

Evolution of Agro-Based Industries in India

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Abstract

Agro-based industries are directly or indirectly related with agriculture. It covers the various industries and its manufacturing process which are based on agricultural raw materials, inputs, activities and services. Majority of the rural population in developing countries depends on it. It provides employment opportunity not only to the farmers in rural area but generating the employment to rural educated people in non-farm activities such as processing, packaging and marketing of agricultural products. As per the Second Advance Estimates of National Income, 2022-23 released by Ministry of Statistics & Programme Implementation (MoSPI), the agriculture and allied sectors contributes 20.3%, 19.0% and 18.3% respectively for the years of 2020-21, 2021-22 and 2022-23 in total economy. According to the data of 2023, agriculture sector provides employment to 41.49% of the people.

Keywords: Agricultural Sector, Agro-Based Industries, Employment and Capital.

Introduction

Development in agriculture is growing every day because of technical progress in the agricultural sector. The change in natural factors helps with the increased growth of crops and the development of agro-based industries. The agricultural sector plays a vital role in the development of the nation by creating employment opportunities for the educated young generation in rural areas and supporting the agriculture industry. It provides raw materials to the agro-based industries and supplies necessities to this industry. Agro-based industries comprise food product industries, paper industries, textile industries, tobacco industries, rubber industries, and plastic industries that use agricultural products as primary inputs in their production processes. Therefore agriculture sector and agro-based industries are closely related to each other and should increase the industrial sector which is important for development of the county. This paper highlights the evolution of the top agro-based industries in India based on number of industries, employment, fixed capital and working capital etc. .

Review of Literature

Kanchan (2016) explained agro-based sector has experienced expansion during last 5 decades, starting with a handful of facilities which were mainly operating at domestic/cottage level. Agro-based industries assume great significance in the context of developing economics

like India. The nation alplan should provide for management of agro-industrial activities in the catchment area, both by private companies and individuals as well as cooperatives. Financial incentives and support should be providing on liberal scale to promote the modernization of agro-processing industry and for establishing new such industries in production catchment.

Objectives of the Study

- To estimate the growth performance of agro-based industries in terms of working capital, fixed capital, value of gross output and net value added in India.
- To make suggestions and recommendations for development of India's agro-based industries.

Methodology

The collected data will be classified, coded and tabulated. The study is primarily analytical in nature. The Compound Growth Rate of agro-based industries is calculated through regression equation $Y = a + bt$. This study covers the period of 15 years 2007-08 to 2021-22. The secondary data were obtained from Annual Survey of Industries, EPW Research Foundation for the period 2007-08 to 2021-22.

Analysis and Discussion

Agricultural industries operate under different working conditions. However, all the agro-based industries have one thing in common; they all require raw materials from agriculture.

Table 1 Growth Rate of Number of Agro-based Industries in India

| Name of the Industry | Regression Coefficients | | R ² | CGR (% per annum) |
|--|--------------------------|-------------------------|----------------|-------------------|
| | a | b | | |
| Manufacture of Food Products and Beverages | 10.07662* (256.3448) | 0.040912* (9.462976) | 0.87 | 4.18 |
| Manufacture of Dairy Products | 6.771725* (161.1788) | 0.06445* (13.94751) | 0.94 | 6.66 |
| Manufacture of Leather | 6.971659* (103.940) | 0.054395* (7.373531) | 0.81 | 5.59 |
| Manufacture of Paper and Paper Products | 8.15729* (110.4141) | 0.059374* (7.307057) | 0.80 | 6.12 |
| Manufacture of Textiles | 9.482887* (155.6383) | 0.041949* (6.259768) | 0.75 | 4.28 |
| Manufacture of Tobacco Products | 6.249281* (18.605321) | 0.167361* (4.530286) | 0.61 | 18.22 |
| Manufacture of Rubber and Plastic Products | 8.820375* (175.0969) | 0.05827* (10.51732) | 0.89 | 6.00 |

Source: Computed from secondary data

Note: 1. (Table value = 4.1) * Significant at one per cent level. 2. Figures in parentheses indicates 't' value

The growth rate of number of agro-based industries has been observed positive for all industries during the study period. The growth of number of manufactures of tobacco industries has been showed significant growth rate of 18.22 per cent per annum. It is observed that there was a positive and significant growth rate in manufacture of dairy products 6.66 percent followed by manufacture of paper and paper products 6.12 per cent and manufacture of rubber and plastic products 6 percent. All the regression coefficients are statistically significant at one per cent level.

Table 2 Growth Rate of Fixed Capital of Agro-Based Industries in India (Rs. in Crore)

| Name of the Industry | Regression Coefficients | | R ² | CGR (% per annum) |
|--|-------------------------|--------------------------|----------------|-------------------|
| | a | b | | |
| Manufacture of Food Products and Beverages | 10.60739* (166.2785) | 0.136219* (19.41354) | 0.97 | 14.59 |
| Manufacture of Dairy Products | 7.648387* (87.5291) | 0.184376* (19.18459) | 0.97 | 20.25 |
| Manufacture of Leather | 7.113602* (37.2608) | 0.064671** (3.079924) | 0.42 | 6.68 |
| Manufacture of | 9.53994* | 0.111268* | 0.93 | 11.77 |

| | | | | |
|--|-------------------------|-------------------------|------|-------|
| Paper and Paper Products | (134.513) | (14.26436) | | |
| Manufacture of Textiles | 7.345241* (83.55119) | 0.109215* (11.29517) | 0.91 | 11.54 |
| Manufacture of Tobacco Products | 10.91341* (118.8549) | 0.08972* (8.884049) | 0.86 | 9.39 |
| Manufacture of Rubber and Plastic Products | 9.65937* (128.1519) | 0.139647* (16.8444) | 0.96 | 14.99 |

Source: Computed from secondary data

Note: 1. (Table value = 4.1) * Significant at one per cent level. 2. (Table value = 2.14) ** Significant at 5 per cent level. 3. Figures in parentheses indicates 't' value

The Compound Growth Rate (CGR) of working capital is calculated for all the categories of agro-based industries based on the data available in Table 4.2. The working capital growth rate is highest in manufacture of food products and beverages and the lowest in the manufacture of leather products, but compound growth rate of all the categories of agro-based industries is significant at 1 per cent level except manufacture of leather i.e 5 per cent level of significant.

Table 3 Growth Rate of Working Capital of Agro-Based Industries in India (Rs. in Crores)

| Name of the Industry | Regression Coefficients | | R ² | CGR (% per annum) |
|--|-------------------------|-------------------------|----------------|-------------------|
| | a | b | | |
| Manufacture of Food Products and Beverages | 9.711232* (84.17783) | 0.14224* (11.20779) | 0.91 | 15.28 |
| Manufacture of Dairy Products | 6.526688* (31.19872) | 0.215411* (9.362196) | 0.87 | 24.05 |
| Manufacture of leather | 6.198701* (22.48718) | 0.150986* (4.980064) | 0.66 | 16.29 |
| Manufacture of Paper and Paper Products | 7.846192* (54.9957) | 0.106684* (6.798833) | 0.78 | 11.26 |
| Manufacture of Textiles | 9.591093* (57.55621) | 0.079927* (4.360978) | 0.59 | 4.36 |
| Manufacture of Tobacco Products | 7.490289* (40.69873) | 0.99875* (4.934055) | 0.65 | 10.50 |
| Manufacture of Rubber and Plastic Products | 8.531371* (108.8118) | 0.175904* (20.39854) | 0.97 | 19.23 |

Source: Computed from secondary data

Note: 1. (Table value = 4.1) * Significant at one per cent level. 2. Figures in parentheses indicates 't' value

The growth rate of working capital of agro-based industries has been observed positive for all industries during the study period. The growth of working capital of manufactures of dairy products has been showed significant growth rate of 24.05 per cent per annum. It is observed that there was a positive and significant growth rate in manufacture of dairy products 6.66 percent followed by manufacture of rubber and plastic products 19.23 per cent and manufacture of leather 16.29 percent. The CGR is computed for the different categories of agro-based industries, which are significant at 1 per cent level.

Table 4 Growth Rate of Employment in Agro-Based Industries in India (in '000)

| Name of the Industry | Regression Coefficients | | R ² | CGR (% per annum) |
|--|-------------------------|--------------------------|----------------|-------------------|
| | a | b | | |
| Manufacture of Food Products and Beverages | 6.975313* (423.2031) | 0.024093* (13.29059) | 0.93 | 2.43 |
| Manufacture of Dairy Products | 3.928343* (12.02238) | 0.091051** (2.533554) | 0.33 | 9.53 |
| Manufacture of Leather | 3.784095* (54.22687) | 0.061823* (8.055104) | 0.83 | 6.38 |
| Manufacture of Paper and Paper Products | 4.989035* (93.86982) | 0.033355* (5.141449) | 0.67 | 3.05 |
| Manufacture of Textiles | 7.011496* (358.0645) | 0.031221* (14.49633) | 0.94 | 3.17 |
| Manufacture of Tobacco Products | 6.030328* (187.9626) | 0.003608 (1.022374) | 0.07 | 0.36 |
| Manufacture of Rubber and Plastic Products | 5.40584* (159.616) | 0.070676* (18.97354) | 0.97 | 7.32 |

Source: Computed from secondary data

Note: 1. (Table value = 4.1) * Significant at one per cent level. 2. (Table value = 2.14) ** Significant at 5 per cent level. 3. Figures in parentheses indicates 't' value

It is observed that, Compound Growth Rate of employment is calculated for all the agro-based industries, which are significant at one per cent level. The compound growth rate of manufacture of dairy product was 9.53 per cent followed by manufacture of rubber and plastic

products 7.32 and manufacture of leather 6.38 per cent. It is noted that compound growth rate of manufacture of tobacco was very small i.e 0.36 per cent compared the other agro-based industries. The CGR is computed for the different categories of agro-based industries, which are significant at 1 per cent level except manufacture of dairy products that was significant at 5 per cent. It is noted that growth rate of manufacture of tobacco products is insignificant during the study period.

Table 5 Growth Rate of Value of Gross Output of Agro-Based Industries in India (Rs. in Crores)

| Name of the Industry | Regression Coefficients | | R ² | CGR (% per annum) |
|--|-------------------------|--------------------------|----------------|-------------------|
| | a | b | | |
| Manufacture of Food Products and Beverages | 12.20512* (196.789) | 0.134129* (19.66286) | 0.97 | 14.35 |
| Manufacture of Dairy Products | 10.22226* (30.66578) | 0.100541** (2.742309) | 0.37 | 10.58 |
| Manufacture of Leather | 8.724567* (95.46955) | 0.089316* (8.886161) | 0.86 | 9.34 |
| Manufacture of Paper and Paper Products | 9.951774* (197.5637) | 0.128166* (23.13373) | 0.97 | 13.67 |
| Manufacture of Textiles | 11.64957* (171.5485) | 0.108792* (14.56592) | 0.94 | 11.49 |
| Manufacture of Tobacco Products | 9.320529* (174.9996) | 0.109347* (18.66668) | 0.96 | 11.55 |
| Manufacture of Rubber and Plastic Products | 10.79236* (142.3391) | 0.137959* (16.54331) | 0.95 | 14.79 |

Source: Computed from secondary data

Note:1. (Table value = 4.1) * Significant at one per cent level. 2. (Table value = 2.14) ** Significant at 5 per cent level. 3. Figures in parentheses indicates 't' value

The above table shows the compound growth rate of value of gross output of agro-based industries in the study period. The Compound Growth Rates were significant at one per cent level for all the categories of agro-based industries over a period of fifteen years from 2004-05 to 2018-19 except manufacture of dairy products, that was significant at 5 per cent. It is noted that the compound growth rate was very highest in manufacture of rubber and plastic products 14.79 percent and 14.35 percent in manufacture of food products and beverages. There was

13.67 percent compound growth rate for manufacture of paper and paper products followed by 11.55 percent in manufacture of tobacco products.

Table 6 Growth Rate of Net Value Added of Agro-Based Industries in India (Rs. in Crores)

| Name of the Industry | Regression Coefficients | | R ² | CGR (% per annum) |
|--|-------------------------|-------------------------|----------------|-------------------|
| | a | b | | |
| Manufacture of Food Products and Beverages | 9.948424* (140.86) | 0.121863* (15.68815) | 0.95 | 12.96 |
| Manufacture of Dairy Products | 7.487211* (78.97414) | 0.134577* (12.90624) | 0.93 | 14.41 |
| Manufacture of Leather | 6.302374* (29.86757) | 0.145314* (6.261366) | 0.75 | 15.64 |
| Manufacture of Paper and Paper Products | 8.117325* (115.3784) | 0.112853* (14.58444) | 0.94 | 11.95 |
| Manufacture of Textiles | 9.602015* (142.0769) | 0.113177* (15.22594) | 0.95 | 11.98 |
| Manufacture of Tobacco Products | 8.426529* (140.4763) | 0.098895* (14.98972) | 0.95 | 10.39 |
| Manufacture of Rubber and Plastic Products | 8.823308* (74.10852) | 0.149428* (11.41124) | 0.91 | 16.12 |

Source: Computed from secondary data

Note: 1. (Table value = 4.1) * Significant at one per cent level. 2. Figures in parentheses indicates 't' value

All the categories of agro-based industries are significant at one per cent level based on the computed Compound Growth Rate and t-statistic figures. The above table reveals that the compound growth rate of net value added of agro-based industries in India. It is observed that the compound growth rate of manufacture of rubber and plastics products was 16.12 per cent followed by manufacture of leather i.e 15.64 percent. It is also noted that the compound growth rate of Manufacture of Dairy Products was 15.64 per cent followed by manufacture of food products and beverages i.e 12.96 per cent.

Table 7 Growth Rate of Profit of Agro-Based Industries in India (Rs. in Crores)

| Name of the Industry | Regression Coefficients | | R ² | CGR (% per annum) |
|--|-------------------------|--------------------------|----------------|-------------------|
| | a | b | | |
| Manufacture of Food Products and Beverages | 9.052456* (62.5641) | 0.119417* (7.503954) | 0.81 | 12.68 |
| Manufacture of Dairy Products | 7.68198* (16.74493) | 0.039235 (0.777577) | 0.04 | 4.00 |
| Manufacture of Leather | 5.219342* (5.748812) | 0.023949 (0.23984) | 0.004 | 2.42 |
| Manufacture of Paper and Paper Products | 6.824619* (18.80675) | 0.106276** (2.662791) | 0.35 | 4.21 |
| Manufacture of Textiles | 7.714861* (16.70815) | 0.116284** (2.289745) | 0.29 | 12.33 |
| Manufacture of Tobacco Products | 8.117668* (116.5575) | 0.10392* (13.56672) | 0.93 | 10.95 |
| Manufacture of Rubber and Plastic Products | 8.055881* (40.71546) | 0.149009* (6.847384) | 0.78 | 16.07 |

Source: Computed from secondary data

Note: 1. (Table value = 4.1) * Significant at one per cent level. 2. (Table value = 2.14) ** Significant at 5 per cent level. 3. Figures in parentheses indicates 't' value

The compound growth rate of profit is depicted in the above table. The Compound Growth Rate of profit is significant at one per cent level for all the categories of agro-based industries over a period of fifteen years from 2004-05 to 2018-19 except manufacture of paper and paper products, that was significant at 5 per cent. It is observed that the compound growth rate of manufacture of rubber and plastic products was very high i.e 16.07 per cent. The compound growth rate was 12.68 per cent in manufacture of food products and beverages followed by manufacture of textiles i.e 12.33 per cent. It is noted that the compound growth of manufacture of paper and paper products and manufacture of dairy products was very low i.e 4.21 per cent and 4.00 per cent respectively compared to other agro-based industries profit rate.

Suggestions

- Skilled management and better methods of marketing should be introduced in agro-based industries which satisfy the export demand.

- Credit procedures and loan policies of credit agencies may be made further flexible to accommodate agro-industries in large numbers.
- Agro-industries are also affected by the power problem. Hence, it is suggested that government should provide uninterrupted supply of power.
- The development of agro-industries depends upon the development of agriculture. Therefore, much attention needs to be paid for the development of agriculture. It is necessary that the most modern technology related to the agriculture should be brought in order to achieve more growth and development of agro-industries.

Conclusion

The agro-based industries are significant to all categories of the rural population income level. The increase in incomes was more spectacular in the households of agricultural workers employed in agro-based industrial units. The farmers in agricultural sectors benefitted more from agro based industries indirectly through employment and increased wages and directly benefited by the employment in agro-based industrial units. Agro-based industries are a cornerstone of the Indian Economy, contributing to employment, income generation, inputs and outputs of industries, regional development and ties to all facets of society. Growth in agriculture sector led to growth in the Nation's socio-economic development. As a result, it is concluded that exporting agricultural products in the future has enormous potential and will generate significant

amounts of foreign currency. The promotion of agro-based exports in the future will require specialized and effective action.

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