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Study on the Efficiency and Effectiveness in the Food Processing Industry

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Abstract -

Introduction: Small and medium-sized businesses in India are essential to the country's progress. These businesses are a reliable source of income for the government.

Aim of the study: the main aim of the study is Study on The Efficiency and Effectiveness in The Food Processing Industry

Material and method: Two hundred business units in the food processing industry in Rajasthan were selected at random for this study's sample.

Conclusion: This research makes use of secondary data on the food processing sector in India, drawn from the ASI time-series data on manufacturing throughout the 35-year period of 1973-2008.

Keywords - Business, Efficiency, Processing, Manufacturing, Food

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1. INTRODUCTION

Small and medium-sized businesses in India are essential to the country's progress. These businesses are a reliable source of income for the government. There are about 26 million MSMEs in India. Of them, 7.3 million are factories and 18.8 million are service businesses. About 2.1 million of such businesses are owned and operated by women, while the other 14.2 million are run by small businesses. There are just 6.24 percent of members who are employed out of a total employment generation of 59.7 million. The micro, small, and medium-sized enterprises (MSMEs) are a major factor in the sustained expansion of the Indian economy.

These industrial farms produce more than 6,000 food products, including both cutting-edge and time-honoured classics. Small and medium-sized enterprises (SMEs) are second only to agriculture in terms of their potential to create new jobs. Since it serves such a wide variety of sectors, the sector may be described as having a somewhat diverse nature. The development of the country's industries has been aided by the participation of MSMEs. With the growing worldwide demand for goods, this industry can overcome the numerous obstacles it has recently encountered. Since the industry was liberalized in 1991, competitors from all over the world have had equal access to the market.

1.1 Food Processing Industry

During India's time of independence, the food processing industry made tremendous strides. This also pinpointed the main aspect of the Green Revolution responsible for the increase in agricultural production and productivity. Positional produce management is essential. Businesses have been shifting their focus from the wholesale distribution of food items to more specialized processing facilities as they have come to appreciate the sector's growing importance. Processing of grain was first established, then wheat milling units, the dairy business, the paper and pulp industry, sugarcane processing, jute production, and solvent facilities for oil extraction. Conventional processing capacity and raw material supply both grew, which was visible in the solvent extraction business. The lack of consumer interest in processed goods has also prevented expansion in related sectors, such as vegetable and fruit processing plants. Because of this condition, processing industry units are now incapable of meeting consumer demand. Processing levels of packaged items have decreased as a consequence of customers' more health-conscious eating habits. Now more than ever, unprocessed, fresh produce is what shoppers are looking for. While India's processing industries have made strides, the country's agricultural sector remains its economic backbone. India's dairy industry is the

country's most important due to the prevalence of processing plants there; just 15% of the industry is formally structured.

2. LITERATURE REVIEW

Monroy-Gomez J (2022) There has never been a more pressing time for a radical revamp of our food supply system. With two billion adults overweight, over 140 million children under the age of five stunted, and over two billion people plagued by hidden hunger, the rising burden of malnutrition has become the new normal. Fortifying foods is a low-cost method of combating nutritional deficiencies in the population. Over 80% of food sales in low and middle-income nations are made by small and medium-sized businesses (SMEs). To combat all types of malnutrition, it is essential to provide the way for small and medium-sized enterprises (SMEs) to participate in food fortification techniques. This analysis focuses on the indirect but crucial role that SMEs play in the production of healthy, flavorful, and economical meals via food fortification procedures. Access to long-term financing, sustainable technical support, and restricted capacity are just some of the problems that are highlighted, along with answers and discussions of how various players may aid SMEs in overcoming these problems. In addition, it provides a case study of a successful public-private cooperation in the area of food fortification, nutritional profiling, and demand development to show how SMEs may help reduce the rising incidence of malnutrition.

Donthu N (2020) Pandemics, like other seldom occurring calamities, have occurred in the past and will continue to occur in the future, as shown by the COVID-19 epidemic. If we are unable to stop the spread of hazardous diseases, we must at least be ready to mitigate their impacts. There seems to be no nation that will be immune to the economic effects of the present pandemic. There have been significant changes in how firms operate and how customers behave as a result of these effects, which ripple well beyond the economy. This special issue represents a coordinated international effort to address problems caused by pandemics. There are a total of thirteen articles, and they range in subject from the tourist industry to higher education to retail to consumer behaviour to company ethics to employee and leadership challenges.

Abed S. S. (2016) The purpose of this essay is to conduct a comprehensive literature study on the topic of SME social media marketing. This study aims to synthesize and organize the unique characteristics covered by these studies, as well as better comprehend how these studies dealt with the many difficulties associated with social media marketing. In all, 48 publications published between 2009 and 2019 in scholarly journals are analysed here. Articles are then sorted into several groups according to factors such as study nation, theoretical framework, research methodology, research design, and social media platform. Future trends and patterns in social media marketing are also discussed, as well as the most popular subcategories under each category that were discovered in the research.

Hu_Tao (2022) As an emerging multidisciplinary field, environmental finance has attracted a lot of interest across the world. Using a bibliometric approach, this research examines the most influential works in the field of environmental finance published during the 1970s. We demonstrated the most popular topics of study in environmental finance by doing a bibliometric analysis of 892 papers in the field that were found in the Web of Science database. Over the last decade, we have seen an exponential growth in the number of publications focused on environmental finance. Research topics include CSR, climate discussions, natural gas price volatility, national policy, and cost comparisons. When looking at the literature published over the last five years, we see that climate finance, sustainable finance, firm value, climate risk, and green bonds are all developing areas of study. In the conclusion, we lay forth a plan for further study in the field of environmental finance.

Gleißner (2022) The importance of financial sustainability in sustainability management and reporting is often ignored. This article suggests a figurative metric for assessing financial sustainability and investigates its link to stock market results. The indicator is at the crossroads of risk management, sustainability management, and risk governance. Investors who are risk averse may perceive financial viability as a secondary condition of investment choices, yet it is widely recognized as an essential control measure that supplements shareholder value. In an imperfect capital market with financing constraints and bankruptcy costs, it lowers risk related to refinancing and insolvency, resulting in risk-adjusted excess profits. We suggest evaluating a business's long-term viability according to four criteria: (1) its rate of development, (2) its likelihood of survival, (3) its overall degree of earnings risk exposure, and (4) its earnings risk profile. We demonstrate that, from July 1990 to June 2019, a criteria-based investing strategy yields monthly excess returns of 0.39% when applied to European enterprises with high financial sustainability (i.e., firms satisfying all four characteristics). The risk associated with this portfolio is less than that of the market. When each of the four requirements is added to the investing strategy, we observe that the excess returns rise.

3. METHODOLOGY

3.1 Sample Design of The Study

Two hundred business units in the food processing industry in Rajasthan were selected at random for this study's sample. Products from the food and agriculture industries include things like flour, rice, and oil. The main survey will focus on manufacturing and service-related entities.

3.2 Statistical Techniques of The Study

Time Series for secondary data collected each year has been used to analyze the pattern of MMSMEs' exports, investments, incomes, and outputs on a state and national scale. Exports of SMEs are considered a dependent variable, along with factors like investment, credit, employment, and income. The GDP has been considered as a dependent variable. The correlation between causes and effects is essential to comprehending the results of the Simple and Multiple Regression Analysis of developments and enhancements in the food processing industry.

4. RESULTS

4.1 DEMOGRAPHIC PROFILE

Table 4.1 Gender wise Distribution of Entrepreneurs

	Frequency	Percent
Female	14	3
Male	467	97
Total	481	100.0

Table 4.1 shows the breakdown of responders by gender. According to the statistics, men are more likely to start and operate food processing businesses. Only 3% of the replies are female, while 97% are male.

Table 4.2 Educational Qualification of Entrepreneurs

	Frequency	Percent
General	173	36
Technical	308	64
Total	481	100.0

Table 4.2 displays the distribution of respondents by level of education. The bulk of food processing entrepreneurs (64% of total respondents) come from a technical background, according to the research. 36 percent of all respondents had some other general education background.

Table 4.3 Distribution of Respondents Based on Segment of Unit

	Frequency	Percent
Bread & Bakery	48	10
Cereals Processing	14	3
Confectionary Consumer Products	48	10
Edible Oils	10	2
Fruits and Vegetable	82	17
Grain Processing	48	10
Meat, Poultry	24	5
Milk And Milk Products	48	10.0
Mineral Water	34	7
Papad, Pickles, Chutany	24	5
Soft Drinks	72	15
Spices	29	6
Total	481	100.0

4.2 EFFICIENCY AND EFFECTIVENESS IN THE USE OF RESOURCES IN THE FOOD PROCESSING INDUSTRY IN THE INDIAN STATE OF RAJASTHAN

Time series data on the Indian food processing industry's various sub-sectors from 1973 to 2008 are used for this section, which also includes an examination of the sector's structural composition and an estimate of its Technical Efficiency (TE) via the stochastic frontier production function.

4.2.1 Food processing industry sub-segments' structural composition in the pre-liberalization (1973–1978), liberalization (1988–1993), and post-liberalization (2003–2008) periods

To better understand the expansion of these sub-segments during the study period, we compare the pre-liberalization (1973–1988), liberalization (1988–1993), and post-liberalization (2003–2008) periods of the food processing industry in India with respect to the distribution of factories and the quantity of inputs used and output generated.

In Table 4.4, we can see an examination of the structural make-up of India's food processing sector. For this reason, we investigate the percentage distribution of factories across

different food industry sub-segments before, during, and after liberalization. According to the data, the Grains industry accounted for 40 percent or more of India's food processing units over the aforementioned three decades. Notably, the Grains have the most evenly distributed factories throughout all three historical periods.

Table 4.4 Food processing industry sub-segments' structural composition in the pre-liberalization (1973–1978), liberalization (1988–1993), and post-liberalization (2003–2008) periods

Time period	Distribution of Factories in Sub-segment of Food Sector (in %)				
	Oil mills	Grains	Rice mills	Spices	Total
Pre-liberalization Period (1973-1978)	21.81	40	34.68	3.51	100.00
Liberalization Period (1988-1993)	18.17	51.47	26.29	4.07	100.00
Post-liberalization Period (2003-2008)	13.80	57.49	23.96	4.75	100.00

Source: Calculated using ASI time-series data on manufacturing (1973-2008).

There has been a consistent drop in the high-value Oil mills and Rice mills sector since the pre-liberalization era. It is possible that the lesser number of operating units during the Tenth Five Year Plan contributed to the delayed takeoff of the food processing sectors, especially during the post-liberalization period (2003-2008).

The location of food-related manufacturing facilities in India is shown in Fig. 5.1 for the years 1973–2008. In this bar chart, the X-axis depicts the five food sub-segments in India, while the Y-axis shows the percentage of manufacturing facilities located in each of these five food sub-segments. The eras before, during, and after liberalization are shown by separate sets of bars. Grains has the most favorable factory distribution throughout all three time periods, as seen in Fig. 4.1. The Grains Sub-segment is the largest and most diverse, followed by the Rice mills Sub-segment and the Oil mills Sub-segment.

The research also breaks down the gross value of production into its component parts, such as fuel used, materials used, capital cost, and labor cost. These show the value-added growth performance of the country's food processing sector before and after liberalization.

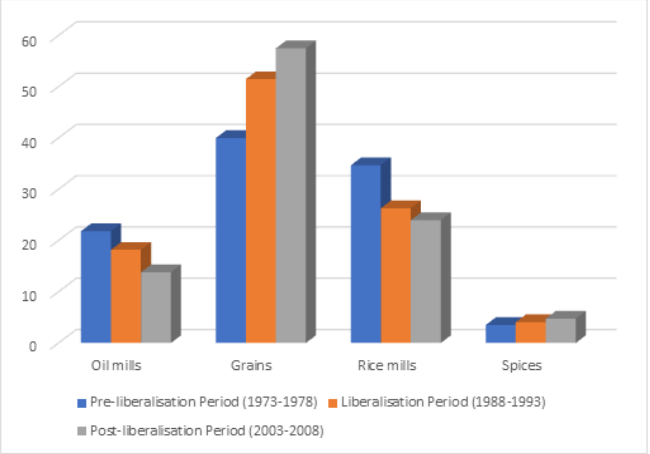

Figure 4.1 Distribution of factories in Sub-segment of Food Sector in India (1973-2008)

According to Table 4.6, the value of grains and spices has increased by 4–8% in the years after liberalization, as compared to the years before. In the wake of market liberalization, the high-value sector's contribution to GDP has grown. Food manufacturers may find promising new markets in these sub-sectors. As can be seen in Table 5.16, the post-liberalization period saw a 4–8% rise in the percentage of sub-segments like Grains and Spices in terms of gross value of output processed as compared to the pre-liberalization period. In the wake of market liberalization, the high-value sector's contribution to GDP has grown. Food manufacturers may find promising new markets in these sub-sectors. The three sub-segments, including Grains and Spices, demonstrate a steady growth from the pre-liberalization to the post-liberalization period in terms of Material used and Fuel consumed.

Both the number of raw materials used and the amount of fuel used by rice mills have decreased. Cost of capital in the high-value part of the rice mills industry has decreased somewhat after liberalization, as measured by a comparison to pre-liberalization levels. The post-liberalization period in the Grains and Spices divisions saw a rise in the percentage of Cost of capital, suggesting that economic liberalization had a positive effect on capital intensity. The percentage of the high-value group stays almost the same over the post-liberalization period, while only the rice mills show a decrease in the Cost of labor.

According to the findings, all industries outside of the grains subsector need more attention now that they are in the post-liberalization age. Particular attention should be paid to the High Value Segment Spices.

Table 4.6 Structural Composition of Indian Food Processing Industry in thePre-liberalisation (1973-1978), Liberalisation (1988-1993) and Post – liberalization (2003-2008) Periods - Output / Input Variables

Output / Input Variables	Time Period	Sub-segment of Food Sector			
		Oil mills	Grains	Rice mills	Spices
Gross Value of Output Processed (in %)	1973-1978	33.40	18.45	37.80	3.17
	1988-1993	28.91	21.09	35.07	4.96
	2003-2008	30.36	24.14	26.28	8.02
Materials Consumed(in %)	1973-1978	35.17	19.58	35.85	1.79
	1988-1993	31.68	23.20	31.13	3.56
	2003-2008	30.82	25.46	25.40	5.90
Fuel Consumed(in %)	1973-1978	22.68	11.83	49.31	7.99
	1988-1993	27.74	15.56	35.73	10.73
	2003-2008	23.68	21.61	31.66	11.91
Cost of Capital Consumed (in %)	1973-1978	0	0	0	0
	1988-1993	18.75	14.40	50.96	9.34
	2003-2008	16.48	16.78	48.07	12.73
Cost of labour Incurred (in %)	1973-1978	0	0	0	0
	1988-1993	11.53	12.12	60.15	7.62
	2003-2008	11.74	15.11	50.88	10.81

Source: Calculated using ASI time-series data on manufacturing 1973-2008.

Table 4.7 displays, for the years 1973–2008, growth rates demonstrating the performance of individual food processing sector segments in India. All of the subsegments are seeing above-average rates of growth in terms of gross value added to the economy. A parallel pattern holds true for other inputs like materials and fuel used. The lowest fuel use was recorded for rice mills, at only 12.0 percent. The Spices subsegment of Materials consumed saw the greatest growth rate between 1973 and 2008, suggesting that this area has much room for development.

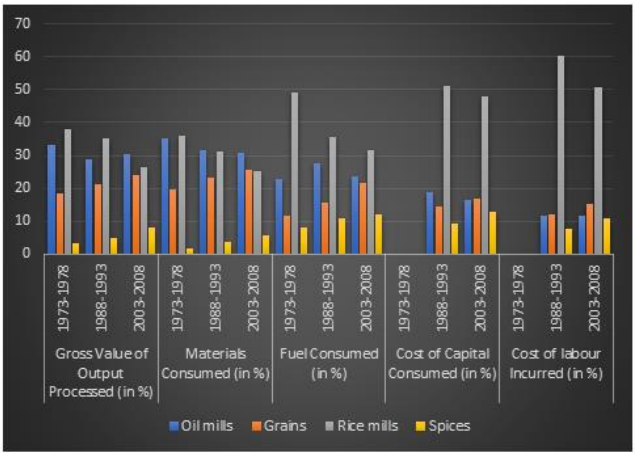

Figure 4.2 Structural Composition of Indian Food Processing Industry in thePre-liberalisation (1973-1978), Liberalisation (1988-1993) and Post – liberalization (2003-2008) Periods - Output / Input Variables

Table 4.7 Growth Rates of Gross Value of Output, Materials Consumed, Fuel Consumed, Cost of Capital and Cost of Labour for various Sub-sectors of the Food Processing Industry in India, 1973-2008

Variables	Sub-segments of Food Sector				Total
	Oil mills	Grains	Rice mills	Spices	
Gross Value of Output (in %)	12.9	14.1	12.2	16.4	**55.6**
Materials Consumed (in %)	12.4	13.8	12.0	16.7	**54.9**
Fuel Consumed (in %)	14.4	16.4	12.7	15.2	**58.7**
Cost of Capital Consumed (in %)	13.2	14.0	12.9	16.4	**56.5**
Cost of Labour Incurred (in %)	11.2	12.5	10.8	13.6	**48.1**

Source: Calculated using ASI time-series data on manufacturing 1973-2008.

5. CONCLUSION

Value addition in India's food processing sector has the potential to provide substantial economic and employment benefits. However, owing to a lack of adequate handling, storage, and processing facilities, only a fraction of the fresh product ever reaches the customer, leading to massive waste and a short shelf life. The substantial rise in consumption of packaged and processed foods in India is indicative of the changing consumption patterns of the country's middle- and upper-income populations. Capturing the vast and continuously expanding food industry in India requires cutting-edge technological advancements in food processing to keep up with the increased demand for processed food items. It is crucial to compare the food processing sector in India before and after liberalization in terms of

productivity and efficiency. This research makes use of secondary data on the food processing sector in India, drawn from the ASI time-series data on manufacturing throughout the 35-year period of 1973-2008. ASI manufacturing panel data for the food processing sector in India during 1998-2008 were also included in the research.

REFERENCE

1. Gleißner, W., Günther, T. & Walkshäusl, C. Financial sustainability: measurement and empirical evidence. *J Bus Econ* 92, 467–516 (2022). https://doi.org/10.1007/s11573-022-01081-0
2. Hu Tao, Shan Zhuang, Rui Xue, Wei Cao, Jinfang Tian, Yuli Shan, Environmental Finance: An Interdisciplinary Review, Technological Forecasting and Social Change, Volume 179, 2022, 121639, ISSN 0040-1625,
3. Abed S. S., Dwivedi Y. K., & Willaims M. D. (2016). Social media as a bridge to e-commerce adoption in SME- a systematic literature review. *The Marketing Review*, 15(1), 39–57.
4. Donthu N, Gustafsson A. Effects of COVID-19 on business and research. J Bus Res. 2020 Sep; 117:284-289. doi: 10.1016/j.jbusres.2020.06.008. Epub 2020 Jun 9. PMID: 32536736; PMCID: PMC7280091.
5. Monroy-Gomez J, Ferraboschi C, van Zutphen KG, Gavin-Smith B, Amanquah D, Kraemer K. Small and Medium Enterprises' Perspectives on Food Fortification Amid the Growing Burden of Malnutrition. Nutrients. 2022 Sep 16;14(18):3837. Doi: 10.3390/nu14183837. PMID: 36145210; PMCID: PMC9503820.
6. Kumar, L.; Nadeem, F.; Sloan, M.; Restle-Steinert, J.; Deitch, M.J.; Ali Naqvi, S.; Kumar, A.; Sassanelli, C. Fostering Green Finance for Sustainable Development: A Focus on Textile and Leather Small Medium Enterprises in Pakistan. *Sustainability* 2022, *14*, 11908. https://doi.org/10.3390/su141911908
7. Yoshino, N. and F. Taghizadeh-Hesary. 2016. Major Challenges Facing Small and Mediumsized Enterprises in Asia and Solutions for Mitigating Them. ADBI Working Paper 564
8. Panda, H. (2011). The complete Book on Managing Food Processing Industry Waste. New Delhi: Asia Pacific business Press Inc.
9. Ruggiero, J. 2007. A comparison of DEA and the stochastic frontier model using panel data. International Transactions in Operational Research, 14: 259–266.
10. Swinnen, J. F. M., and Maertens, M. 2007. Globalization, privatization, and vertical coordination in food value chains in developing and transition countries. Agricultural Economics, 37(s1): 89-102.

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