**A STUDY ON INDIAN FOOD PROCESSING INDUSTRY:**

**GROWTH TRENDS AND FOOD SAFETY STANDARDS**

**ABSTRACT**

India has strong availability of raw materials, despite India's large-scale agricultural production, post-harvest losses or food wastages remain significant concerns as they impact the fundamental need for citizens. The term 'food processing' refers to the method of adding value to agricultural or horticultural produces through techniques such as grading, sorting, and packaging. Essentially, it involves the manufacturing and preservation of food items to extend their shelf life, enhance their quality, and make them more functional. Food Processing sector has also emerged as an important segment of the Indian economy in terms of its contribution to GDP, employment and investment. The food industry's complex supply chain includes various stakeholders, to maintain product safety and quality, as well as adhering to food safety regulations, implementing a strong food safety management system is crucial for food businesses. The study was conducted with the objectives to analyse the growth rate and understand the key certificates and standards related to food safety and quality required in the food processing industry. The study highlighted the importance of the food processing industry in the Indian economy. However, its slower growth shows the untapped potential. Implementing rigorous safety and quality measures is essential. These measures not only safeguard consumer health but also enhance product acceptance in global markets. The findings of the present study would be of practical significance for researchers, extension personnel, policy makers, planners, administrators and farmers, enabling them to make informed and rational decisions.

***Keywords:*** *Post-harvest losses,**food wastages, food processing, food safety, food certification, food standards*

1. **INTRODUCTION**

India is one of the largest populated countries in the world, with agriculture serving as the primary source of livelihood for approximately 55% of its population, and is expected to continue having one of the youngest populations globally until 2030.

India ranks first in the production of pulses (23.32 million tonnes), dry onions (26.09 million tonnes), and total milk (210.19 million tonnes), contributing 25.88%, 24.95%, and 22.99% of global production in 2020, respectively. The country ranked second in vegetables and fruits and egg production and fifth in meat production, respectively. Additionally, India is the largest producer of spices in the world.

Despite India's large-scale agricultural production, post-harvest losses or food wastages remain significant concerns as they impact the fundamental need for citizens to access sufficient, healthy, and affordable food. A study was conducted by ICAR-CIPHET, Ludhiana, in 2015 highlighted that food wastage remains a concern as nearly 40% of perishables goes waste in India. In August 2022, NABARD Consultancy Services Private Limited (NABCONS) conducted a nationwide study on post-harvest losses, the study reflected positive progress in reducing post-harvest losses in India. The losses in cereals, pulses, oilseeds, fruits, and vegetables show slight reductions, with the ranges of loss narrowing in most cases. For example, the loss in cereals has decreased from 4.65-5.99% to 3.89-5.92%, and the loss in pulses has reduced from 6.39-8.41% to 5.65-6.74%. Similarly, post-harvest losses in milk, fisheries, meat, poultry, and eggs also show a slight decline. From both of these studies, we can conclude that value addition, food processing and better post-harvest management practices plays an important role in reducing post-harvest losses and has the potential to enhance the efficiency of the agricultural sector.

In contrast, countries like the USA (65%), China (23%) and Philippines (78%) are far ahead of India in reducing wastage and enhancing the value addition and shelf life of farm products. Though India has a strong raw material base, it has been unable to tap the real potential for processing because of certain challenges that hinders the growth of this sector. These challenges need to be addressed to take this sector to the next level.

The term “food processing” refers to the method of adding value to agricultural or horticultural products through techniques such as grading, sorting, and packaging. The extent of processing in India can be categorized as primary, secondary, and tertiary processing. In India, the food processing remains dominated by primary processing, but now it is gradually shifting towards secondary processing and manufacturing of other higher-valued commodities.

Food processing helps in toxin removal, preservation, easing marketing and distribution tasks, and increasing food consistency. In addition, it increases seasonal availability of many foods, enables transportation of delicate perishable foods across long distances and makes many kinds of foods safe to eat by de-activating spoilage and pathogenic micro-organisms. Modern food processing also improves the quality of life for people with allergies, diabetics, and other people who cannot consume some common food elements. Additionally, it saves individuals considerable time that would otherwise be spent preparing and cooking unprocessed, "natural" foods.

**1.1 Indian Scenario of Food Processing Industry**

According to the Ministry of Food Processing Industries (MoFPI), Food Processing sector has been growing at an average annual growth rate of around 5.35 per cent as compared to around 4.46 per cent in Agriculture & allied sector (at 2011-12 prices). Food Processing sector has also emerged as an important segment of the Indian economy in terms of its contribution to GDP, employment and investment. The sector constituted as much as 7.66 per cent and 8.45 per cent of GVA in Manufacturing and Agriculture sector respectively in 2022-23 (at 2011-12 prices).

According to the International Market Analysis Research and Consulting Group (IMARC), the food processing industry in India has witnessed rapid growth in the recent past, with the sector emerging as one of the most promising industries driving the economic growth of the country. The food processing industry in India reached a value of USD 336.4 billion in 2023 and is expected to reach USD 735.5 billion, at a CAGR of 8.8% during 2023-2032 as shown in Fig 1.

**Fig 1: Forecasted market value of food processing industry**

According to the Grant Thornton report on Viksit Bharat by 2047, India's food processing sector will grow significantly, reaching USD 1,100 billion by FY35, USD 1,500 billion by FY40, USD 1,900 billion by FY45, and USD 2,150 billion by FY47, backed by the rise in population, changing lifestyle and food habits due to rising disposable income and urbanization.

The key growth drivers of the food processing sector in India include increasing spending on health and nutritional foods, the rise in nuclear families and working women, changing lifestyles, the demand for functional foods, and the growing popularity of both fresh and processed foods. With the increase in consumer awareness during the lockdowns, there's increased demand for processed foods, especially in RTE/RTC, dairy, and fruit and vegetable segments.

**1.2 Food Safety and Standards**

The food industry's complex supply chain includes various stakeholders, from farmers to manufacturers to retailers and foodservice like restaurants and hotels. To maintain product safety and quality, as well as adhering to food safety regulations, implementing a strong food safety management system is crucial for food businesses.

At the foundational level, businesses must comply with their local food safety laws and regulations in order to operate. Examples of such regulations include the FDA Food Code in the United States, the SFCR in Canada, the Food Standards Act from the UK’s Food Standards Agency, and the FSSAI in India.

Companies which want to go beyond the basic regulatory requirements can pursue certification in voluntary food safety programs, which involves being audited and certified by an independent third party. The next level in food safety involves certifications for non-benchmarked standards like GMP, HACCP, and ISO.

At last, the highest level of food safety compliance is achieved through GFSI-recognized certifications. For food industry organizations, this recognition implies “once certified, worldwide recognized”. Some of the most widely recognized certifications include BRC, Safe Quality Food (SQF), FSSC 22000, International Featured Standards (IFS), Global Seafood Alliance, Global Good Agricultural Practices (GAP), etc.

The objectives of the present study were to analyse the growth rate and understand the key certificates and standards related to food safety and quality required in the food processing industry.

**2. MATERIALS AND METHODS**

To study the growth rate, the time series data were collected from the Ministry of Food Processing Industries (MoFPI), the Ministry of Commerce, the Agricultural and Processed Food Products Export Development Authority (APEDA), and the Department for Promotion of Industry and Internal Trade (DPIIT), including annual reports, and websites.

**Compound Annual Growth Rate (CAGR)**

CAGR was used to study the growth rate of the contribution of the food processing industry to the Indian economy (GVA), employment generation, foreign direct investment, and the export and import of agri-food products over a period of approximately 20 years using the following formula.

Where, CAGR = Compound Annual Growth Rate

Vfinal = Final value

Vbegin = Beginning Value

t = Time in years

The growth rate analysis of the data was conducted in three parts: a five-year analysis, a ten-year analysis, and a twenty-year (overall) analysis.

To study the key certificates and standards related to food safety and quality, we discussed the Licensing and Registration of Food Businesses (FSSAI Certificate), Good Manufacturing Practices (GMP), Hazard Analysis and Critical Control Points (HACCP), International Organization for Standardization (ISO) standards such as ISO 9001:2015 (Quality Management System) and ISO 22000:2018 (Food Safety Management System), Food Safety System Certification 22000 (FSSC 22000), British Retail Consortium (BRC), as well as Halal and Kosher certifications in detail.

**3. RESULTS AND DISCUSSION**

**3.1 Growth rate of the food processing industry**

**3.1.1 Contribution to Indian Economy (Gross Value Added – GVA) by Food Processing Industry**

The table 1 shows the overall and sectoral GVA (manufacturing, agri, forestry and fishing, and food processing industry) over the past 12 years, from 2011-12 to 2022-23.

**Table 1: Overall and sectoral GVA at constant prices 2011-12 (in lakh crore)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **All India** | **Manufacturing** | **Agri, Forestry & Fishing** | **FPI** |
| 2011-12 | 81.07 | 14.10 | 15.02 | 1.47 |
| 2012-13 | 85.46 | 14.87 | 15.24 | 1.30 |
| 2013-14 | 90.64 | 15.61 | 16.09 | 1.30 |
| 2014-15 | 97.12 | 16.84 | 16.06 | 1.34 |
| 2015-16 | 104.92 | 19.04 | 16.16 | 1.61 |
| 2016-17 | 113.28 | 20.55 | 17.26 | 1.79 |
| 2017-18 | 120.34 | 22.09 | 18.40 | 1.93 |
| 2018-19 | 127.34 | 23.29 | 18.79 | 2.36 |
| 2019-20 | 132.36 | 22.60 | 19.94 | 1.96 |
| 2020-21 | 126.87 | 23.29 | 20.74 | 1.96 |
| 2021-22 | 138.77 | 25.61 | 21.70 | 1.90 |
| 2022-23 | 148.05 | 25.05 | 22.72 | 1.92 |

(Source – National Accounts Division, Central Statistics Office)

**Fig 2: Contribution to GVA by food processing industry**

The Fig 2 shows that the food processing sector accounted for 7.66%, 8.45%, and 1.30% of the GVA in the manufacturing sector, the agriculture sector, and the overall All India GVA, respectively, in 2022-23 (at 2011-12 prices).

The table 2 provides a growth analysis of GVA at constant prices 2011-12, from 2011-12 to 2022-23, the estimated CAGRs were 5.15%, 4.91%, 3.51%, and 2.25% for GVA – All India, Manufacturing, Agri, Forestry & Fishing, and Food Processing Industries (FPI), respectively.

**Table 2: Growth analysis of GVA at constant prices 2011-12**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **2011-12 to 2022-23** | | | | |
| **Particulars** | **All India** | **Manufacturing** | **Agri, Forestry & Fishing** | **FPI** |
| CAGR | 5.15% | 4.91% | 3.51% | 2.25% |

**3.1.2 Employment in Food Processing Industry**

The table 3 shows the total employment generated in the food processing industry over the past 20 years, from 2002-03 to 2021-22.

**Table 3: Total employment in FPI (in lakhs)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Employment** | **Year** | **Employment** |
| 2002-03 | 13.08 | 2012-13 | 16.89 |
| 2003-04 | 12.97 | 2013-14 | 17.41 |
| 2004-05 | 13.42 | 2014-15 | 17.74 |
| 2005-06 | 13.92 | 2015-16 | 17.65 |
| 2006-07 | 14.76 | 2016-17 | 18.54 |
| 2007-08 | 15.05 | 2017-18 | 19.33 |
| 2008-09 | 15.64 | 2018-19 | 20.05 |
| 2009-10 | 16.06 | 2019-20 | 20.33 |
| 2010-11 | 16.61 | 2020-21 | 20.36 |
| 2011-12 | 17.76 | 2021-22 | 20.68 |

(Source – Annual report, MoFPI)

The table 4 provides a five-year, ten-year, and overall analysis of employment growth in the food processing industry. From 2002**-**03 to 2006-07, the estimated CAGR was 2.45%, which increased to 3.37% from 2007-08 to 2011-12. However, it then decreased to 1.88% from 2012-13 to 2016-17, and further dropped to 1.36% from 2017-18 to 2021-22.

From 2002-03 to 2011-12, the estimated CAGR was 3.11%, which decreased to 2.05% from 2012-13 to 2021-22.

Twenty-year analysis (Overall) of employment growth in the food processing industry, from 2002-03 to 2021-22, the estimated CAGR was 2.32%.

**Table 4: Analysis of employment growth in FPI**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Particulars** | **2002-03 to 2006-07** | **2007-08 to 2011-12** | **2012-13 to 2016-17** | **2017-18 to 2021-22** |
| Five Year Analysis | 2.45% | 3.37% | 1.88% | 1.36% |
| Ten Year Analysis | 3.11% | | 2.05% | |
| Overall | 2.32% | | | |

**3.1.3 Foreign Direct Investment (FDI) in Food Processing Industry**

The table 5 shows the total foreign direct investment in the food processing industry over the past 20 years, from 2004-05 to 2023-24.

**Table 5: Total FDI in FPI (Rs in crore)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **FDI** | **Year** | **FDI** |
| 2004-05 | 201.32 | 2014-15 | 3164.72 |
| 2005-06 | 182.93 | 2015-16 | 3312 |
| 2006-07 | 457.28 | 2016-17 | 4865.85 |
| 2007-08 | 279.01 | 2017-18 | 5835.62 |
| 2008-09 | 455.59 | 2018-19 | 4430.44 |
| 2009-10 | 1314.23 | 2019-20 | 6414.67 |
| 2010-11 | 860.99 | 2020-21 | 2934.12 |
| 2011-12 | 859.02 | 2021-22 | 5290.27 |
| 2012-13 | 2193.65 | 2022-23 | 7194.13 |
| 2013-14 | 25106.77 | 2023-24 | 5037.06 |

(Source – Department for Promotion of Industry and Internal Trade)

The table 6 provides a five-year, ten-year, and overall analysis of FDI growth in the food processing industry, from 2004-05 to 2008-09, the estimated CAGR was 17.74%, which increased to 80.39% from 2009-10 to 2013-14. However, it then decreased to 6.96% from 2014-15 to 2018-19, and further dropped to -4.72% from 2019-20 to 2023-24.

From 2004-05 to 2013-14, the estimated CAGR was 62.03%, which decreased to 4.76% from 2014-15 to 2023-24.

Twenty-year analysis (Overall) of FDI growth in the food processing industry, from 2004-05 to 2023-24, the estimated CAGR was 17.47%.

**Table 6: Analysis of FDI growth in FPI**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Particulars** | **2004-05 to 2008-09** | **2009-10 to 2013-14** | **2014-15 to 2018-19** | **2019-20 to 2023-24** |
| Five Year Analysis | 17.74% | 80.39% | 6.96% | -4.72% |
| Ten Year Analysis | 62.03% | | 4.76% | |
| Overall | 17.47% | | | |

According to the Grant Thornton report on Viksit Bharat by 2047, the major reasons that contributed to the decrease in FDI inflow over the last five years, from 2019-20 to 2023-24 were:

* COVID-induced lockdowns which led to an overall reduction in the FDI inflows to India
* Insufficient infrastructure in the food processing sector which adversely affects the ease of doing business and reduces profit margins for foreign investors
* Competition from other emerging markets like Vietnam, etc., which provide cheap labour and favourable regulatory regime for foreign investors in the food processing sector.

**3.1.4 Export of Agri-Food Products**

The table 7 shows the total export of agri-food products and India’s total export over the past 20 years, from 2004-05 to 2023-24. It indicates that agri-food products constituted 11.74% of India's total exports in 2023-24.

**Table 7: Export of agri-food products and India’s total export (in USD million)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Agri-food products** | **India’s total export** | **% share** |
| 2004-05 | 8245.89 | 83535.94 | 9.87 |
| 2005-06 | 9344.2 | 103090.53 | 9.06 |
| 2006-07 | 10955.42 | 126414.05 | 8.67 |
| 2007-08 | 15869.72 | 163132.18 | 9.73 |
| 2008-09 | 16266.16 | 185295.36 | 8.78 |
| 2009-10 | 14771.49 | 178751.43 | 8.26 |
| 2010-11 | 20277.68 | 249815.55 | 8.12 |
| 2011-12 | 31459.58 | 305963.92 | 10.28 |
| 2012-13 | 35898.06 | 300400.58 | 11.95 |
| 2013-14 | 38051.43 | 312621 | 12.17 |
| 2014-15 | 36171.92 | 310338.48 | 11.66 |
| 2015-16 | 29672.31 | 262291.09 | 11.31 |
| 2016-17 | 30871.47 | 275852.43 | 11.19 |
| 2017-18 | 35467.9 | 303526.2 | 11.69 |
| 2018-19 | 35302.46 | 330078 | 10.70 |
| 2019-20 | 32731.98 | 313361 | 10.45 |
| 2020-21 | 38654.67 | 291808.5 | 13.25 |
| 2021-22 | 46113.94 | 42204.4 | 10.93 |
| 2022-23 | 51061.22 | 451070 | 11.32 |
| 2023-24 | 46435.53 | 395394.98 | 11.74 |

(Source – Tradestat, Department of Commerce, Ministry of Commerce and Industry)

The table 8 provides a five-year, ten-year, and overall analysis of export growth of agri-food products, from 2004-05 to 2008-09, the estimated CAGR was 14.55%, which increased to 20.83% from 2009-10 to 2013-14. However, it then decreased to -0.49% from 2014-15 to 2018-19, and further increased to 7.24% from 2019-20 to 2023-24.

From 2004-05 to 2013-14, the estimated CAGR was 16.52%, which decreased to 2.53% from 2014-15 to 2023-24.

Twenty-year analysis (Overall) of export growth of agri-food products, from 2004-05 to 2023-24, the estimated CAGR was 9.03%.

**Table 8: Analysis of export growth of agri-food products**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Particulars** | **2004-05 to 2008-09** | **2009-10 to 2013-14** | **2014-15 to 2018-19** | **2019-20 to 2023-24** |
| Five Year Analysis | 14.55% | 20.83% | -0.49% | 7.24% |
| Ten Year Analysis | 16.52% | | 2.53% | |
| Overall | 9.03% | | | |

**3.1.5 Import of Agri-Food Products**

The table 9 shows the total import of agri-food products and India’s total import over the past 20 years, from 2004-05 to 2023-24. It indicates that agri-food products constituted 4.69% of India's total imports in 2023-24.

**Table 9: Import of agri-food products and India’s total import (in USD million)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Agri-food products** | **India’s total import** | **% share** |
| 2004-05 | 4545.9 | 111517.43 | 4.08 |
| 2005-06 | 4676.49 | 149165.73 | 3.14 |
| 2006-07 | 6142.16 | 185735.24 | 3.31 |
| 2007-08 | 6744.09 | 251654.01 | 2.68 |
| 2008-09 | 7218.87 | 303696.31 | 2.38 |
| 2009-10 | 11946.79 | 288372.88 | 4.14 |
| 2010-11 | 12014.32 | 369769.13 | 3.25 |
| 2011-12 | 16104.74 | 489319.49 | 3.29 |
| 2012-13 | 18780.98 | 490736.65 | 3.83 |
| 2013-14 | 16464.47 | 450199.79 | 3.66 |
| 2014-15 | 19690.73 | 448033.41 | 4.39 |
| 2015-16 | 21399.62 | 381007.76 | 5.62 |
| 2016-17 | 23924.36 | 384357.03 | 6.22 |
| 2017-18 | 23096.6 | 465581 | 4.96 |
| 2018-19 | 19374.3 | 514078.4 | 3.77 |
| 2019-20 | 19698.2 | 474709.3 | 4.15 |
| 2020-21 | 21048.5 | 394435.9 | 5.34 |
| 2021-22 | 31290 | 613052.1 | 5.10 |
| 2022-23 | 33596.4 | 715968.9 | 4.69 |
| 2023-24 | 31660.75 | 675429.87 | 4.69 |

(Source – Tradestat, Department of Commerce, Ministry of Commerce and Industry)

The table 10 provides a five-year, ten-year, and overall analysis of import growth of agri-food products, from 2004-05 to 2008-09, the estimated CAGR was 9.69%, which decreased to 6.63% from 2009-10 to 2013-14. However, it then fell to -0.32% from 2014-15 to 2018-19, and further increased to 9.96% from 2019-20 to 2023-24.

From 2004-05 to 2013-14, the estimated CAGR was 13.73%, which decreased to 4.86% from 2014-15 to 2023-24.

Twenty-year analysis (Overall) of import growth of agri-food products, from 2004-05 to 2023-24, the estimated CAGR was 10.19%.

**Table 10: Analysis of import growth of agri-food products**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Particulars** | **2004-05 to 2008-09** | **2009-10 to 2013-14** | **2014-15 to 2018-19** | **2019-20 to 2023-24** |
| Five Year Analysis | 9.69% | 6.63% | -0.32% | 9.96% |
| Ten Year Analysis | 13.73% | | 4.86% | |
| Overall | 10.19% | | | |

**3.2 Certificates and standards for food safety and quality in food processing industry**

Increased demand for processed and packed food obviously increases the risk of food safety issues. As a result of this, customers look for quality and safety guarantee when visiting outlets for food purchases, and in turn there is a proliferation of food safety management system (FSMS) standards in the food industry.

According to the International Organization for Standardization (ISO), food safety is the concept that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use. A management system is a set of interrelated or interacting elements to establish policy and objectives and to achieve those objectives. A standard is a document agreed upon by experts and approved by an official organization. It provides rules, guidelines, or features that should be followed regularly to help things work smoothly and stay organized in a specific situation.

**3.2.1** **Licensing and Registration of Food Businesses (FSSAI Certificate)**

According to Section 31 of the Food Safety & Standards Act, 2006, all Food Business Operators (FBOs) in the country must obtain registration or a license before starting or operating any food business. The process for granting licenses and registrations to FBOs is governed by the Food Safety and Standards (Licensing and Registration) Regulations, 2011.

FSSAI covers all the global food safety norms laid down by WTO such as good manufacturing practices (GMP), good hygiene practice (GHP), and hazard analysis critical control point (HACCP).

**3.2.2 Good Manufacturing Practices (GMP)**

GMP is a framework designed to ensure that products are consistently produced and controlled according to quality standards. It focuses on regular pest control, proper hygiene, equipment maintenance, employee training, and maintaining optimal production conditions. GMP is often required as a foundation for certifications such as HACCP.

**3.2.3** **Hazard Analysis and Critical Control Points (HACCP)**

HACCP is a globally recognized preventive food safety management system that identifies potential hazards like physical, chemical, microbial, and allergen and sets up controls at critical points like use of x-ray machine and metal detectors to prevent, eliminate or reduce the hazard to an acceptable level at every stage of the manufacturing process.

It follows a systematic approach with seven principles: hazard analysis, identifying Critical Control Points (CCPs), establishing critical limits for CCPs, setting up monitoring procedures, defining corrective actions, implementing recordkeeping procedures, and establishing verification procedures to ensure food safety.

The benefits of HACCP include:reduces contamination, reduces product recalls, provides preferred supplier status, matching international standards, and international acceptance.

**3.2.4 International Organization for Standardization (ISO)**

International standards ensure that the products and services we use every day are safe, reliable, and of high quality. These standards do not give exact instructions over what an organization should do, but instead offer a framework that can be used for the development and implementation of systems that meet certain requirements with regard to quality, food safety and the protection of the environment.

ISO is an independent, non-governmental international organization that develops standards to ensure the quality, safety, and efficiency of products, services, and systems. Certification is carried out by accredited external bodies, meaning that a company or organization cannot be certified directly by ISO.

**ISO 9001:2015 (Quality Management System)**

ISO 9001:2015 is an internationally recognized standard and is the only standard in the ISO 9000 family that can be certified. It primarily focuses on food quality and it is required in hotels, restaurants, catering or any organizations, regardless of their size, sector or activity or geographic location. It guides and supports companies and organizations through providing them with the tools they need to ensure that their products and services are consistent and in accordance with what their customers need.

**ISO 22000:2018 (Food Safety Management System)**

ISO 22000:2018 is a global food safety management system standard that covers the entire food supply chain. It applies to all organizations in the food supply chain, from farmers to processors to retailers, ensuring the delivery of safe products to consumers. It combines the principles of HACCP and ISO 9001 to help companies build a strong food safety and quality management system. It is one of the most popular standards around the world.

A very important reason why companies implement this standard is customer requirements. Generally, firms consider ISO certification as a tool that offers them a competitive advantage.

**3.2.5 Food Safety System Certification 22000 (FSSC 22000)**

FSSC 22000 is another globally recognized food safety certification, recognized by the Global Food Safety Initiative (GFSI). It is based on ISO 22000 and incorporates additional food safety requirements to ensure food safety along the supply chain and it is considered equivalent to BRC (British Retail Consortium).

For facilities already certified under ISO 22000, applying for FSSC 22000 Certification will be the logical next step who are eager to upgrade their certification to a GFSI-recognised standard.

**3.2.6 British Retail Consortium (BRC)**

BRC Global Standards, particularly the BRCGS Food Safety Standard, is a leading quality and food safety certification program for food products, originally developed by UK retailers. BRC Global Standards has become widely recognized by the Global Food Safety Initiative (GFSI) and is a respected food safety certification program. It is among the most widely used standards in food industry, particularly by companies focused on the retail market, with a strong presence in the UK, EU, Germany and North America.

This standard gives more emphasis on documentation, factory and facilities condition, controls on products and processes, and personnel. BRC provides a framework to assist food manufacturers in ensuring that the products produced are safe, while it also assists them in managing product quality to ensure customers’ requirements are met.

According to the Eurofins and IRQS Certification Body, the benefits of FSSC 22000 and BRCGS includes: assurance of product safety and quality, access to international markets, increased consumer confidence, and enhanced reputation of the company.

**3.2.7 Halal**

Halal food follows the rules given in the Quran, the holy book of Islam. These rules explain what kinds of food can be eaten and how the food should be prepared and handled. When a product has Halal Certification, it means it has been checked and approved according to Islamic law.Halal-certified food products are not only recognized within the country but are also in demand globally, particularly in the United Arab Emirates. The Halal certificate signifies that the food meets high standards of hygiene, cleanliness, safety, and nutrition, and is produced strictly according to Islamic dietary guidelines.

**3.2.8 Kosher**

A Kosher Certificate is an official document issued by a recognized Jewish authority that verifies a food product complies with Jewish dietary laws. Studies show that products with a kosher label tend to outperform similar non-kosher items by up to 20% when placed side by side. This certification is important to promote the export of food products to countries where an important Jewish community (i.e. Israel and USA) is living.

Foods that are not considered kosher include specific animals, birds, and fish as well as most insects, shellfish, and reptiles. Additionally, animals that are permitted must be slaughtered according to specific kosher guidelines, and meat and dairy must not be produced or consumed together.

**4. CONCLUSION**

The study highlighted the importance of the food processing industry in the Indian economy, as it serves as a value-adding link between primary production and industrial output. The food processing sector remains a vital component of the Indian economy and is often referred to as a sunrise industry. However, its slower growth indicates the untapped potential. The employment growth trend shows a gradual decline in both the five-year and ten-year analyses indicates a slowdown in job creation within the sector. The overall CAGR of the Foreign Direct Investment (FDI) indicates the long-term positive growth. The export growth of agri-food products witnessed strong performance, reflecting growing global demand and increasing competitiveness of Indian agri-food exports. But, the overall CAGR of imports (10.19%) is higher than the CAGR of overall exports (9.03%), indicates sustained demand in our country.

Compliance with FSSAI guidelines not only ensures food safety within the domestic market but also aligns Indian food businesses with international standards. Quality standards such as the standards of the ISO 9000 series, and food safety standards (for example, BRC, FSSC 22000, HACCP, and so on) are now extensively used in the global food industry. Implementing rigorous safety and quality measures is essential. These measures not only safeguard consumer health but also enhance product acceptance in global markets, thereby positioning the industry competitively on an international scale.

The findings of the present study would be of practical significance for researchers, extension personnel, policy makers, planners, administrators and farmers, enabling them to make informed and rational decisions.

Disclaimer (Artificial intelligence)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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