

# PERFORMANCE OF DAIRY INDUSTRY IN INDIA: AN ANALYSIS

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**Abstract:-** India is the world's biggest producer and consumer of milk and has the world's biggest dairy masses, comprised of water buffalo and indigenous and crossbred cattle. Indian agriculture is a gamble of monsoon. The significance of dairy organisation in the national economy can be gauged from the reality that the value of output from milk group is most comfortable amongst all the agricultural commodities, accounting for almost one-fourth of the cost of the production from the farming sector. In this regards, dairy industries are expending its helping hand to the agriculture sector by way of providing seed money of meatout the day to day expenditure of the small and medium farmers. Dairying is one among the essential abilities to present livelihood and nutritional protection to the rural masses. In this direction, the paper highlighted the satisfying growth and development of the Indian dairy industry. In this direction, the current study attempted to analyse the growth and trend analysis in the Indian dairy industry. The Nominal Protection Coefficient (NPC) shows thatthe Indian dairy industry lacks export competitiveness because the export valueof dairy products in India exceed the world export value. Additionally, the Revealed Comparative Advantage (RCA) coefficient confirmsthat India hardly enjoys any comparative advantage for exporting its dairy products.

**Keywords:** Agricultural, Consumer, Milk, Dairy Industry, Growth, India.

## I. INTRODUCTION:

In a developing country like India, where a majority of people depends on agriculture, Agro-based industries have a significant role to play in the macroeconomic development of the nation. The development of agro-based industries not only supplements the growth of the economy but also supports the growth of the agricultural sector. It is very much essential that 52 per cent of the Indian labour force belongs to the farming industry. It is also a vital component for the rapid and self-sustained development of the rural economy. Economists believed that rapid industrialisation is the solution for economic evils like poverty, unemployment, malnutrition, and soon as such manufacturing assumes admirable importance, particularly in a developing nation like India. Industrialisation is, in general leads to the development of the economy. Economic growth implies that an increase in diversification of labour from agriculture to the industry and tertiary sectors.

The growth of agricultural sector influenced by the increasing demand for the industrial area of farming outputs and similarly, the growth of industrial sector depends on the increase in purchasing power of agricultural sector for industrial productions and on the supply of raw materials for processing. The relationship between agriculture and industry has featured prominently in economic theory since its very beginning in classical political

economy. The interdependency between the agriculture and industries in an economy is vital for its overall development.

UN (1972)<sup>1</sup> publication states that the purpose of industrialization of the developing nations is for expanding its industrial base, diversification of industrial activities modernisation their economy, which are essential for improving the living standards. There are numerous arguments raised by the researchers regarding the importance of the industrial sector in the process of economic development, especially in the manufacturing industry of the developing nations like India. There is a high degree of correlation between the level of industrialisation and per capita income in developing countries. Even though there is no perfect correlation in the less developing nations are having the upper end of the scale<sup>2</sup>.

### 1.1 Dairy Industry - Overview

India has been the leading producer and consumer of dairy products worldwide since 1998 with sustained growth in the availability of milk and milk products. Dairy activities form an essential part of the rural Indian economy, serving as a critical source of employment and income. India also has the largest bovine population in the world. However, the milk production per animal is significantly low as compared to the other major dairy producers. Moreover, nearly all of the dairy products in India is consumed domestically, with the majority of it sold as fluid milk. On account of this, the Indian dairy industry holds tremendous potential for value-addition and overall development. India's Export of Dairy products was 1,13,725.7 MT to the world for the well worth of Rs. 2423 Crores 345.71 USD Millions at some stage in the year 2018-19<sup>3</sup>. The dairy market in India reached a value of INR 10,527 Billion in 2019<sup>4</sup>. Along with offering profitable business opportunities, the dairy industry in India serves as a tool of socio-economic development.

## II. Review of Literature:

S. No	Author	Objective	Tools Employed	Source of Data	Conclusion
1	Payal Jaiswal, Hemkant Chandravanshi, Ashulata Netam <sup>5</sup>	To analyse the nature and extent of contribution of dairying to income, employment and food security of rural farming households.		Central Statistical Organization. India: Government of India	Dairying contributes positively and drastically to the income and employment of rural farming households, mainly the marginal and poor farmers, thereby offering them livelihoods and sustenance. ii. Dairying helps the inequitable distribution of earnings and employment among the rural farming households, thus lowering the disparity in maintaining of sources through the rural communities.
2	Maria J. Groot and Katrien E. van't Hooff <sup>6</sup>	To find out about the variations and similarities of dairy farming, and the impact on public and environmental health, between the Netherlands, India, Ethiopia, and Uganda, emphasising the techniques that developed during the E-Motive Exchange project to decrease the use of antibiotics and other chemical compounds in dairy farming. To Propose options which encompass raising awareness about the threat of antibiotics and their impact on food quality, and implementing the Natural			The threat of Multi-resistant microbes and antimicrobial-resistant (AMR) infections are still mostly unaddressed within the dairy industry in India, Ethiopia, and Uganda. At the same time, the use of antibiotics and other agrochemicals is rampant and largely uncontrolled. Therefore, raising attention about the trouble of antibiotic resistance, along with the hyperlink with livestock production and the effect of the frequent availability of agrochemicals and their impact on environmental, animal, and human health is of utmost importance.

<sup>1</sup> United Nations (1972) Industrialization Trend in the Developing ECAFE Countries. *Economic Bulletin for Asia and the Far East*, Vol. XXIII, No.2, 62-76.

<sup>2</sup> Szirmai, A. (2009) "Is manufacturing still the main engine of growth in Developing countries?" Accessed from [http://www.wider.unu.edu/publications/newsletter/articles/en\\_GB/05-09-Zirmai](http://www.wider.unu.edu/publications/newsletter/articles/en_GB/05-09-Zirmai).

<sup>3</sup> Agricultural & Processed Food Products Export Development Authority Site Developed & Maintained by *Logic soft*, New Delhi.

<sup>4</sup> Dairy Industry in India 2020 Edition: Market Size, Growth, Prices, Segments, Cooperatives, Private Dairies, Procurement and Distribution. Report by *IMARC Group*, <https://www.imarcgroup.com/dairy-industry-in-india>.

<sup>5</sup> PayalJaiswal, HemkantChandravanshi, Ashulata Netam (2018). Contribution of dairy farming in employment and household nutrition in India. *International Journal of Avian & Wildlife Biology*, 3(1): 78–79.

<sup>6</sup> Maria J. Grootl and Katrien E. van'tHooff (2016) The Hidden effects of Dairy Farming on Public and Environmental Health in the Netherlands, India, Ethiopia, and Uganda, considering the Use of Antibiotics and Other Agro-chemicals. *Front. Public Health*, 4:12, 1-9.

S. No	Author	Objective	Tools Employed	Source of Data	Conclusion
		Livestock Farming five-layer approach for reducing the use of antibiotics and other chemicals.			
3	M. Koteswara Rao <sup>7</sup>	To study the milk yield and the dairying aspects of households in Prakasam district of Andhra Pradesh, To study the factors influencing milk yield Prakasam district of Andhra Pradesh	Multiple linear, Ordinary Least Squares, multicollinearity, heteroscedasticity regression model	Primary data, 460 sample	The regression results for the total sample and also for sub-sample reveal that on an average 60 to 80 per cent of the variations in the value of milk yield per day per the animal could be explained by fodder, green fodder and concentrates used per animal Per day, and the age of the animal. However, the explanatory variable, number of labour hours required per day did not show any significant impact on the dependent variable. The model fitted for various samples valid as indicated by their respective p-values of the statistic.
4	Abida Ahsan & Bilal Ahmad Dar <sup>8</sup>	To examine the Dairy sector in the J& K with special reference to the production of milk	Growth Rate = $Qt - Qt-1 / Qt-1 * 100$	Economic Survey 2016-17	The significant problems in this sector are animal diseases, lack of fodder and nutrition feed, lack of market access, technical guidance. There is a need to increase the infrastructure like there should be cooperatives, coolers, market services so that this sector can develop and will provide a livelihood to thousands of people especially in rural areas in the state of Jammu and Kashmir.
5	Maurice Landes, Jerry Cessna, Lindsay Kuberka and Keithly Jones <sup>9</sup>	This report presents a profile of India's dairy sector using handy secondary data and research to examine trends in supply, demand, and trade, and the elements affecting these trends. Based on the profile, this report tries to discover the increase possibilities for India's dairy production and trade, accounting for the structural, technical, and coverage factors in all likelihood to structure that growth.	Annual Growth	United States Department of Agriculture (USDA)	India's most significant dairy industry is understudied, and there is limited public data on aspects of the industry that is important in assessing progress, future developments, or policy options. There are massive gaps in data collection in the areas of feed availability and use, modifications in the size and value structure of dairy production enterprises, and on the supply and consumption of most dairy products.
6	Ramphal Ohlan <sup>10</sup>	The study investigates the pattern, trends, competitiveness, and determinants of the export of dairy products from India	First-order finite Markov chain model. Chi Square ( $\chi^2$ ) test, The trend analysis, The Herfindahl Index. Log-linear form using the multiple regression analysis.	FAOSTAT, Economic Survey (2012), the Indian government's Ministry of Finance. Period of study 1961–1962 to 2010–2011 (50 years).	Market institutions to commercialise production intensified awareness and efforts to produce quality dairy products with reduced safety risks, higher standards to meet sanitary and phytosanitary specifications for food export, higher productivity, and increase in the scale of the collection, distribution, and processing of dairy products.
7	Bhagyashree S. Kunte, Sanjay Patankar <sup>11</sup>	To understand the troubles faced through the dairy area units, the execs and cons of various issues.			For the milk processing plants, the procurement cost observed the massive issue of the total costs, followed via the processing cost. For

<sup>7</sup> M. Koteswara Rao (2017) Factors Affecting Milk Production: A Case Study in Andhra Pradesh. *Journal of Rural Development*, Vol. 36, No. 1, 21-32.

<sup>8</sup> Abida Ahsan & Bilal Ahmad Dar (2018) An Economic Analysis of Dairy Sector in Jammu and Kashmir with Special Reference to Milk Production. *International Journal of Research in Humanities, Arts and Literature*, Vol. 6, Issue 4, 401-406.

<sup>9</sup> Maurice Landes, Jerry Cessna, Lindsay Kuberka and Keithly Jones (2017) India's Dairy Sector: Structure, Performance, and Prospects. *A Report from the Economic Research Service*, United States Department of Agriculture, LDPM-272-01, 1-49.

<sup>10</sup> Ramphal Ohlan (2016) Competitiveness and Trade Performance of India's Dairy Industry, *Asian Journal of Agriculture and Development*, Vol. 11, No. 2, 17-37.

<sup>11</sup> Bhagyashree S. Kunte, Prof. Sanjay Patankar (2015) A Literature Review of Indian Dairy Industry. *International Journal of Management Research & Review*, Volume 5, Issue 6, 341-350.

S. No	Author	Objective	Tools Employed	Source of Data	Conclusion
		The study finds out about is carried out to recognise the magnitude of the research work carried out in the area and recognise the unresolved issued if any that can pave the direction for similar research in the field.			some dairy products; cooperative dairy plants were discovered cost-effective while for some other products, non-public dairy plants had been observed profitable. This paper studied the economic viability of dairy plants or cooperative units.
8	Shiv Kumar, Md. Kashif Ansari <sup>12</sup>	Find out the reasons for the low per-unit production, Imports and negligible exports.	Compound Annual Growth Rate	Export-Import Data Bank, Directorate General of Foreign Trade	To study conclude, it can say that the location of Exporting Dairy Products holds promising prospects for future researchers as it has many aspects which are still unexplored. Due to massive production and very fewer exports and growing consumption of Dairy Products, it will become crucial to understand and analyse the most current trends in Exports and Imports as properly in Dairy Sector and find out the measures to expand the exports of Dairy Products.
9	A. Sudharsana Reddy, M. Padmavathi <sup>13</sup>	The significance of dairy enterprise in the national economy can be gauged from the fact that the value of output from the milk group is highest amongst all the agricultural commodities, accounting for almost one-fourth of the value of output from the agricultural sector.		Various issues of Basic Animal Husbandry Statistics, MoA, GoI	An analysis of the lessons learned through the implementation of the programme should be useful for those involved in formulating dairy development policies and plans for the nation. The performance is of the Indian dairy sector quite impressive.
10	M. S. Deshmukh <sup>14</sup>	Study the trends of the dairy sector in India. Find out the constraints and opportunities of the dairy sector in India. Examine the role of cooperative institutions in the development of the dairy industry in India. Suggesting the measures for the overall development of the Indian dairy sector.	per centage, growth rate, variation	Economic Survey, National Dairy Development Board and Reserve Bank of India.	The need of the hour for the cooperative sector in the era of the liberalised environment is to seize every opportunity available. To strengthen, expand and bring transparency in the milk procurement system to reduce the collection and transport cost. The role of government should be to direct, coordinate, and regulate the activities of various organisations engaged in dairy industry development to establish and maintain a level the playing field for all stakeholders

### 2.1 Scope of the Study:

The present paper attempts to study the performance of the dairy industry in India. The study covers the details of import and export for ten years from 2009-10 to 2018-19. This paper analyses the share of milk production in the State, National and International level during the period in reference.

### 2.2 Objectives of the Study:

The specific objectives of the study are as follows:

- To assess the production of dairy products among the various states in India.
- To study the state of dairy production at the international level.
- To analyse the performance of export and import of the dairy industry in India.
- To provide the suggestions for the development of the dairy industry in India

### III. RESEARCH METHODOLOGY:

Secondary data used for the present research investigation. The data collected from the relevant annual reports, COMTRADE, United Nations, FAOSTAT, Basic Animal Husbandry Statistics, DAHD&F, DGCIS, Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture and Farmers Welfare, GoI. The data were classified and tabulated as per the objectives of the study. The study used simple statistical tools. Mean,

<sup>12</sup> Shiv Kumar, Md. Kashif Ansari (2016) An Analytical Study on the Export Performance of Dairy Industry in India. *International Journal of Research-Granthaalayah*, Vol.4, (Iss.1), 153-157.

<sup>13</sup> Sudharsana Reddy. A and Padmavathi. M. (2016) The Growth and Development of Dairy Industry in India. *International Journal of Scientific Research*, Volume 5, Issue 6, 426-429.

<sup>14</sup> M. S. Deshmukh (2014) Growth and Performance of Dairy Sector in India. *Voice of Research*, Volume 3, Issue 2, 39-44.

Standard Deviation, Coefficient of Variation, Annual growth rate, Compound average growth rate (CAGR) use for analysis. In this study discuss with Nominal Protection Coefficient (NPC) and Revealed Comparative Advantage (RCA) techniques for evaluating trade competitiveness.

### 3.1 Nominal Protection Coefficient (NPC)

While the competitiveness of any product/commodity can be measured in various ways, NPC happens to be one of the popular measures, and it is defined as follows:

$$NPC_i = P_i^d / P_i^w$$

Where  $NPC_i$  is the nominal protection coefficient of the  $i^{th}$  commodity,  $P_i^d$  is the domestic value of the  $i^{th}$  commodity, adjusted transportation cost in the local market and  $P_i^w$  is the world reference value of the  $i^{th}$  commodity, adjusted transportation cost in the world Market. The studies mentioned above adjusted both domestic value and the World commodity value. Hence, NPC shows the ratio of domestic value to the world reference value, while explaining the level of competitiveness of a particular commodity in the International market. The present study estimates NPC under the exportable hypothesis and compares the unit prices of exportable goods in India with the world unit price of those goods but is unable to adjust transportation cost in domestic and transportation cost in the world markets<sup>15</sup>. Thus, the NPC formula is as follows.

$$NPC_i = India_i^x / World_i^x$$

Where  $India_i^x$  is the export value of  $i^{th}$  commodity in India and  $World_i^x$  is the export value of the  $i^{th}$  commodity in the world.

$$India_i^x = \text{Export Value}_i / \text{Export Quantity}_i$$

$$World_i^x = \text{Export Value}_i / \text{Export Quantity}_i$$

If  $NPC_i < 1$ , implies that the export value of  $i^{th}$  commodity in India is less than the export value of  $i^{th}$  commodity in the world, it means that a particular product is competitive in the world market. In this means the merchandise is unprotected and is obtainable in a free trade scenario. If  $NPC_i > 1$ , it implies that the export value of  $i^{th}$  commodity in India is higher than the export value of the same product in the world. The ultimately means that the particular product is less competitive in the world market (commodity is a protected item).

### 3.2 Revealed Comparative Advantage (RCA)

We have calculated the Revealed Comparative Advantage (RCA) proposed for measuring the degree of trade specialisation of a particular commodity. In the event of the RCA's being more significant than unity for a country, then that country has a comparative advantage in terms of exporting certain products. In other words, there is a scope of trade with the rest of the world in a particular commodity<sup>16</sup>. RCA measure is as follows:

$$RCA_{ik} = \frac{X_{ik} / X_{it}}{X_{wk} / X_{wt}}$$

Where,  $\frac{X_{ik}}{X_{it}}$  = India's export share of product  $k$  over India's total export in value term,  $\frac{X_{wk}}{X_{wt}}$  = world's export share of product  $k$  over the world's total export in the value term. Where  $RCA_{ik}$  is the revealed comparative advantage index for India. ' $i$ ' exporting product ' $k$ ',  $X_{ik}$  is the value of India's export of products  $k$ .  $X_{it}$  is the value of India's total export,  $X_{wk}$  is the value of the world's export of products  $k$  and  $X_{wt}$  is the value of the world's total export. The importance of the RCA's being more significant than unity confirms that India has a comparative advantage regarding exporting commodity ( $k$ ). In other words, India's export share of product  $k$  exceeds the world's export share of product  $k$ .

## IV. Analysis and Discussion

Table 1 presents the details of dairy products made by the top 10 Indian states for the period in reference. These states contribute around 80 per cent of the aggregate output of Indian dairy products. Among other Indian states, Uttar Pradesh contributes 17 per cent of Indian dairy production. Rajasthan became the second-largest producer of dairy products account for around 12 per cent of Indian dairy production, which is followed by Madhya Pradesh (8.21 percent), Gujarat (7.81 percent), and Andhra Pradesh (7.44 percent) during 2016-17. The table reveals that the Indian dairy production is having moderate and negative growth rate expect Madhya Pradesh. The analysis coefficient of variation recorded reasonable stability during the study period.

<sup>15</sup> Yashobanta Parida, Avinash K. Ghule and Priyankumar Dudharejiya (2019) Trade Competitiveness of Indian Dairy Industry: An Empirical Analysis. *Institute of Rural Management Anand*, Working Paper 295, 1-23.

<sup>16</sup> Balassa, B. (1965) "Trade Liberalization and Revealed Comparative Advantage" *The Manchester School*, 33 (2): 99-123.

Table 1  
State-wise Milk Production in India

State Wise Milk Production (000 Tonnes)																					
Sr No	State	2007-08		2008-09		2009-10		2010-11		2011-12		2012-13		2013-14		2014-15		2015-16		2016-17	
		Production	(%)	Production	(%)	Production	(%)	Production	(%)	Production	(%)	Production	(%)	Production	(%)	Production	(%)	Production	(%)	Production	(%)
1	Uttar Pradesh	37722	17.47	39074	17.42	40406	17.35	42062	17.67	45112	17.64	46660	17.92	24194	17.57	25198	17.22	26387	16.97	27551	16.83
2	Rajasthan	22754	10.54	23862	10.64	24660	10.59	26468	11.12	27024	10.57	27892	10.71	14573	10.58	16934	11.57	18500	11.9	19357	11.83
3	Madhya Pradesh	13144	6.09	13710	6.11	14334	6.16	15028	6.31	16298	6.37	17676	6.79	9599	6.97	10779	7.37	12148	7.81	13445	8.21
4	Gujarat	15822	7.33	16772	7.48	17688	7.6	18642	7.83	19634	7.68	20630	7.93	11112	8.07	11691	7.99	12262	7.89	12784	7.81
5	Andhra Pradesh	17850	8.27	19140	8.53	20858	8.96	21632	9.09	24176	9.45	25524	9.81	13007	9.45	9656	6.6	10817	6.96	12178	7.44
6	Punjab	18564	8.6	18774	8.37	18778	8.06	18846	7.92	19102	7.47	19448	7.47	10011	7.27	10351	7.07	10774	6.93	11282	6.89
7	Maharashtra	14420	6.68	14910	6.65	15358	6.6	16088	6.76	16938	6.62	17468	6.71	9089	6.6	9542	6.52	10153	6.53	10402	6.35
8	Haryana	10884	5.04	11490	5.12	12012	5.16	12534	5.27	13322	5.21	14080	5.41	7442	5.41	7901	5.4	8381	5.39	8975	5.48
9	Bihar	11566	5.36	11868	5.29	12248	5.26	12641	5.31	13286	5.19	13690	5.26	7197	5.23	7775	5.31	8288	5.33	8711	5.32
10	Tamil Nadu	13080	6.06	13302	5.93	13574	5.83	13662	5.74	13936	5.45	14010	5.38	7049	5.12	7132	4.87	7244	4.66	7556	4.62
<b>Top 10 States Total</b>		175806	81.44	182902	81.52	189916	81.56	197604	83.03	208828	81.64	217076	83.39	113273	82.27	116959	79.94	124954	80.36	132242	80.79
<b>Total India</b>		215869		224362		232848		237982		255786		260310		137686		146312		155487		163694	

Source: Department of Animal Husbandry

Table 2  
World Dairy Productions

World Dairy Production in (000) MT																	
Sr No.	Country	2010		2011		2012		2013		2014		2015		2016		2017	
		Producti on	(%)	Producti on	(%)	Producti on	(%)	Producti on	(%)	Producti on	(%)	Producti on	(%)	Producti on	(%)	Producti on	(%)
1	India	122070	16.87	128124	17.28	132647	17.47	137900	17.96	146526	18.46	155693	19.44	165332	20.42	176272	21.91
2	U S A	87521	12.10	89053	12.01	91043	11.99	91311	11.89	93490	11.78	94645	11.82	96372	11.90	97761	12.15
3	China	40802	5.64	41436	5.59	42012	5.53	39870	5.19	41884	5.28	41592	5.19	42945	5.30	44294	5.50
4	Pakistan	35491	4.91	36656	4.94	37861	4.99	39105	5.09	40282	5.07	35886	4.48	34765	4.29	34469	4.28
5	Russia	31841	4.40	32365	4.36	32574	4.29	34529	4.50	35361	4.45	34862	4.35	33911	4.19	33742	4.19
6	Brazil	30961	4.28	31640	4.27	31750	4.18	31351	4.08	32419	4.08	32708	4.08	32700	4.04	32695	4.06
7	Germany	29646	4.10	30355	4.09	30704	4.04	30523	3.98	30785	3.88	30791	3.84	30753	3.80	31178	3.87
8	New Zealand	17010	2.35	17339	2.34	19129	2.52	19469	2.54	21320	2.69	21939	2.74	21672	2.68	21372	2.66
9	U K	14071	1.94	15056	2.03	17401	2.29	18224	2.37	18631	2.35	18655	2.33	18489	2.28	20700	2.57
10	Turkey	13544	1.87	13849	1.87	13843	1.82	13935	1.82	15050	1.90	15324	1.91	14662	1.81	15256	1.90
<b>Top 10 Countries Total</b>		<b>422957</b>	<b>58.46</b>	<b>435873</b>	<b>58.77</b>	<b>448965</b>	<b>59.13</b>	<b>456216</b>	<b>59.43</b>	<b>475748</b>	<b>59.93</b>	<b>482093</b>	<b>60.19</b>	<b>491600</b>	<b>60.72</b>	<b>507738</b>	<b>63.10</b>
<b>Total</b>		<b>723510</b>		<b>741663</b>		<b>759255</b>		<b>767703</b>		<b>793866</b>		<b>800969</b>		<b>809670</b>		<b>804617</b>	

Source: Food & Agricultural Organisation (FAO)

Table 3  
Top 5 Importers of Indian Dairy Products

(Qty in MT; Value in Rs. Crore)

Countries	2009-10		2010-11		2011-12		2012-13		2013-14		2014-15		2015-16		2016-17		2017-18		2018-19	
	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore
France	199.85	5.51	1737.71	19.27	13973.85	232.59	1815.06	24.55	2413.61	45.78	3373.66	73.13	4536.98	88.57	4091.06	65.32	4321.75	72.35	554.4	70.47
Italy	149.73	5.91	165.23	6.95	1077.91	23.26	292.12	14.69	253.11	13.34	276.61	15.74	302.43	13.92	373.7	16.68	405.82	18.93	58.13	25.55
Germany	148.14	1.38	70.08	1.32	4131.04	79.41	100.75	2.47	271.24	5.62	330.08	13.52	506.44	11.77	856.68	7.65	1635.91	18.45	1.2	15.96
UK	63.52	0.96	1986.49	12.52	0	0	1343.85	14.34	911.6	12.45	1165.4	15.65	1174.5	14.98	840.56	10.6	701.41	12.01	51.75	14.56
Denmark	1074.34	15.09	751.92	15.73	762.34	17	979.84	21.91	771.9	16.34	631.32	16.34	1814.57	32.03	1543.43	22.96	1427.38	21.99	43.98	12.62
Top 5 Total	1635.58	28.85	4711.43	55.79	19945.14	352.26	4531.62	77.96	4621.46	93.53	5777.07	134.38	8334.92	161.27	7705.43	123.21	8492.27	143.73	709.46	139.16
<b>Total</b>	<b>31374.76</b>	<b>322.25</b>	<b>54334.61</b>	<b>822.41</b>	<b>70699.92</b>	<b>1203.93</b>	<b>7417.44</b>	<b>166.54</b>	<b>9916.42</b>	<b>212.84</b>	<b>11901.61</b>	<b>282.78</b>	<b>16986.74</b>	<b>322.3</b>	<b>16305.78</b>	<b>230.2</b>	<b>22683.19</b>	<b>282.09</b>	<b>1012.97</b>	<b>198.49</b>
% Share of Top 5 Countries	5.21	8.95	8.67	6.78	28.21	29.26	61.09	46.81	46.60	43.94	48.54	47.52	49.07	50.04	47.26	53.52	37.44	50.95	70.04	70.11

Source: DGCISTable 4

Top 4  
Exporters of Dairy Products in the World

(Qty in MT; Value in Rs. Crore)

Countries	2009-10		2010-11		2011-12		2012-13		2013-14		2014-15		2015-16		2016-17		2017-18		2018-19	
	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore	Qty	Rs. Crore
Turkey	1.1	0.0	0.0	0.0	0.0	108.9	2.6	0.0	0.0	0.0	108.9	2.6	0.0	0.0	0.0	0.0	0.0	0.0	14852.8	355.9
U Arab Emts	4988.2	70.6	5845.4	94.8	4036.1	6136.0	187.4	5461.7	180.8	5733.9	6136.0	187.4	5461.7	180.8	5733.9	203.2	5725.3	207.4	10267.0	305.3
Egypt A Rp	864.4	8.9	3647.4	66.4	807.3	50.0	1.3	0.0	0.0	0.0	50.0	1.3	0.0	0.0	0.0	0.0	5734.4	173.4	10692.0	289.4
Bangladesh Pr	7564.1	84.2	4979.7	64.9	68.2	10490.3	224.0	5359.8	95.1	7092.7	10490.3	224.0	5359.8	95.1	7092.7	124.6	3317.0	61.6	21745.3	270.0
Bhutan	393.5	2.1	540.8	4.8	217.6	3708.0	49.1	2082.4	36.9	4362.8	3708.0	49.1	2082.4	36.9	4362.8	109.2	6173.4	116.4	9375.9	144.3
Top 5 Total	13811.4	165.9	15013.2	231.0	5129.2	20493.2	464.4	12903.9	312.8	17189.3	20493.2	464.4	12903.9	312.8	17189.3	437.1	20950.1	558.8	66932.9	1364.9
<b>Total</b>	<b>34380.0</b>	<b>402.7</b>	<b>37435.9</b>	<b>548.0</b>	<b>25639.5</b>	<b>66424.4</b>	<b>1205.4</b>	<b>33442.5</b>	<b>755.5</b>	<b>39167.0</b>	<b>66424.4</b>	<b>1205.4</b>	<b>33442.5</b>	<b>755.5</b>	<b>39167.0</b>	<b>905.7</b>	<b>48039.4</b>	<b>1196.2</b>	<b>113725.7</b>	<b>2423.0</b>
% Share of Top 5 Countries	40.17	41.20	40.10	42.15	20.01	30.85	38.53	38.59	41.40	43.89	30.85	38.53	38.59	41.40	43.89	48.25	43.61	46.71	58.85	56.33

Source: DGCIS



Table 2 presents that details of the top ten dairy-producing countries in the world covering the period from 2010 to 2017. The study reveals that these top 10 countries contribute more than 60 per cent of total dairy products exports in the world. It shows that India is the leading producer of dairy products, having 21.91 per cent share in the world's total dairy production during 2017, which is followed by the USA (12.15 per cent), China (5.50 per cent), Pakistan (4.28 per cent), Russia (4.19 per cent), and Brazil (4.06 per cent). It is evident from the table that among the selected nations, all the countries have registered a better growth except Pakistan during the period of analysis.

#### 4.1 Import and Export of Indian Dairy Products

Table 3 presents the top five import countries of Indian dairy products. During 2009-10, France is the major importer of Indian dairy products with 70.47 crores which is followed by Italy (25.55crores), Germany (15.96 crores), UK (14.56 crore) and Denmark (12.62 crores). The table shows that the share of the top 5 importing nations has moderate growth during the period of analysis.

Table 4 presents the top five export destinations of Indian dairy products. Among the nations, Turkey recorded as a significant importer of Indian dairy products with 355.9 crores, which is followed by United Arab Emirates (305.32 cr.), Egypt (289.36cr), Bangladesh (270.03cr) and Bhutan (144.32 cr.). It is evident from the table that the share of the top 5 importer nations are recorded with moderate growth during the period in reference.

#### 4.2 Analysis of Nominal Protection Coefficient

**Table 5**  
**Result of Nominal Protection Coefficient (NPC)**

Sr No.	India	World	NPC
2009	0.00205	0.00194	1.055
2010	0.00266	0.00200	1.328
2011	0.00201	0.00242	0.829
2012	0.00275	0.00226	1.218
2013	0.00317	0.00250	1.266
2014	0.00307	0.00256	1.202
2015	0.00334	0.00196	1.703
2016	0.00336	0.00172	1.947
2017	0.00366	0.00201	1.822
2018	0.00368	0.00218	1.686

Source: COMTRADE, United Nations

Apart from the competitiveness of the dairy industry in India and the world, the study also estimated the competitiveness of dairy products using the NPC measure. Table 5 presents the results of the analysis. The values of NPC dairy products are unity for most of the years, except for the period 2011. It implies that dairy products are competitive in the world market, but it is not competitive in the Indian market.

**Table 6**  
**Revealed Comparative Advantage (RCA)**

Sr No.	India		World		RCA
	Qty	Share	Qty	Share	
2009	33169	4.56	24507118	6.20	0.74
2010	41793	5.75	28617017	7.24	0.79
2011	38866	5.35	29154388	7.38	0.72
2012	50184	6.91	30149508	7.63	0.90
2013	124608	17.15	32244192	8.16	2.10
2014	86544	11.91	34113262	8.63	1.38
2015	35377	4.87	33323224	8.43	0.58
2016	30397	4.18	36956901	9.35	0.45
2017	30293	4.17	37302216	9.44	0.44
2018	56025	7.71	34712248	8.79	0.88
Total	726708	100	395073605	100	

Source: COMTRADE, United Nations.

It is evident from table 6, the coefficient of RCA of dairy products is less than unity, which implies that India does not have any comparative advantage in the context of exporting dairy products. The estimated results indicate that the RAC indices for the dairy product were found to be less than unity, suggesting that India does not enjoy a comparative advantage for exporting any or a particular dairy product from its dairy product portfolio. The situation could be attributed to various reasons. India's dairy exports are increasing over the period, thanks to the consistent rise of milk production. At the same time, there has been a trend in rising income levels in urban centres, where the demand for processed dairy products has gone up leaving few surpluses for exports.

## V. Suggestion

Cooperative banks and other national banks ought to come ahead to extend liberal credit services to the farmers, especially small and marginal farmers for the improvement of the dairy enterprise. The cooperative sector should be strengthened to increase the procurement of milk in a better way. It is essential to provide continuous subsidies for the farmers who involved in the milk production so that the output of milk will increase. The study recommended to encourage the farmers to introduce value-added milk products in rural areas, and it will enable them to get more revenue.

The major hassle in the unorganised dairy sector is quality, which creates a severe threat to the health of consumers. Hence the study recommends introducing stringent norms for the procurement of milk from the farmers and private organisations.

## VI. Conclusion

The dairy industry has the potential to improve the income of the rural mass, better nutrition for the women, better self-employment and hence is a very critical area for investment. The dairy sector is a potential sub-sector for generating income and employment, 75-80 per cent of farm families are belongs to the small farmers, marginal farmers and landless labourers. The dairy industry is providing a better livelihood for them. It generates employment for more number of rural people with the least unit cost of employment. India recorded a moderate growth rate in the dairy industry during the period in reference. With an increase in demand on one hand and sluggish supply on the other, the government needs to intervene for improving the dairy industry in India.

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