybean is known as the "golden bean" and "miracle crop" because of its several uses. It is an excellent source of protein, oil, and vitamins, which have tremendous potential to meet the protein-calorie malnutrition of the ever-increasing Indian population. The soybean crop of India has an important place in the world's agricultural scenario due to its high productivity, profitability, and contribution towards maintaining soil fertility. Soybean Processing is one of the potential sectors of the Indian economy. It is one of the sectors which can be developed to improve the livelihood of farmers. Approximately 85% of the world's soybeans are processed annually into soybean meal and oil. Indian soybean processing units have capabilities to process soybean for food, feed, pharmaceutical, and industrial applications. In view of the dominance of soybean crop in the cropping pattern, besides the low yield and infrastructural problems that the industrial units face such as inadequacy of power, lack of efficient and quick transport, non–availability of proper market for these soy products, consumer acceptability, and availability of funds and low margin share amongst major problems faced by these processing units in India. Very few soya processing units are engaged in making value-added products indicating apprehensions on the viability of investments in value-added soybean products. The present study deals with the study of the capital structure of soya processing companies and its impact on a company's profitability. The financial data is collected through the annual reports of the company. Descriptive Statistical Analysis, Correlation, and Multiple Regression are done to interpret the results of the study. Results of the study indicate that there is a significant effect of financial structure variables on the profitability of soya processing units.*

Keywords *- Soybean Processing Companies, Profitability, Financial Structure, Financial Restructuring, Viability.*

I. INTRODUCTION

In 2015 Indian food processing sector was around 258 billion USD. The anticipated growth rate of the food processing sector is around 13 percent. According to a 2017 report by the Associated Chambers of Commerce and Industry of India (ASSOCHAM), the country's food processing industry is expected to reach US$482 billion by 2020, driven by growth in organized retail, changing consumer behavior, and increasing consumerism in tier II and tier III cities. During 2015, the food processing industry constituted 14 percent of India's GDP through manufacturing. The food processing industry is one of the major industries in India and orders fifth in terms of production, consumption, and exports. Agriculture is the basic requirement to support the growth of the Food Processing sector. Cultivation of quality crops with minimum price variation will be helpful for the tremendous growth of the processing sector. The soybean crop of India has an important place in the world's agricultural scenario due to its high productivity, profitability, and contribution towards maintaining soil fertility. Soybean contributed 25% to the global vegetable oil production, two-thirds of the world's protein essence for livestock feeding, and used to feed poultry and fish. Approximately 85% of the world's soybeans are processed annually into soybean meal and oil. About 98% of the soybean is crushed and processed into animal feed, and the balance is utilized for soy flour and proteins (FICCI). Out of the oil segment, 95% is consumed as edible oil; the rest is used for industrial products (fatty acids, soaps, and biodiesel). The United States, Brazil, and Argentina are the major Soyabean producing nations (FICCI). The three countries dominate global production with 80% of the world's soybean supply. The crop contributes significantly to the Indian edible oil pool as well. Presently it contributes 43% to the total oilseeds and 25% to the total oil production in the country. India ranks fourth in Soyabean production in the world. The crop aids to earn foreign exchange by way of soya meal exports. In India, Soyabean production is dominated by Maharashtra and Madhya Pradesh which contribute 89 percent of the total production. Rajasthan, Andhra Pradesh, Karnataka, Chhattisgarh, and Gujarat contribute the remaining 11 percent of production. Nearly 40 percent of Soyabean is processed in Madhya Pradesh alone. It has largely been responsible for uplifting farmer's economic status, and it usually fetches higher income to the farmers owing to the huge export market for soybean de-oiled cake. The production of Soybean in India has increased at a CAGR of 9.60 percent from 6.87 million tonnes in 2004-05 to 15.68 million tonnes in 2012-13. On the other hand, Soybean meal

consumption had also increased at a CAGR of 10.82 percent over the last eleven years from 1365 thousand million tonnes in 2004-05 to 4225 thousand million tonnes in 2014-15. Therefore to keep pace with the increasing demand, it is imperative to increase the productivity level of Soybean in the country.

Indian soybean processing units have capabilities to process soybean for food, feed, pharmaceutical, and industrial applications. The present utilization pattern of soybean in India is that 80 percent is used for oil extraction, 10 percent for seed, and only 10 percent for food and feed, but it contributes about 12% to the domestic edible oil pool, and the country earns substantial foreign exchange through export of soy-meal. Madhya Pradesh produces 54% of the total production of soybean in the country. The western and north-western parts of Madhya Pradesh are major soybean-producing areas. Comparatively, eastern and southern parts of Madhya Pradesh produce very little of it. Amongst different major oilseeds cultivated in Madhya Pradesh, the total area covered in soybean was found maximum (79.10%). In Madhya Pradesh, the Area under Soybean Cultivation during Kharif 2014 is 55.462 lack Hectares. The production during Kharif 2014 was 60.249 Lac MT. In the northern hill region, the area under soybean cultivation was 0.105 lacks ha, yield 850 per kg, and production 0.089 lacks MT (SOPA, 2014). The adoption of an improved technology often results in increased technology depends on various factors, which influence the yield of the soybean. The average yield of soybean in India is about 1353kg/ha, compared with 2300–2800 kg/ha in other countries(www.indiastat.com). The area under the crop in Madhya Pradesh during 2012-13was 60.32 lakh hectares, and the production was 78 lakh tonnes with the productivity of 1293kg/ ha. In Madhya Pradesh, major soybean-producing districts are Ujjain, Devas, Shajapur, Sehore, Indore, Ratlam, Balaghat, Chhindwara, Gwalior, Bhopal, Jabalpur, Itarasi, Sagar, Mandsaur, Datia, Rewa, and Satna (www.mpkrishi.org). India has a population of 1217million (2011 census) people. Forty percent population are vegetarians who derive their protein from pulses, cereal, and milk and to some extent from oilseeds such as groundnut, sesame, and soybean. In general, the quality of the protein eaten by the population is poor. Better quality proteins from egg, meat, and aqua products are costly, and only a small proportion of the population has access to them. About 30 percent of the Indian population is below the poverty line and does not have enough purchasing power for good quality dietary proteins. It is therefore important to provide them with an alternative source of dietary protein that is financially affordable, and soybean meets this requirement. Hence, for India, one option is to make use of soybean as a protein source to augment the conventionally available protein supply at a cost/price that is affordable for all, especially those with lower incomes. In India, the cost of 1 kg protein from full-fat soy flour is just US$ 1.5, as compared to US$ 4, US$ 5, US$8, US$10, US$12and US$18 from split pulses (dal), egg, milk, chicken, fish, and meat, respectively. Very few firms are engaged in making value-added products indicating apprehensions of high profitability & margins along with the financial viability of processing units. The market and consumers are getting aware with regard to the value-added soybean products, its quality and nourishment values have raised the demand for the products. In this context, there is a need to understand the financial implications of the processing of various value-added products of soybean. The present study will study the financial soundness of the Soyabean processing units operating in Madhya Pradesh by evaluating important parameters of company financials. The study will help the companies to understand their financial requirements in the coming future, which can support their expansion strategies. Also, the present financial scenario of the company will help them to decide their future plans accordingly.

II. LITERATURE REVIEW

The below section represent the cost and return structure of food processing units and challenges in front of soya processing companies.

Deorukhakar et al. (2007), in their study in Sindhudurg district of Maharashtra, India, worked out costs and returns structure and employment potential in kokum (Garcinia indica) processing units. The study revealed that the processing of kokum into kokum syrup was more profitable than kokum agal and kokum rind. The processing of kokum into kokum syrup resulted in gross returns of Rs 3780 per quintal at the cost of Rs 2440/-, thereby yielding net returns of Rs 1339.63 per quintal. On the other hand, kokum rind and kokum agal yielded net returns of Rs 604.91 and Rs 476.33 per quintal.

Sharma and Pandey (2008) studied the costs and net profits from Guava processing in Uttar Pradesh. The cost of processing guava into jam and jellies was estimated at Rs 3 96,482 per year, the gross returns obtained from selling it was worked out to Rs. 5 28,750 per year, and the net returns obtained were Rs 1, 32,268 per annum. It was observed that the processing of guava was more profitable than selling it raw.

Gupta et al. (1971) studied on modernization of the rice processing industry in Punjab and found that the lack of financial resources to meet the procurement requirement was the major problem faced by the millers. The non-availability of gunny bags and the high moisture content of paddy were the other problems encountered in paddy procurement. One-third of the millers had experienced problems in paddy storage.

Hemchand (1989) studied the economics of processing units in Narasinghpur district (MP) and found that the main problems of arhar processors were inadequate availability of raw materials, short supply of power leading to underutilization of the plant, declining output, inefficient utilization of machinery and labor and problems of transportation of processed material to different destinations.

Ansari (1990) studied the organization and management in Co-operative Sugar Mills in Uttar Pradesh and concluded that the sugar co-operatives of Uttar Pradesh area were in the grip of a number of management problems at various levels. The nature of the cooperatives multiplies their complexity. Lack of professionalization of management was mainly responsible for this state of affairs besides other things such as vested interests of office bearers.

Nagesh (1990) found that the major problems faced by the cashew Processors in Karnataka were the existence of a large number of processing units, inadequate availability of raw cashew nut, poor quality of raw cashew nuts, rise in prices of raw cashew nut, nonavailability of skilled labor, increase in wage rate and high taxes. All these problems ultimately resulted in the underutilization of the installed capacity.

Veerkar et al. (2001) studied constraints in the kokum processing industry. They found that the common problem faced by the industry was higher transport charges incurred in marketing which was 60 percent of the processing units. Similarly, the high price of raw material and its non-availability were reported by the same (60%) processing units. On the other hand, 70 and 80 percent of the processing units faced the problem of non-availability of labor and capital, respectively. Similar problems were also found in the Amrit kokum and kokum butter processing units. To overcome their problem, more than 70 percent of kokum processors proposed to provide long-term financial assistance with a lower rate of interest by the financial institutions.

Chakravorty et al. (2004) found that soymilk chana and potato paste combination at 60:40, 50:50, and 40:60 ratios were used to prepare the potato analog. A product with a 40:60 combination yielded a most suitable and acceptable sample with smooth, soft, and spongy and was similar to the market sample. The product was without typical beany odor, which is the major constraint in consumer acceptability of soymilk and its products.

Kohler et al. (2007) examined the project, which was launched in mid-2006, looking into value-addition to various camel products, especially camel milk. Ice cream made from camel milk, which was launched during an inception workshop, had generated significant interest among local hoteliers. Furthermore, it was suggested to analyze the hurdles that need to be overcome before value-added products can truly contribute to improving local incomes and livelihoods.

Rangasamy and Dhaka (2007) found that the economic efficiency of dairy plants is severely influenced by a variety of constraints at 3 important value addition stages of milk procurement, processing, and manufacturing and distribution of dairy products. This study was conducted to compare the constraints faced by cooperative and private dairy plants at these vital value addition stages. Some of the members of the cooperative society selling the milk to private milk vendors and some of the collection centers taking the inadequate quantity of milk were the very serious problems faced by cooperative and private dairy plants, respectively. Underutilization of transport vehicles at milk transport, underutilization of chilling centers, and underutilization of plants at milk processing and manufacturing levels were the most serious constraints faced by both the cooperative and private dairy plants. Encouraging value addition, effective sales promotion and advertisement strategy, and also focusing on consumer-oriented market research and development were some of the suggested strategies.

Verma and Jain (2007) examined the value addition of Nutri-cereals (nutritious cereals), coarse cereals, and millets. The important coarse cereals generally referred are sorghum (Sorghum bicolor), barley, pearl millet (Pennisetum glaucum), and maize. Finger (Eleusine coracana), Kodo (Paspalum scrobiculate), foxtail (Setaria italica), proso (Panicum miliaceum), barnyard (Echinochloa frumentacea), and little millets (Panicum sumatrense) are a few other common types of millets. Their production, agro-economic constraints, uses, nutritional quality, traditional processing techniques, and storage were described in the study area.

Yadav et al. (2007) studied the prevailing practices of post-harvest handling and management (focusing on processing, pre-cooling, grading, packaging, transport, storage, and marketing) of horticultural produce (including fruits and vegetables) in the northeastern region of India: Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura. Postharvest handling, processing, and marketing constraints were enumerated. Some thrust areas identified in post-harvest technology for value addition and employment generation were given.

Singh (2008) found that the major problems faced by the processing sector were low productivity of raw materials leading to high unit price of final products, lack of storage infrastructure leading to wastage and increasing unit price of finally available quantity, lack of trained human resource, inadequate knowledge of material and lack of market intelligence and inadequate cold storage and refrigerated transport facility of the fresh as well as processed commodities which needs to be solved immediately for the growth of processing sector.

Jaiswal (2009) studied the economics of production and value addition to soybean In Madhya Pradesh.

He made compare between two soya processing units. Where a unit was processing soybean into soy milk and tofu and others for processing raw soybean into soya flour. The net present value (NPV) at a 14 percent discount rate, in the case of soymilk and tofu unit (Rs 22, 30,823), was more than soy flour (Rs 7, 24,137). Similarly, the benefit-cost ratio (BCR) at the same discount rate was more in the case of soy milk and tofu unit (1.42) than soy flour unit (1.17), indicating profitability of converting soybean into soymilk and tofu was more than soy flour. He also observed that the payback period (PBP) in both soy processing units was less, only 3 years in the case of the soymilk and tofu unit and 6 years in the soy flour unit. The internal rate of return (IRR) was more in the case of soymilk and tofu units, 75.25 percent to 37.25 percent in soy flour units.

Sundarevarodarayan and Ramanathan (2008) reported that the BC ratio and IRR for new plantations were 1.42 and 34.36 percent, while for old plantations, it was 1.06 and 17.17 percent, respectively. Further, they suggested the need to create an awareness to adopt improved varieties (HYV), which not only reduce the cost of cultivation but also increase the net income among the different size groups of farmers.

Gondalia et al. (2007) studied the economic evaluation of investment on aonla orchard in Gujarat. The study found that the establishment of an aonla orchard involves high investment, but the annual net returns are also quite high after the third year of plantation. The values of economic parameters, viz. NPV, BCR, IRR, and PBP have been found to be Rs 652652, 5, 25, 65.03 percent, and 55 months, respectively, at a 10 percent discount rate. Under varying cost and return situations, values of all these feasibility parameters have satisfied the acceptance rules for the investment proposition. The above studies depict challenges faced by processing companies in respect of low-quality raw material, lack of trained manpower, poor technological and marketing support, and lack of awareness of the processed food market.

III. OBJECTIVES OF THE STUDY

To study the impact of the Debt Equity Ratio of Soyabean food processing companies on profitability variables.

IV. HYPOTHESIS FORMULATION

Ho1: There is no significant impact of the Debt Equity Ratio on ROA.

Ho1: There is no significant impact of the Debt Equity Ratio on ROE.

Ho1: There is no significant impact of the Debt Equity Ratio on EPS.

V. RESEARCH METHODOLOGY

Research Type: The study is analytical in nature. It explores the present financial structure of the Soya processing units of Madhya Pradesh. Also, it studied the correlation and impact of companies' financial structure on the profitability of firms.

Research Description: The study was purposively confined to Madhya Pradesh state since area and production in soybean is more than 50 percent of the total area and production in the country. The research studies Soyabean processing units operating in Central India and understands the financial challenges and opportunities faced by them. Also, to explore further the financial structure of the company is regressed to companies profitability variable, i.e., ROA.

Sampling Design: Convenient sampling technique is used for the study. The capital structure variables value has been collected from the annual data of Mahakali Foods, Indian Soya Industries, Ruchi Soya Industries, Dewas Soya Limited, Kriti Industries (I) Ltd, and further, the value was averaged to understand the view of the Industry.

Nature and Source of Data: Data pertaining to the food processing companies was collected through Annual Reports. The data of the past 10 years ranging from 2008 to 2018, has been collected for the purpose of the study.

Variables for the study: The Independent variables are represented by the Debt Equity Ratio of the company, and the Dependant variable is represented by Return on Assets.

Research Tools: The collected data were subjected to various statistical and econometric analyses to draw meaningful inferences. Descriptive Statistics, Correlation, and Regression analysis have been done to analyze the collected data and draw interferences.

VI. DATA ANALYSIS

Table 1 gives the detail of descriptive statistics of the variables used in this paper. The first row of the table shows the mean of the variables, including debt Ratio (DR), earnings per share (EPS), return on assets (ROA), and return on equity (ROE). The respective mean values are 44.558, 0.590, 4.123, and 6.991

Table 1: Descriptive statistics

	DR	EPS	ROA	ROE
Mean	44.558	0.590	4.123	6.991
Median	41.229	0.214	4.448	8.217
Maximum	80.925	24.559	37.151	53.547
Minimum	14.124	-11.057	-31.569	-59.843
Std. Dev.	14.551	1.527	6.227	13.501
Jarque-Bera	51.226	389892.004	311.559	396.112
Probability	8.5E-12	0	0	0

Correlation analysis

Correlation is a concern with describing the strength of the relationship between two variables. In this study, the correlation coefficient analysis is undertaken to find out the relationship between capital structure and financial firm performance. It shows the degree of relationship that exists between capital structure and financial performance. Capital structure correlated with Performance variables: Table 2 above shows the relationship between Performance variables (EPS, ROE, and ROA) and capital structure variables (DR). There is a weak negative relationship between the independent variable (capital structure DR) and all dependent variables (performance variables).

Variables	Performance variables		
	EPS	ROE	ROA
Capital structure variable (DR)	-0.098	-0.250	-0.130
R^2	0.0067	0.0132	0.0867

Table 2: Correlation result between capital structure variable (DR) and performance variables (EPS, ROE, ROA). The correlation between DR and EPS is -0.098. The significant level is 0.01. The coefficient of determination is 0.0067. That 0.67% of the variance in the capital structure is accounted for by the EPS. The correlation between DR and ROE is -0.250. The significant level is 0.01. The coefficient of determination is 0.0132. That is, 1.32% of the variance in the capital structure is accounted for by the ROE. The correlation between DR and ROA is -0.130. The significant level is 0.01. The coefficient of determination is 0.0867. That is, 8.67% of the variance in the capital structure is accounted for by the ROA. Regression analysis is used to examine the impact of capital structure on the financial performance of the selected company of Soya bean processing.

Regression result between capital structure variable (DR) and Performance variables (EPS, ROE, ROA). The table above shows the regression result used to verify the association between the independent variable (DR) and dependent variables (EPS, ROE, and ROA). The result indicates a significant negative relation between DR and all financial performance variables (EPS, ROE, and ROA). This means an increase in DR by one dollar will increase EPS, ROE, and ROA by 0.007, 0.10, 0.13 dollars, respectively. R2 on average is 3.4%; means only 3.4% of the variance of performance variables is accurate by these factors.

Table 3: Regression result between capital structure variable (DR) and Performance variables (EPS, ROE, ROA).

Variables	Financial Performance					
	EPS		ROE		ROA	
Constant	1.046	0.000	13.31	0.00	10.502	0.00
DR	-0.007	0.003	-0.10	0.00	-0.13	0.00
R2	0.006		0.016		0.081	
F value	8.488		16.893		97.61	
Sig	0.002		0.000		0.000	

The table above shows the regression result used to verify the association between the independent variable (DR) and dependent variables (EPS, ROE, and ROA). The result indicates a significant negative relation between DR and all financial performance variables (EPS, ROE, and ROA). This means an increase in DR by one dollar will increase EPS, ROE, and ROA by 0.007, 0.10, 0.13 dollars, respectively. R2 on average is 3.4%; means only 3.4% of the variance of performance variables is accurate by these factors. But, the remaining variance with performance variables is attributed to other factors.

VII. FINDINGS

Based on the empirical results of this study, we accept all three hypotheses (H1, H2, and H3), which referred to a negative relationship between capital structure and financial firm performance (EPS, ROE, ROA). These results are consistent with Mumtaz, Le, and Phung, Saleh, Ahmad and Onaolapo, Kajola, who pointed to the negative relationship between capital structure and financial firm performance, While inconsistent with Badar and Saeed, who found a significant positive relationship between capital structure and firm performance as well as Iorpev and quantum, who found that capital structure and firm performance have insignificant negative relation.

VIII. CONCLUSION

This study investigates the impact of capital structure on firm performance in the Soyabean Processing Industry. Our results suggest that a firm's capital structure is negatively and significantly associated with a firm financial performance which is defined by (EPS, ROE, and ROA variables). That means using a high level of debt negatively affects a firm's return on assets, earnings per share, and return on equity.

There are three main limitations of this study; it studies the data of only one market of developing economy so it cannot represent all the markets of transition economies. Secondly, this study includes only 10 years of data. To explore consistent results long time series of data could be required. Thirdly we can find the impact of capital structure on a firm's performance by sector and then compare the results to know the real picture of the relationship. Capital structure is a puzzling concept, especially so in emerging markets like India. Further study can be conducted by adding sales growth and business risk as independent variables. To clarify the results of our study, more variables for performance measurement may be useful. Data of long time series could also be used for the credibility of results. Future research can be processed by comparing the capital structure and firm performance of small and large firms.

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