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Trends and Growth Analysis of India's Manufacturing Exports: A Study from 1991–92 to 2016–17

T. Mathanraj[1,*], Haldhar Sharma[2]

[1]Department of Economics, Government Arts and Science College, Kovilpatti, Thoothukudi, Tamil Nadu, India.
[2]Department of Commerce, MEDICAPS University, Rau, Indore, Madhya Pradesh, India.
drmathantraj@gmail.com[1], haldharsharma@gmail.com[2]

*Corresponding author

Abstract: Manufacturing exports are a big element of this. At the moment, the service and manufacturing sectors are the most important parts of the Indian economy. The Indian economy has faced various challenges and found new opportunities because of progress, privatisation, and globalisation. The primary aims of the study are as follows: (i) To examine the trends and growth rate of India's manufacturing exports from 1991-92 to 2016-17. (ii) To examine the growing performance of India's exports to various significant manufacturing commodities. The research employs annual time-series data from 1991-92 to 2016-17. Secondary data obtained from many published sources of Government Agencies. The Reserve Bank of India (RBI), Government of India, publishes the Handbook of Statistics on the Indian Economy, which is where all the data comes from. Descriptive statistics, such as tables, were used to analyse the data. A linear model has been utilised to examine the trends and growth rates of India's manufacturing exports from 1991-92 to 2016-17. The Semi-Log Model and Compound Growth Rate have been utilised to analyse the growth performance of India's exports for several key manufacturing commodities. The analysis was conducted utilising SPSS and Excel.

Keywords: Manufacturing Exports; Growth Rate; Indian Economy; Economy's Growth; Government Agencies; Privatisation, and Globalisation; Trends and Growth Analysis; Manufacturing Enterprises.

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1. Introduction

Manufacturing is a key driver of the national economy's growth. This sector's growth demonstrates the strength of the country's economy [1]. This helps other parts of the economy thrive, create jobs, and make workers more productive. Compared to other economies worldwide, India's manufacturing sector is growing slowly, which is a major concern. The "Make in India" campaign has made people trust not just the executives of manufacturing enterprises, but also investors from India and other countries [2]. The goal of the initiative is to raise the sector's share of GDP from 15% to 25% and create more than 100 million jobs by 2022. Trade in services is worth $294 billion [3]. India's exports of agricultural goods have increased significantly, reaching $1 million. 60.12 billion rupees. The number is 226.6 billion, which is a big increase from 1990–91 to 2016–17.

1.1. Significance of the Study

For the economy to expand, exports are necessary, as they bring in foreign currency that helps it grow. A country gets richer when its economy grows [4]. India's exports have changed a lot since the country became independent. At a certain point in time, a company's export performance indicates how well it uses its resources and skills in an international setting [5]. A company's ability to export is seen as one of the most important signs of how well it is doing, which is why it has been researched so often [6]. A country's manufacturing exports are very important for its economy to flourish [7]. The growth of this sector shows how strong a country's economy is. It boosts production, creates jobs, and benefits other parts of the Indian economy [8]. The study looks at the trends and growth rates of India's manufacturing exports. The policymaker should set rules that make it easier for people to trade. This study will also be useful for future researchers in international economics [9].

1.2. Objective

The main objectives of the study are as follows:

- To analyse the trends and growth rate of the direction of India's manufacturing exports during 1991-92 to 2016-17.
- To study the growth performance of India's exports to Various major manufacturing commodities.

2. Research Methodology

The research spans from 1991-1992 to 2016-2017, employing data obtained from annual time series. Secondary data were collected from various public sources, all supplied by distinct government authorities [10]. The Government of India and the Reserve Bank of India worked together to develop the Handbook of Statistics on the Indian Economy. This book has all you need [11]. The data were analysed using a descriptive statistical method, including tables.

A linear model has been created to examine India's industrial exports from 1991–1992 to 2016–2017 and determine how they have changed over time. This investigation has been undertaken out of necessity. The Semi-Log Model and the Compound Growth Rate have been extensively employed to evaluate the growth performance of India's exports of several essential manufactured goods. We were able to do this study with both models. During the analysis, both SPSS and Excel were used simultaneously.

2.1. Tools of Analysis

The following statistical tools were used to analyse the collected data, enabling meaningful interpretation of the results. The researcher had analysed the collected data with the study's basic objectives in mind. Some of the tools involved in the study include

- 't' test
- The Time Series Analysis
- Linear Trend model
- The Semi-Log Model

2.1.1. T'TEST

$$t = \frac{b_1 - b_2}{\sqrt{(S.E.\ b_1)^2 + (S.E.\ b_2)^2}}$$

Here, b1 represented the slope coefficient obtained in the regression model estimated for the study period, and b2 represented the slope coefficient obtained in the regression model estimated for the same period. S.E. is the standard error.

2.1.2. Linear Model

Further, the researcher has used percentages and the simple linear growth rate model. The linear growth rate model

$$Y = a + b_t$$

Where, Y - Dependent variable, T – Time, a ' and 'b' are the parameters. The linear growth rate is obtained from the 'b' value.

2.1.3. Semi-Log Model and Compound Growth Rate

Further, the researcher has used the semi-log model to compute the Instantaneous Growth Rate and the Compounded Annual Growth Rate (CAGR). The Semi-log is used and was computed using the following models.

If Y = Variable at time t and Y_t= initial year value of the variable, simple compounding is explained as:

$$\log Y=a+b_t$$

$$CGR= (\text{Anti log } b-1)100$$

3. An Economic Analysis of the Direction of Manufacturing Exports in India

We examined the direction of exports for various significant primary ores and minerals, as well as manufactured commodities. This investigation looked at exports to nations with high values. Leather and leather goods, gems and jewellery, chemicals, pharmaceuticals and drugs, engineering goods, cotton yarn and fabrics, handloom goods, textiles, jute manufacturing, and carpet goods were some of the main things that were exported. From 1991-92 to 2016-17, Table 1 displays the trend and growth rate of leather and leather goods.

Table 1: Trend and growth rate of leather and leather products in 1991-92 to 2016-17

Variable	Linear Model				Semi-log Model				CGR
	a	b	t	R^2	a	b	t	R^2	
France	0.240 (16.082)	12.352 (1.041)	11.862	0.854	3.895 (0.077)	0.077 (0.005)	15.523	0.909	8.0
Germany	211.040 (35.161)	17.239 (2.277)	7.572	0.705	255.909 (18.854)	1.037 (0.005)	209.613	0.711	3.7
Hong Kong	-22.982 (22.922)	16.573 (1.484)	11.166	0.839	3.548 (0.127)	0.107 (0.008)	13.019	0.876	11.3
Italy	99.950 (23.708)	15.637 (1.535)	10.186	0.812	4.889 (0.076)	0.056 (0.005)	11.345	0.843	5.7
Netherlands	-10.632 (9.624)	7.890 (0.623)	12.661	0.870	3.055 (0.071)	0.094 (0.005)	20.449	0.946	9.8
Portugal	13.985 (2.605)	1.772 (0.169)	10.505	0.821	2.880 (0.070)	0.050 (0.005	11.075	0.836	5.1
Russia	55.905 (12.084)	-1.488 (0.782)	-1.901	0.131	3.668 0.303)	0.028 (0.020)	-1.412	0.077	2.7
Spain	-22.286 (8.911)	13.504 (0.577)	23.404	0.958	3.327 (0.084)	0.108 (0.005)	19.753	0.942	11.4
UK	53.340 (23.708)	22.457 (1.535)	14.628	0.899	4.878 (0.041)	0.065 (0.003)	24.698	0.962	6.7
USA	107.358 (45.558)	19.283 (2.950)	6.537	0.640	5.192 (0.089)	0.046 (0.006)	7.976	0.726	4.7
Others	-120.537 (80.482)	64.057 (5.211)	12.292	0.863	5.156 (0.060)	0.090 (0.004)	23.119	0.957	9.4

Source: *Calculated by the researcher (Figures in brackets indicate Standard Error)*

Table 1 above shows the t-values for the trend coefficient, which were found to be statistically significant at the 1% level. The R2 values were also determined to be good. The UK has the highest average yearly export value of US$22.45 million among countries that export leather. With an average annual export value of US$19.28 million, the USA was the second largest exporter. Germany came in third, with an average annual export value of US$17.23 million. Hong Kong came in fourth (US$16.57 million), Italy came in fifth (US$15.63 million), Spain came in sixth (US$13.50 million), France came in seventh (US$12.35 million), the Netherlands came in eighth (US$7.89 million), and Portugal came in ninth (US$1.77 million). The average annual value of Russia's exports was the lowest at US$ -1.48 million.

Spain had the highest growth rate for exports from leather-exporting countries, at 10.8% per year. Hong Kong's exports grew by 10.7% each year, making it the second fastest-growing country. The Netherlands came in third place for export growth, with a rate of 9.4% per year. France came in fourth, with a rate of 7.7%, the UK came in fifth, with a rate of 6.5%, Italy came

in sixth, with a rate of 5.6%, Portugal came in seventh, with a rate of 5.0%, the USA came in eighth, with a rate of 4.6%, and Germany came in ninth, with a rate of 3.7%. Russia had the lowest rate of export growth, at 2.8% per year. Spain had the highest compound growth rate for exports at 11.4% per year, while Russia had the lowest at 2.7% per year.

Table 2: Trend and growth rate of gems and jewellery in 1991-92 to 2016-17

Variable	Linear Model				Semi-log Model				CGR
	a	b	t	R^2	a	b	t	R^2	
Belgium	75.641 (152.691)	98970 (152.691)	10.384	0.812	6.091 (0.061)	0.073 (0.004)	19.278	0.937	7.6
Hong Kong	-2262.767 (682.436)	487.432 (42.597)	11.443	0.840	6.182 (0.074)	0.127 0.005	27.446	0.968	13.6
Israel	-119.118 (60.173)	51.649 (3.756)	13.751	0.883	4.347 (0.124)	0.120 (0.008)	15.514	0.906	12.7
Japan	526.874 (33.308)	-8.723 (2.079)	-4.196	0.413	6.272 (0.075)	-0.21 (0.005)	-4.571	0.455	2.1
Singapore	-25.085 (82.707)	24.641 (5.162)	4.773	0.477	3.902 (0.189)	0.104 (0.012)	8.841	0.758	11.0
Switzerland	22.346 (19.286)	9.508 (1.204)	7.898	0.714	3.930 (0.106)	0.068 (0.007)	10.331	0.810	7.0
Thailand	-4.283 (34.308)	22.979 (2.141)	10.730	0.822	4.484 (0.091)	0.077 (0.006)	13.595	0.881	8.0
UAE	-4549.970 (1337.282)	707.655 (83.472)	8.478	0.742	3.741 (0.188)	0.248 (0.012)	21.174	0.947	28.2
UK	-12.265 (23.176)	19.218 (1.447)	13.285	0.876	4.037 (0.087)	0.091 (0.005)	16.829	0.919	9.5
USA	-73.494 (259.529)	301.726 (16.199)	18.626	0.933	6.993 (0.045)	0.082 (0.003)	28.935	0.971	8.5
Others	-427.808 (331.319)	108.392 (20.681)	5.241	0.524	4.690 (0.156)	0.126 (0.010)	12.915	0.870	13.4

Source: *Calculated by the researcher (Figures in brackets indicate Standard Error)*

The examination of Table 2 indicates that the trend coefficient t-values are statistically significant at the 1% level. The R2 values were likewise good. The UAE has the highest yearly average export value of US$707.65 million among countries that export gems and jewellery. Hong Kong had the second-highest average annual export value, at US$487.43 million. The United States came in third with an average annual export value of US $19.21 million. Belgium came in first with US $98.97 million, followed by Israel (US$51.64 million), Singapore (US $24.64 million), Thailand (US $22.97 million), the UK (US $19.21 million), and Switzerland (US $9.50 million). Japan had the lowest average yearly export value, which was US$ -8.72 million. The UAE has the highest growth rate for exports from Gems and Jewellery exporting countries, at 24.8% per year. With a growth rate of 12.7% each year, Hong Kong had the second-highest rate of export growth. Israel came in third with a 12% yearly increase in exports, followed by Singapore (10.4%), the UK (9.1%), the USA (8.2%), Thailand (7.7%), Belgium (7.3%), and Switzerland (6.8%). Japan had the slowest growth in exports, at just 2.1% per year. The UAE had the highest compound growth rate for exports at 28.2% per year, while Japan had the lowest at 2.1% per year.

Table 3: Trend and growth rate of chemical, pharmaceutical, and drug products from 1991-92 to 2016-17

Variables	Linear Model				Semi Log Model				CGR
	a	b	t	R^2	a	b	t	R^2	
Brazil	-170.02 (46.350)	34.232 (3.001)	11.406	0.844	2.068 (0.208)	0.206 (0.013)	15.252	0.906	22.8
China	-214.39 (50.820)	48.717 (3.291)	14.804	0.901	2.131 (0.340)	0.226 (0.022)	10.290	0.815	25.4
Germany	-62.769 (40.968)	39.942 (2.653)	15.057	0.904	4.608 (0.070)	0.097 (0.005)	21.185	0.949	10.1
Hong Kong	88.494 (12.139)	-0.427 (0.786)	-0.544	0.012	4.339 (0.153)	0.001 (0.010)	0.098	0.000	1
Italy	-37.012 (19.039)	18.422 (1.233)	14.943	0.903	3.594 (0.084)	0.108 (0.005)	19.896	0.943	11.4

Netherlands	-89.142 (40.574)	29.710 (2.627)	11.308	0.842	3.769 (0.105)	0.119 (0.007)	17.417	0.927	12.6
Russia	39.561 (46.789)	18.272 (3.030)	6.031	0.602	4.518 (0.175)	0.069 (0.011)	6.069	0.606	7.1
UAE	-93.422 (24.550)	29.520 (1.590)	18.570	0.935	3.613 (0.089)	0.127 (0.006)	22.107	0.953	13.6
UK	-111.796 (41.859)	37.155 (2.710)	13.708	0.887	4.103 (0.081)	0.113 (0.005)	21.527	0.951	11.9
USA	-1603.56 (412.116)	275.69 (26.686)	10.331	0.816	4.704 (0.073)	0166 (0.005)	34.976	0.981	18.1
Others	-3311.51 (860.39)	786.18 (55.713)	14.111	0.892	6.302 (0.112)	0.151 (0.007)	20.945	0.948	16.3

Source: *Calculated by the researcher (Figures in brackets indicate Standard Error)*

Table 3 shows that the t-values for the trend coefficient were statistically significant at the 1% level. The R2 values were likewise good. The US had the largest average yearly export value of chemical, pharmaceutical, and medicine items, at US$275.69 million. China had the second-highest average annual export value, which was US$48.71 million. Germany came in third with an average yearly export value of US $39.94 million, followed by the UK (US $37.15 million), Brazil (US $34.23 million), the Netherlands (US $29.71 million), the UAE (US $29.52 million), Italy (US $18.42 million), and Russia (US $18.27 million). Hong Kong had the lowest average yearly export value, which was US$ -0.42 million. China had the highest growth rate for exports of chemicals, pharmaceuticals, and drugs from exporting countries, at 22.6 percent each year. Brazil's exports grew at the second-fastest rate, 20.6% per year. The USA had the third highest export growth rate, at 16.6% per year. The UAE (12.7%), the Netherlands (11.9%), the UK (11.3%), Italy (10.8%), Germany (9.7%), and Russia (6.9%) came next. Hong Kong had the slowest growth in exports, at 1.0 percent each year. China had the largest compound growth rate for exports at 25.4% per year, while Hong Kong had the lowest at 1.0% per year.

Table 4: trend and growth rate of engineering products from 1991-92 to 2016-17

Variables	**Linear Model**				**Semi Log Model**				**CGR**
	A	**b**	**t**	**R^2**	**a**	**b**	**t**	**R^2**	
Bangladesh	-285.84 (113.802)	60.651 (7.369)	8.231	0.738	4.141 (0.103)	0.125 (0.007)	18.644	0.935	13.3
Germany	-510.15 (150.737)	116.359 (9.761)	11.921	0.856	4.305 (0.120)	0.154 (0.008)	19.873	0.943	16.6
Hong Kong	70.68 (59.090)	12.255 (3.826)	3.203	0.299	4.233 (0.254)	0.070 (0.016)	4.287	0.434	7.3
Italy	-415.49 (100.852)	88.564 (6.530)	13.562	0.885	3.655 (0.154)	0.172 (0.010)	17.256	0.925	18.7
Malaysia	-383.82 (156.678)	78.400 (10.145)	7.728	0.713	3.919 (0.163)	0.147 (0.011)	13.925	0.890	15.8
Singapore	-636.62 (323.019)	147.660 (20.916)	7.060	0.675	4.590 (0.175)	0.148 (0.011)	13.117	0.878	16.0
Sri Lanka	-552.80 (231.202)	101.289 (14.971)	6.766	0.656	4.083 (0.128)	0.147 (0.008)	17.755	0.929	15.8
UAE	-1151.86 (312.161)	231.194 (20.213)	11.438	0.845	4.650 (0.119)	0.167 (0.008)	21.808	0.952	18.2
UK	-447.72 (125.976)	118.788 (8.157)	14.562	0.898	4.799 (0.097)	0.134 (0.006)	21.360	0.950	14.3
USA	-1444.37 (409.301)	360.507 (26.503)	13.602	0.885	5.615 (0.113)	0.148 (0.007)	20.199	0.944	16.0
Others	-9839.187 (2424.304)	1886.990 (156.979)	12.021	0.858	6.715 (0.119)	0.167 (0.008)	21.550	0.951	18.1

Source: *Calculated by the researcher (Figures in brackets indicate Standard Error)*

Table 4 demonstrates that the trend coefficient t values are statistically significant at the 1% level. The R2 values were also determined to be good. The USA had the greatest yearly average export value of US$360.50 million among the countries that exported engineering products. The UAE had the second-highest average yearly export value, which was US$231.19 million. Singapore came in third with an average annual export value of $147.66 million. The UK came in next with $118.78 million,

Germany with $116.35 million, Sri Lanka with $101.28 million, Italy with $88.56 million, Malaysia with $78.40 million, and Bangladesh with $60.65 million. The average yearly value of exports from Hong Kong was US$12.25 million, which was the lowest. Italy had the highest growth rate for exports of engineering products from exporting countries, with a rate of 17.2 percent each year. With a growth rate of 16.7% each year, the UAE has the second-highest export growth rate. Germany came in third with a 15.4% yearly increase in exports. Singapore (14.8%), the USA (14.8%), Malaysia (14.7%), Sri Lanka (14.7%), the UK (13.4%), and Bangladesh (12.5%) followed. Hong Kong had the lowest rate of export growth, at 7.0% per year. Italy had the highest compound growth rate of exports at 18.7% per year, while Hong Kong had the lowest at 7.3% per year.

Table 5: Trend and growth rate of cotton yarn fabrics, made-ups, and handloom products from 1991-92 to 2016-17

Variables	Linear Model				Semi Log Model				CGR
	a	b	t	R^2	a	b	t	R^2	
Bangladesh	-63.215 (80.516)	34.836 (5.214)	6.682	0.650	4.697 (0.174)	0.077 (0.011)	6.838	0.661	8.0
Germany	80.600 (16.414)	6.899 (1.063)	6.491	0.637	4.593 (0.080)	0.037 (0.005)	7.197	0.683	3.8
Hong Kong	121.936 (25.619)	-0.784 (1.659)	0.473	0.009	4.476 (0.246)	0.006 (0.016)	0.352	0.005	6.0
Italy	90.501 (13.350)	5.098 (0.864)	5.898	0.592	4.494 (0.099)	0.038 (0.006)	5.969	0.598	3.9
Japan	79.681 (9.115)	1.027 (0.590)	1.740	0.112	4.318 (0.114)	0.014 (0.007)	1.833	0.123	1.4
Mauritius	98.106 (31.189)	2.020 (31.189)	1.353	0.071	4.387 (0.307)	0.022 (0.020)	1.086	0.047	2.2
South Korea	28.527 (21.224)	4.038 (1.374)	2.938	0.265	3.703 (0.248)	0.037 (0.016)	2.304	0.181	3.8
UAE	41.088 (13.717)	5.724 (0.888)	6.444	0.634	4.102 (0.084)	0.044 (0.005)	8.028	0.729	4.5
UK	171.986 (21.552)	1.373 (1.396)	0.984	0.039	5.156 (0.117)	0.004 (0.008)	0.544	0.012	4.0
USA	-207.330 (129.104)	79.198 (8.360)	9.474	0.789	5.159 (0.075)	0.098 (0.005)	20.071	0.944	10.3
Others	-349.228 (326.555)	196.669 (21.145)	9.301	0.783	6.274 (0.081)	0.091 (0.005)	17.248	0.925	9.5

Source: *Calculated by the researcher (Figures in brackets indicate Standard Error)*

The trend coefficient t values in Table 5 are statistically significant at the 1% level. The R2 values were also acceptable. The USA had the greatest yearly average export value of US $79.19 million for Cotton Yarn Fabs, Made-ups, and Handloom Products. Bangladesh's average yearly export value was US$34.83 million, making it the second largest. Germany came in third with an average yearly export value of US$6.89 million, followed by the UAE (US$5.72 million), Italy (US$5.09 million), South Korea (US$4.03 million), Mauritius (US$2.02 million), the UK (US$1.37 million), and Japan (US$1.02 million). The average annual export value for Hong Kong was the lowest at US$ -0.78 million. The USA had the highest growth rate for exports of Cotton Yarn Fabs, Made-ups, and Handloom Products, at 9.8 percent per year. Bangladesh had the second-highest rate of export growth, at 7.7% per year. The UAE had the third-highest export growth rate, at 4.4% each year. Italy came in fourth (3.8%), Germany (3.7%), South Korea (3.7%), Mauritius (2.02%), Japan (1.4%), and Hong Kong (0.6%) every year. The UK had the lowest rate of export growth, at just 0.4% per year. The USA had the highest compound growth rate for exports at 10.3% per year, while Japan had the lowest at 1.4% per year.

Table 6: Trend and growth rate of textile products from 1991-92 to 2016-17

Variables	Linear Model				Semi Log Model				CGR
	a	b	t	R^2	a	b	t	R^2	
Canada	108.109 (16.066)	7.134 (1.040)	6.857	0.662	4.634 (0.106)	0.045 (0.007)	6.605	0.645	4.6
France	84.178 (26.555)	31.093 (1.719)	18.083	0.932	5.109 (0.065)	0.072 (0.004)	17.209	0.925	7.5
Germany	110.341 (56.643)	42.163 (3.668)	11.495	0.846	5.525 (0.078)	0.064 (0.005)	12.649	0.870	6.6

Italy	32.138 (26.666)	17.724 (1.727)	10.265	0.814	4.381 (0.097)	0.077 (0.006)	12.300	0.863	8.0
Japan	55.981 (12.804)	5.030 (0.829)	6.067	0.605	4.243 (0.100)	0.037 (0.006)	5.781	0.582	3.8
Netherlands	45.205 (22.116)	16.875 (1.432)	11.784	0.853	4.530 (0.074)	0.069 (0.005)	14.552	0.898	7.2
Russia	155.680 (34.716)	-3.514 (2.248)	-1.563	0.092	4.937 (0.298)	-0.040 (0.019)	-2.083	0.153	3.9
UAE	-577.358 (236.523)	109.486 (15.315)	7.149	0.680	4.397 (0.112)	0.138 (0.007)	18.971	0.937	14.8
UK	-109.416 (68.473)	71.268 (4.434)	16.074	0.915	5.238 (0.068)	0.094 (0.004)	21.255	0.950	9.8
USA	393.359 (88.786)	130.960 (5.749)	22.779	0.956	6.612 (0.061)	0.069 (0.004)	17.639	0.928	7.2
Others	-530.948 (205.975)	196.577 (13.337)	14.739	0.901	5.948 (0.036)	0.105 (0.002)	45.093	0.988	11.1

Source: *Calculated by the researcher (Figures in brackets indicate Standard Error)*

Table 6 reveals that the t values for the trend coefficient are statistically significant at the 1% level. The R2 values were likewise deemed acceptable. The USA has the highest yearly average export value of US$136.96 million among countries that export textiles. The UAE had the second-highest average yearly export value, which was US$109.48 million. The UK came in third with an average yearly export value of US$71.26 million. Germany came in fourth with US$42.16 million, France with US$31.09 million, Italy with US$17.72 million, the Netherlands with US$16.87 million, Canada with US$7.13 million, and Japan with US$5.03 million. Russia's average annual export value was the lowest, at US$ -3.5 million. The UAE had the highest growth rate for textile exports, at 13.8% per year. The UK had the second highest growth rate, at 9.4% per year. Italy came in third for the fastest growth in exports, with a rate of 7.7% per year. France came in fourth, with a rate of 7.2%, followed by the Netherlands (6.9%), the USA (6.9%), Germany (6.4%), Canada (4.5%), and Russia (4.0%). Japan had the slowest growth rate for exports, at 3.7 percent per year. The UAE had the highest compound growth rate for exports at 14.8% per year, while Russia had the lowest at 3.9% per year.

Table 7: Trend and growth rate of jute manufacturing products from 1991-92 to 2016-17

Variables	**Linear Model**				**Semi Log Model**				**CGR**
	a	**b**	**t**	**R^2**	**a**	**b**	**T**	**R^2**	
Australia	1.171 (0.691)	0.394 (0.045)	8.811	0.764	0.945 (0.088)	0.059 (0.006)	10.365	0.817	6.1
Belgium	33.558 (2.139)	-1.021 (0.139)	-7.369	0.693	3.719 (0.128)	-0.065 (0.008)	-7.804	0.717	93.7
Egypt	5.694 (2.184)	0.266 (0.141)	1.878	0.128	1.739 (0.193)	0.026 (0.012)	2.094	0.155	2.6
Germany	-0.018 (1.143)	0.695 (0.074)	9.390	0.786	0.855 (0.128)	0.085 (0.008)	10.259	0.814	8.9
Italy	0.208 (0.631)	0.378 (0.041)	9.241	0.781	0.155 (0.137)	0.094 (0.009)	10.536	0.822	9.8
Japan	7.423 (0.575)	-0.076 (0.037)	-2.039	0.148	2.010 (0.086)	-0.013 (0.006)	-2.374	0.190	1.3
S Arabia	1.770 (1.638)	0.637 (0.106)	6.008	0.601	1.237 (0.124)	0.069 (0.008)	8.560	0.753	7.1
Turkey	9.103 2.814)	0.162 0.182)	0.888	0.032	2.150 0.224)	0.009 0.015)	0.639	0.017	9
UK	7.688 1.901)	0.812 0.123)	6.598	0.645	2.267 (0.098)	0.043 (0.006)	6.794	0.658	4.4
USA	15.291 (4.477)	2.460 (0.290)	8.485	0.750	3.028 (0.100)	0.055 (0.006)	8.514	0.751	5.7
Others	-7.879 (20.590)	8.767 (1.333)	6.576	0.643	3.361 (0.151)	0.081 (0.010)	8.294	0.741	8.4

Source: *Calculated by the researcher (Figures in brackets indicate Standard Error)*

Table 7 shows that the trend coefficient t values are statistically significant at the 1% level. The R2 values were likewise good. The USA had the greatest average yearly export value of US$2.46 million among the countries that exported jute. With an average annual export value of US$0.81 million, the UK came in second. Germany came in third with an average yearly export value of US $0.69 million. Saudi Arabia came in fourth with US $0.63 million, Australia fifth with US $0.39 million, Italy sixth with US $0.37 million, Egypt seventh with US $0.26 million, and Turkey eighth with US $0.16 million. Japan and Belgium had the lowest average yearly export values, which were US$ -0.07 million and US$ -1.02 million, respectively. Italy had the highest growth rate for exports from jute manufacturing countries, at 9.4 percent per year. Germany had the second-highest rate of growth in exports, at 8.5% per year. Saudi Arabia had the third-highest rate of export growth, at 6.9% per year. Belgium came in fourth, with 6.5%, followed by Australia (5.9%), the US (5.5%), the UK (4.3%), Egypt (2.6%), and Japan (1.3%). Turkey had the lowest export growth rate, at 0.9% per year. Italy had the highest compound growth rate of exports, at 9.8% per year. Turkey had the lowest annual growth rate, at just 0.9%.

Table 8: Trend and growth rate of carpet products in 1991-92 to 2016-17

Variables	Linear Model				Semi Log Model				CGR
	a	b	t	R^2	a	b	t	R^2	
Australia	-0.243 (2.592)	1.348 (0.168)	8.030	0.729	1.752 (0.104)	0.071 (0.007)	10.461	0.820	7.3
Canada	8.688 (0.976)	0.446 (0.063)	7.067	0.675	2.263 (0.064)	0.029 (0.004)	6.984	0.670	2.9
France	12.145 (1.169)	0.266 (0.076)	3.515	0.340	2.485 (0.079)	0.018 (0.005)	3.565	0.346	1.8
Germany	162.123 (11.689)	-1.781 (0.757)	-2.353	0.188	5.057 (0.091)	-0.012 (0.006)	-1.963	0.138	98.9
Italy	13.113 (2.095)	0.307 (0.136)	2.263	0.176	2.557 (0.125)	0.018 (0.008)	2.195	0.167	1.8
Japan	25.011 (2.309)	-0.635 (0.150)	-4.247	0.429	3.190 (0.113)	-0.035 (0.007)	-4.730	0.482	96.6
Spain	4.711 (2.216)	0.447 (0.143)	3.119	0.288	1.415 (0.189)	0.058 (0.012)	4.729	0.482	6.0
Sweden	16.142 (1.384)	-0.104 (0.090)	-1.157	0.053	2.766 (0.098)	-0.008 (0.006)	-1.203	0.057	99.2
UK	5.599 (4.537)	2.681 (0.294)	9.126	0.776	2.662 (0.086)	0.068 (0.006)	12.252	0.862	7.1
USA	91.175 (33.322)	17.086 (2.158)	7.919	0.723	5.003 (0.072)	0.050 (0.005)	10.842	0.830	5.2
Others	-13.649 (24.976)	14.234 (1.617)	8.801	0.763	3.887 (0.108)	0.080 (0.007)	11.452	0.845	8.3

Source: *Calculated by the researcher (Figures in brackets indicate Standard Error)*

Table 8 above shows that the trend coefficient t-values are statistically significant at the 1% level. The R2 values were likewise good. The United States has the highest average yearly export value of US$17.08 million among nations that export carpets. The UK had the second-highest average annual export value, which was US$2.68 million. Australia came in third, with an average yearly export value of US$1.34 million. Japan and Germany had the lowest average yearly export values, at US$-0.63 million and US$-1.78 million, respectively. Australia had the highest growth rate for carpet exports, at 7.1% per year. The UK had the second highest growth rate, at 6.8% per year. Spain was third in terms of export growth rate, with a rate of 5.8% per year. The USA came in second with a rate of 5.0% per year, followed by Canada (0.44%), France (1.8%), and Italy (1.8%). Japan had the lowest rate of export growth, at -3.5% each year. Australia had the highest compound growth rate for exports at 7.3% per year, while Sweden had the lowest at 0.8% per year.

4. Major Findings

The analysis of India's export performance across major manufacturing commodities in 2016–17 reveals significant variations in export values across countries. Among leather product exporters, India's exports to the USA recorded the highest value at $837 million, followed by Germany at $627.3 million and the UK at $587.2 million. In the case of gems and jewellery, India's exports to the UAE were the highest at $13,822.1 million, with Hong Kong and the USA following at $12,925.6 million and $9,691.1 million, respectively. For chemical, pharmaceutical, and drug products, India's exports to the USA stood out at $7,002 million, while China and Germany recorded $932.1 million and $863.8 million, respectively. Engineering products showed

India’s exports to the USA as the highest at $7,366.6 million, followed by the UAE at $4,115.0 million and Singapore at $2,803.6 million. In the category of cotton yarn, fabrics, made-ups, and handloom products, India’s exports to the USA reached $2,333.5 million, Bangladesh ranked second with $1,056.0 million, and Germany third with $281.5 million. Among textile products, India’s exports to the UAE were the highest at $3,954.5 million, followed by the USA at $3,764.9 million and the UK at $1,637.1 million. For jute-manufactured products, India’s exports to the USA and the UK both reached $61.9 million, while Germany recorded $14.9 million. Lastly, in carpet exports, India’s exports to the USA led with $707.8 million, followed by Germany at $170.4 million and the UK at $79.7 million. These figures collectively highlight India’s dominant trade relationships with key global markets across multiple manufacturing sectors.

5. Annual Average Growth Rate

The analysis of India’s manufacturing export performance across major commodities reveals distinct patterns in the compound annual growth rates among different trading partners. For leather exports, Spain recorded the highest growth rate of 10.8 percent per year, while Russia showed the lowest at 2.8 percent. In the case of gems and jewellery, the UAE demonstrated the strongest growth at 24.8 percent per year, whereas Japan had the lowest at 2.1 percent. Among exporters of chemical, pharmaceutical, and drug products, China led with an impressive growth rate of 22.6 percent per year, followed by Brazil at 20.6 percent, while Hong Kong registered the lowest at 1.0 percent. Engineering product exports revealed that Italy achieved the highest growth rate of 17.2 percent per year, while Hong Kong recorded the lowest at 7.0 percent.

For cotton yarn, fabrics, made-ups, and handloom products, the USA attained the highest growth rate of 9.8 percent, followed by Bangladesh at 7.7 percent, whereas the UK had the lowest at just 0.4 percent. In textile exports, the UAE emerged as the leading destination with a 13.8 percent annual growth rate, while Japan’s growth was the lowest at 3.7 percent. In the jute manufacturing sector, Italy recorded the highest growth at 9.4 percent per year, while Turkey had the lowest at 0.9 percent. Finally, for carpet exports, Australia achieved the top growth rate of 7.1 percent per year, whereas Japan experienced a negative growth rate of -3.5 percent, indicating a decline in exports. These variations highlight the dynamic and region-specific performance of India’s manufacturing exports.

6. Compound Growth Rate

The analysis of India’s manufacturing export performance across major commodities reveals significant variations in compound annual growth rates among trading partners. In the case of leather exports, Spain recorded the highest growth rate at 11.4 percent per annum, while Russia showed the lowest at 2.7 percent. For gems and jewellery exports, the UAE achieved an exceptional compound annual growth rate of 28.2 percent, contrasting with Japan’s modest 2.1 percent. In the category of chemicals, pharmaceuticals, and drug products, China led with a growth rate of 25.4 percent per annum, whereas Hong Kong had the lowest at just 1.0 percent. Engineering product exports exhibited notable disparities as well, with Italy recording the highest growth at 18.7 percent and Hong Kong the lowest at 7.3 percent. For cotton yarn, fabrics, and made-up handloom products, the USA experienced the highest growth rate at 10.3 percent per annum, while Japan lagged behind at 1.4 percent. Regarding textile exports, the UAE once again dominated with a growth rate of 14.8 percent per annum, while Russia reported only 3.9 percent. In the jute manufacturing sector, Italy led with 9.8 percent growth, and Turkey registered the lowest at 0.9 percent. Lastly, carpet exports showed that Australia had the highest compound annual growth rate of 7.3 percent, while Sweden had the lowest at 0.8 percent. These findings highlight the diverse growth patterns across commodities and countries, underscoring the dynamic nature of India’s export performance during the study period.

7. Conclusion

A country's economy grows a lot when it exports goods that it makes. The growth of this sector shows how strong a country's economy is. It aids the Indian economy by making more things, creating jobs, and helping other parts of the economy. The Prime Minister's "Make in India" campaign is all about making India a manufacturing centre and getting the Indian economy known around the world. India thought that by the end of 2020, it would be the fifth-largest manufacturing country in the world. The government wanted to raise the share of manufacturing production in the economy to 25% of gross domestic product (GDP) by 2025. This would be a nine-percentage-point increase from the current level of 16%. The biggest amount of manufactured goods exported was in 2018–19, and the lowest was in 2000–01. The amount of manufactured goods exported rose steadily from US$35,181 million in 2000–01 to US$313,361 million in 2019–20. Its share of India's overall exports likewise kept going up, from 79% to 82.8% within the same time period. The "Make in India" program introduced by the Prime Minister of India is something that exporters should take advantage of. To make India a productive and affluent country, we need to make the most of our initiatives and resources to reduce the trade imbalance. So, in order to improve the export sector's performance, policies need to be put in place to make agriculture and manufacturing stronger in the future.

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