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An Analysis of Gems and Jewellery Industry in India

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Abstract

The Indian gem and jewellery export industry had its modern beginning in the 1960s and after that the sector never looked back. Gems and jewellery exports accounted for 14.46 per cent of India's total exports in 2012-13. The sector witnessed a CAGR of 18.05 per cent of India's exports of gems and jewellery during the period 1987-88 to 2017-18. The study conducts a detailed analysis of the role of gems & jewellery exports in total merchandise exports of India (commodity-wise and destination-wise). The present paper analyses the pattern of growth, structure, concentration and instability of gems & jewellery exports of India (both commodity-wise and geographical). The changes in structure of India's exports have been analysed by measuring the shares of gems & jewellery exports during the study period 1987-88 to 2017-18. The country-wise growth rates and structure have enabled us to identify the export potential countries for the Indian economy. The study is also an attempt to examine the present position and growth of gems and jewellery products with concentration (geographical as well as commodity-wise) and geographical instability in exports. In the end, study also discusses the various problems facing the gems and jewellery sector in India; such as dependence on imports, changing fashion, imbalance growth of products, manual way of crafting, various problems regarding labourers, financial problems, procedural hardships and unemployment etc.

Key Words

Gems and Jewellery, Exports, Imports, Direction

INTRODUCTION

The gems and jewellery industry is a leading foreign exchange earner

and also one of the fastest growing industries in the country. This sector consists of two major segments i.e. gold jewellery and diamonds. The significance of the gems and jewellery industry in the Indian economic scenario is a development of the last three or four decades. The gems and jewellery sector is a major foreign exchange earner. Due to its importance in India's foreign trade, the government has taken many initiatives to boost the sector. The government, for instance, has declared this sector as a thrust area for exports. During the global economic meltdown especially, the government has dealt out many initiatives for the badly-affected sector (Parasakthi and Dhanalakshmi, 2015).

In 1966-67, the export turnover of the Gems & Jewellery industry was just Rs. 220 million representing a 3 per cent of total merchandise exports. However, it has now grown to become one of the leading export-oriented industries in India recording an export turnover of around Rs. 875 billion during 2010-2011 and contributing 16 per cent of total exports, making it a significant foreign exchange earner for the country. India is the world's largest diamond processing (cutting and polishing) country with around 1 million processors treating over 57 percent of the world's rough diamonds by worth. Processing is done on rough diamonds in a complete range of sizes and qualities, including stones larger than 10 carats. In terms of carat, India's contribution in this sector is about 80 percent of the global market.

India is one of the eight key world markets, the others being the USA, UK, Middle East, Turkey, Japan, Italy and China. India is the also the large consumer of gold in the world. While a largest portion of gold jewellery, manufactured in India, is for domestic consumption, a significant portion of rough, uncut diamonds, processed in the form of either polished diamonds or finished diamond jewellery is exported.

REVIEW OF LITERATURE

Arora (2014) studied the trade of gems and jewellery from the period 2001-02 to 2010-11. The study found CAGR of 14.7% for the gems and jewellery industry in India. Diamonds are one of the most important constituents of gems and jewellery trade of India. Against this background, the present research paper analyses the growth of diamonds trade of India vis-à-vis gems and jewellery trade and exports from India. Kumar (2013) analysed the Indian gems and jewellery industry with problems and future prospects for the period 2009-2010. This sector witnessed a CAGR of 16.59 per cent of India's exports of gems and jewellery during the period 1990-91 to 2009-10. However, gems and jewellery sector is facing various problems such as dependence on imports, changing

fashion, imbalance growth of products, manual way of crafting, various problems regarding labourers, financial problems, procedural hardships and unemployment etc.

Aggarwal *et al.* (2017), Gems and jewellery industry has gradually become important for the Indian economy due to its contribution in India's total exports. This sector accounts for 14.98% of the country's total merchandise exports estimated at US$ 262290.13 million in 2015- 16. In last four years, export of gems and jewellery decreased by 12 percent and exports got affected by the rising cost of raw materials, depressed demand and slowdown of markets.

OBJECTIVES OF THE STUDY

The present paper seeks to achieve the following objectives :

1. To estimate the growth and structure pattern (commodity and destination-wise) of gems and jewellery exports of India during 1987-88 to 2012-13.
2. To analyse the commodity concentration of gems and jewellery exports among merchandise exports of India.
3. To analyse the geographical concentration of gems and jewellery exports among the direction of India's exports.
4. To identify different factors affecting gems and jewellery exports from India.

Database

The present study is based on secondary data and also, it conducts a detailed analysis of the role of gems & jewellery exports in total merchandise exports of India (commodity-wise and destination-wise). The data has taken from Directorate General of Commercial Intelligence and Statistics (DGCIS) published by Reserve Bank of India (2017-18) for the period 1987-88 to 2017-18. Present study has examined the pattern of growth, structure, concentration and instability of gems and jewellery exports of India (both commodity-wise and geographical).

The changes in structure of India's exports have been analysed by measuring the shares of gems & jewellery exports during the study period 1987-88 to 2012-13. The compound growth rates have also been calculated for the whole period and decade-wise i.e.1991-92 to 2000-01 and 2001-02 to 2010-11. The country-wise growth rates and structure have enabled us to identify the export potential countries for the Indian economy. The study is an attempt to examine the present position and growth of gems and jewellery products along

with concentration (geographical as well as commodity-wise) and geographical instability in exports.

METHODOLOGY

In the present study, data has been analysed by calculating growth rates, percentage shares, an instability and concentration indices through appropriate methods. A detailed methodology used in the study is explained below :

(a) Growth Rates of Exports

In order to study the growth pattern of exports (commodity-wise and destination-wise), the compound growth rates have been calculated for the period 1987-88 to 2012-13 and decade-wise i.e.1991-92 to 2000-01 and 2001-02 to 2010-11. The growth rates have been calculated by fitting the exponential function as shown below :

$$Y_t = ab^t e^u$$

Transforming the equation in linear form

$$\text{Log } Y_t = \log a + t \log b + U \log e$$

Where,

Y_t = value of exports in year t

t = trend variable

u = disturbance term

a, b are constants.

From the estimated values of regression co-efficient 'b' the compound rate of growth 'r' was calculated as follows :

$$r = (\text{antilog} \quad - 1) \times 100$$

Where, = estimated value of b.

(b) Concentration / Diversification

In the literature, various measures of concentration are available. Appropriateness of a measure depends upon the nature of data and the purpose of using the measure (Erlat and Akyuz, 2001; Bailey and Boyle, 1971; Togan, 1994). In the analysis of commodity concentration, the present study uses five concentration measures.

The share of each commodity or destination in total exports of India for the year t expressed as :

$$P_{it} = Q_{it} / Q_t$$

Here, i = 1.....m and t = 1.....n

Let m represent the number of commodity groups and Qit represents the export of ith commodity or exports to i^{th} country at time t. The sum of Q_{it} from 1 to m will be Q_t.

In the present analysis for category-wise exports of India m is equal to 11, for major category-wise study and 43 for sub-category-wise study. In destination-wise analysis of exports m is equal to 50, while selected commodities to principal countries are eleven. The value of n is equal to 26 (total number of years in the analysis).

First group comprises discrete measures of concentration. In such kind of concentration measures, only a few commodities' or destinations' shares have been taken for the analysis. Within discrete measures, the first measure is concentration ratio that can be expressed as follows :

(1) Concentration Ratio (CR) : It shows the total share of k commodities/ destination, which have the largest shares in total exports of India. Therefore, it considers the share of first few commodities/destinations to measure the concentration levels in exports.

It is denoted by CR(k) and calculated as :

$$CR\ (k)_t = \sum_{i=1}^{k} P_{it}$$

Where *k* is less than the total number of export commodities/countries.

This measure ranges from zero to one. The value of concentration closes to zero showing low concentration. If Concentration Ratio is near unity that implies that the largest category/ destination of exports.

In the concentration analysis, second group includes measures which are known as summary measures. These are as follows :

(2) Hirschman-Herfindhal Index (HH) : The Hirschman- Herfindhal Index (HH) is calculated by taking the square of export shares of all export commodities/destinations in the study. In simple terms, this measure of concentration consists of the sum of shares of exports commodities / destinations (i.e. Pit's) weighted by themselves. This measure is calculated as below :

$$HH_t = \sum_{i=1}^{m} P_{it}^2$$

In this index, greater weight has been given to the larger export categories/country and even it reaches a value of unity i.e. one when the export of only one category or sub-category (high concentration).

(3) Rosenbluth-Hall-Tideman (RHT) : As per this measure of concentration, exports share of each commodities (i.e. Pit) are arranged in

descending order as P_{it} are weighted by their ranks, *i*.

$$RHT_t = \frac{1}{2\sum_{i=1}^{m}(i.P_i)-1}$$

The value of RHT ranges between $1/(2m - 1)$ to 1.

Third group of concentration measures have collective features of both discrete as well as summary measures. Under which we have :

(4) Comprehensive Measure of Concentration Index (CCI) : As similar to the measure of concentration RHT, CCI requires the export share P_i to be sorted in descending order. However, CCI's main focus is on the largest P_{it} i.e. P_{1t} which is the highest share of a category/ country in total exports. The remaining Pit's are used to adjust according to the formula :

$$CCI_t = P_{it} + 2\sum_{i=1}^{n} P_i^2\left[1+\left(1-P_{it}\right)\right]$$

This index also produces a value of unity in the case of high concentration.

(c) Measures of Export Instability

In order to find out the extent of export instability, nine different measures of instability have been used in the analysis. These measures are given by different economists in the literature. These different indices of instability are used to measured export fluctuations for over all period of study (i.e. 1987-88 to 2012-13).

(1) Export instability can also be measured with the help of "Normalized Standard Error" which is expressed as the Standard Error of Estimate. Standard Error of Estimated can be measured by fitting linear trend as well as exponential trend. The measure based on linear trend is as follows :

$$\text{Export Earning Instability Index (EEII)} = \left(\frac{SEE}{\bar{X}}\right) \times 100$$

Where $SEE = [\Sigma e_i^2 / (n-k)]^{1/2}$

$e_i = (X_t - \alpha - \beta_t)$ expressed as the difference between observed and estimated values in year t; n is number of years and k is number of variables.

$$\text{Thus, } \left[\frac{\Sigma\left(X_t-\alpha-\beta_t\right)}{n-k}\right]^{1/2} \times \frac{100}{\bar{X}}$$

The estimated value of Y_t can be measured by estimating the values of

intercept i.e. α and slope i.e. β, while average of export commodity is defined as $\bar{X} = \frac{\Sigma X}{n}$

In this measure the OLS equation is $X_t = \alpha + \beta_t + \mu$

Where, μ is the error term;

n is number of observations in the series. This measure of instability is independent of the rate of growth of country's exports. In other words, this method estimates the coefficient of variation of the values, corrected for trend.

(2) The calculation of export instability through exponential trend is similar to the measure based on linear trend. The instability measured through linear trend has one major shortcoming that it imagines a constant absolute increase in data which may or may not be true. Hence, it would be quite improper if the data shows exponential trend path.

Therefore, the measure based on exponential trend has been calculated as :

$$\text{Export Earning Instability Index (EEII)} = \left[\frac{SEE}{\bar{X}}\right] \times 100$$

Where SEE is defined as

$$\left[\frac{\Sigma e_i^2}{N}\right] \times \frac{100}{\bar{X}}$$

$$e_i = \left(X_i - \alpha e^{\beta i}\right)$$

$$\left[\frac{\Sigma\left(X_i - \alpha e^{\beta i}\right)^2}{N}\right]^{1/2} \times \frac{100}{\bar{X}}$$

EMPIRICAL ANALYSIS

The gems and jewelry industry in India is mostly concentrated in the unorganized sector. Gems and Jewellery exports comprise of diamonds, gold jewellery, silver jewellery etc. Gems and jewellery exports make significant contribution to country's overall export earnings and in the foreign exchange earnings. Table 1 depicts the share of gems and jewellery exports in total merchandise exports of India. It also shows compound growth rates for the whole period and decade-wise i.e.1991-92 to 2000-01 and 2001-02 to 2010-11.

Table 1

Structure of Gems & Jewellery Exports in Total Merchandise Exports of India

Commo-dity/year	Agriculture and Allied Products	Ores & Minerals	Leather & Manuf-actures	Chemical & Related	Enginee-ring Goods	Textile & Textile	Gems & Jewellery	Handicraft (excluding Handmade Carpets)	Other Manufac-tured Goods	Petroleum Products	Others
1987-88	21.18	4.96	7.98	6.55	9.53	24.93	16.67	1.44	0.69	4.14	1.92
1988-89	17.3	5.91	7.52	7.81	11.46	21.74	21.71	1.47	0.65	2.5	1.92
1989-90	17.17	6.2	7.05	9.35	12.03	22.55	19.15	1.34	0.59	2.52	2.04
1990-91	18.49	5.34	7.99	9.52	12.4	23.93	16.12	1.23	0.43	2.88	1.67
1991-92	17.93	5.2	7.1	10.46	12.61	26.27	15.33	1.35	0.48	2.32	0.95
1992-93	16.92	3.98	6.89	9.64	13.38	27.01	16.57	1.49	0.75	2.57	0.99
1993-94	18.11	3.99	5.84	10.69	13.66	24.61	17.97	1.43	0.7	1.79	1.21
1994-95	16.05	3.75	6.12	11.65	13.32	27.03	17.09	1.47	0.81	1.58	1.12
1995-96	19.13	3.7	5.51	11.31	13.81	25.26	16.59	1.36	0.84	1.43	1.06
1996-97	20.5	3.5	4.8	11.69	14.83	25.8	14.2	1.42	0.8	1.44	1.01
1997-98	18.93	3.03	4.73	12.56	15.24	25.85	15.27	1.5	0.67	1.01	1.2
1998-99	18.17	2.69	5.00	12.07	13.44	26.69	17.85	1.91	0.69	0.27	1.23
1999-00	15.23	2.49	4.32	12.78	13.99	26.67	20.37	1.82	0.74	0.11	1.48
2000-01	13.4	2.59	4.36	13.21	15.3	25.33	16.57	1.48	0.8	4.2	2.76
2001-02	13.46	2.88	4.36	13.81	15.88	23.29	16.67	1.25	0.89	4.84	2.68
2002-03	12.73	3.79	3.51	14.14	17.13	22.04	17.13	1.49	0.9	4.89	2.26

Contd.

Contd. Table 1

2003-04	11.8	3.71	3.39	14.8	19.43	20.04	16.56	0.78	0.96	5.59	2.95
2004-05	10.14	6.08	2.9	14.9	20.77	16.23	16.47	0.45	0.98	8.37	2.71
2005-06	9.91	5.98	2.62	14.33	21.07	15.91	15.06	0.45	0.95	11.29	2.44
2006-07	10.04	5.54	2.39	13.72	23.4	13.75	12.64	0.35	0.96	14.78	2.43
2007-08	11.31	5.6	2.15	13.01	22.94	11.92	12.08	0.31	0.8	17.41	2.46
2008-09	9.59	4.27	1.95	12.42	25.87	10.95	15.29	0.16	0.73	14.68	4.1
2009-10	9.95	4.86	1.89	12.85	21.47	11.14	16.27	0.13	0.88	15.72	4.84
2010-11	9.65	3.44	1.56	11.51	23.18	9.66	16.14	0.10	0.84	16.52	7.4
2011-12	12.25	2.76	1.57	12.13	22.17	9.16	14.66	0.09	0.83	18.28	6.1
2012-13	13.52	1.85	1.62	13.29	21.72	9.10	14.46	0.07	0.87	20.04	3.46
2013-14	13.99	1.78	1.87	13.78	21.78	9.20	14.78	0.06	0.56	20.00	2.78
2014-15	14.23	1.67	1.56	13.99	21.98	9.40	14.94	0.03	0.23	21.02	1.78
2015-16	14.45	1.56	1.67	13.22	21.84	9.70	14.67	0.04	0.24	21.56	1.09
2016-17	14.77	1.89	1.87	13.87	21.76	9.56	14.87	0.03	0.34	21.87	0.66
2017-18	14.98	1.99	1.84	13.03	22.02	9.78	14.98	0.06	0.66	21.98	0.87
1991-92 to 2000-01	18.58	9.78	11.59	22.79	20.76	19.65	20.45	23.25	24.39	-12.27	19.8
2001-02 to 2010-11	15.18	28.24	7.99	18.36	25.88	7.92	17.11	-9.89	18.72	42.73	25.33
1987-88 to 2017-18	15.67	17.52	11.01	21.39	23.19	14.11	18.05	5.85	21.2	32.48	26.08

Source : Directorate General of Commercial Intelligence and Statistics (DGCIS)

Figure 1 : Structure of Exports of Gems & Jewellery in Total Merchandise Exports During 1987-88

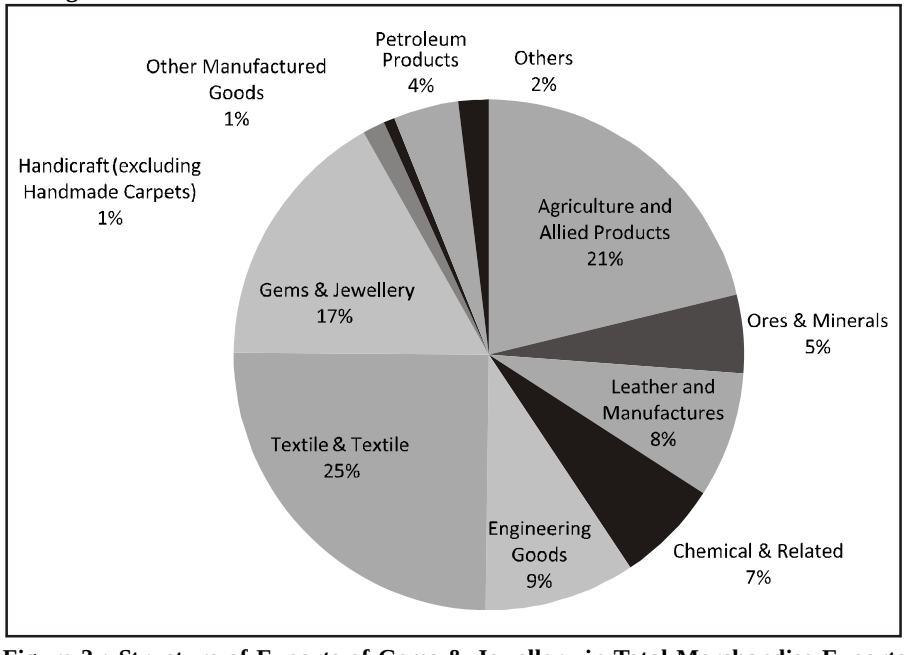
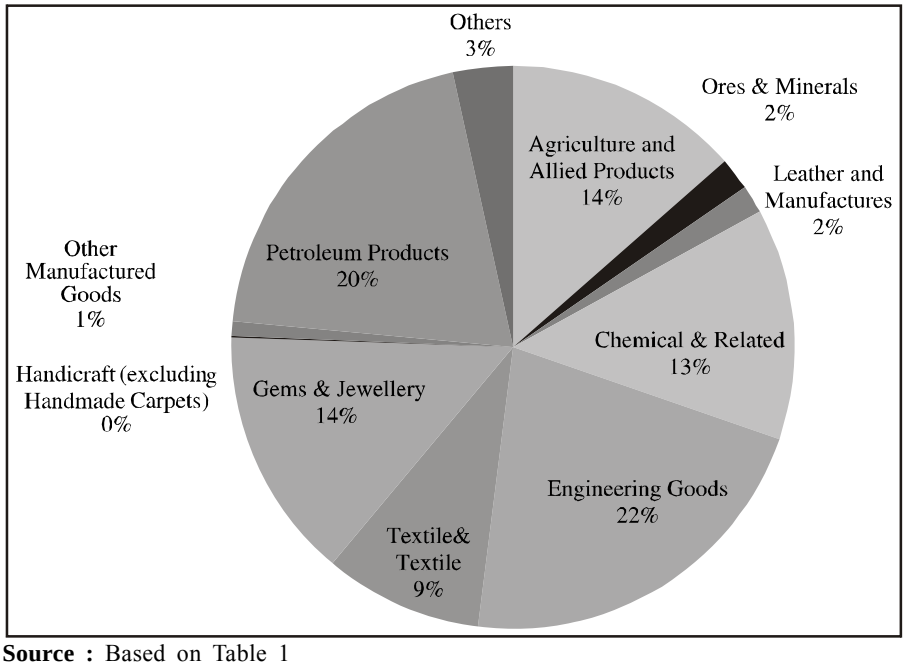


Figure 2 : Structure of Exports of Gems & Jewellery in Total Merchandise Exports During 2017-18



Source : Based on Table 1

Gems & jewellery exports grew at the rate of 18.05 per cent during period 1987-88 to 2017-18. The decade-wise growth rate for the period of 1991-92 to 2000-01 was 20.45 per cent, which declined to 17.11 per cent for the period of 2001-02 to 2010-11. The overall growth for the period 1987-88 to 2017-18 observed to be 18.05 per cent.

The exports share of gems & jewellery has been fluctuating during the period of study. Gems and jewellery accounted for 16.67 per cent of total merchandise exports of India in 1987-88, which declined to 14.46 per cent in 2012-13. The highest share was 20.37 per cent for the year 1999-00 and lowest was 12.08 per cent for the year 2007-08.After the liberalization period, gems and jewellery production declined slightly due to non-availability of good quality rough gemstones, breaking of single channel supply and growing competition, demand contraction in developed countries resulting from global recession etc. (Sahni, 2014).

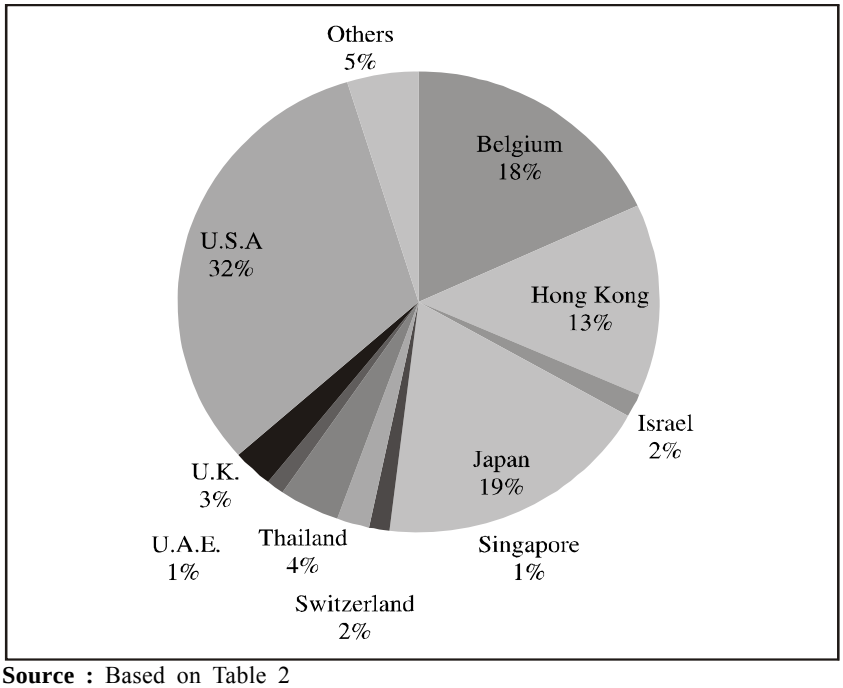
Table 2 shows the growth performance and shares of India's gems & jewellery exports to different countries. India exports gems & jewellery to Belgium, Hong Kong, Israel, Japan, Singapore, Switzerland, Thailand, UAE, UK and USA. The compound growth rate was found to be higher for UAE (39.01 per cent) followed by Israel (20.34 per cent), Hong Kong (18.86 per cent) and other countries (19.92 per cent), while exports to Japan have grown at lower rate during the period 1990-91 to 2012-13. Decade-wise growth rates were found to be higher in the first decade of 1991-92 to 2000-01for all the markets except UAE. Although the exports share of gems & jewellery to USA declined from 31.76 per cent in 1990-91 to 15.54 per cent in 2012-13, but still it constituted higher share in exports. The share of exports to UAE significantly increased from 1.19 per cent to 43.15 per cent and that of Hong Kong increased from 13.46 per cent to 24.07 per cent for the respective years. UAE and Hong Kong are found to be top exporting markets, while Singapore, Switzerland, Thailand and UK have relatively lower shares of gems & jewellery exports from India's during the study period.

Table 2
Direction of Gems & Jewellary Exports

Comm/ Country	Bel-gium	Hong Kong	Israel	Japan	Sing-apore	Switz-erland	Thai-land	U.A.E.	U.K.	U.S.A.	Others
1990-91	18.15	13.46	1.62	18.71	1.36	2.21	4.04	1.19	2.73	31.76	4.76
1991-92	16.78	14.18	2.02	16.86	1.54	1.99	3.48	4.15	2.12	32.40	4.47
1992-93	14.57	17.36	2.16	14.07	1.63	1.35	2.53	2.54	1.66	37.65	4.48
1993-94	14.46	22.56	2.41	13.69	2.03	1.05	3.01	2.18	1.34	33.46	3.81
1994-95	13.80	24.22	2.20	12.88	1.65	1.36	3.57	1.94	1.51	33.11	3.77
1995-96	13.66	23.96	2.60	14.07	1.81	1.24	4.35	1.78	1.59	31.06	3.89
1996-97	14.33	22.77	2.60	9.75	2.30	1.70	3.59	2.17	1.75	34.46	4.58
1997-98	13.84	22.11	3.69	6.21	1.60	1.59	1.77	3.96	3.15	37.04	5.02
1998-99	13.96	20.84	3.65	5.80	0.96	1.77	2.07	4.16	2.47	38.66	5.66
1999-00	11.40	24.19	4.56	5.99	1.57	1.76	2.29	3.45	1.78	38.96	4.05
2000-01	12.31	23.63	3.71	5.22	1.62	1.94	2.58	5.96	1.96	36.96	4.12
2001-02	11.80	23.04	3.53	5.22	1.66	1.65	3.25	7.42	2.33	35.98	6.45
2002-03	11.35	20.80	4.57	4.62	2.85	1.28	2.57	7.33	2.25	37.05	5.32
2003-04	9.97	22.08	4.51	3.36	1.70	1.41	1.91	12.99	2.09	34.99	4.98
2004-05	9.81	19.88	5.07	3.63	4.09	1.24	2.13	18.44	1.61	29.40	4.70
2005-06	9.60	21.44	5.24	3.13	7.99	0.92	2.12	16.02	1.46	28.15	3.92
2006-07	9.20	21.67	5.48	2.69	0.95	0.74	2.13	20.65	1.74	29.76	4.98
2007-08	9.98	25.91	5.27	2.29	1.10	1.08	1.98	20.52	1.45	25.27	5.15
2008-09	6.71	18.83	2.84	1.33	1.96	0.74	1.15	38.48	2.02	16.41	9.54
2009-10	5.66	21.49	2.59	0.88	2.06	0.37	1.07	42.66	1.20	16.27	5.75
2010-11	5.91	21.40	2.38	0.69	1.17	0.44	0.95	41.05	0.86	13.02	12.11
2011-12	8.51	24.95	3.25	0.83	1.37	0.84	1.35	36.49	1.13	15.10	6.17
2012-13	5.61	24.07	2.66	0.80	1.47	0.45	1.45	43.15	1.12	15.54	3.67
2013-14	6.46	27.00	3.17	0.84	1.28	0.85	1.82	30.8	0.98	18.76	8.04
2014-15	6.48	29.57	2.86	0.68	1.19	0.71	1.61	29.75	1.16	20.29	5.69
2015-16	5.93	27.74	2.55	0.63	1.09	0.7	1.6	32.86	1.31	21.94	3.65
2016-17	5.69	29.56	2.3	0.71	1.3	0.49	1.4	31.94	1.06	22.32	3.22
2017-18	6.46	27	3.17	0.84	1.28	0.85	1.82	30.8	0.98	18.76	8.04
1991-92 to 2000-01	16.31	27.35	33.12	4.94	19.26	19.92	13.47	29.32	21.37	22.67	21.44
2001-02 to 2010-11	9.00	16.30	14.71	-2.30	15.35	1.44	6.16	45.34	11.41	6.73	21.00
Overall period	12.16	18.86	20.34	1.09	17.78	11.00	11.56	39.01	14.63	12.99	19.92

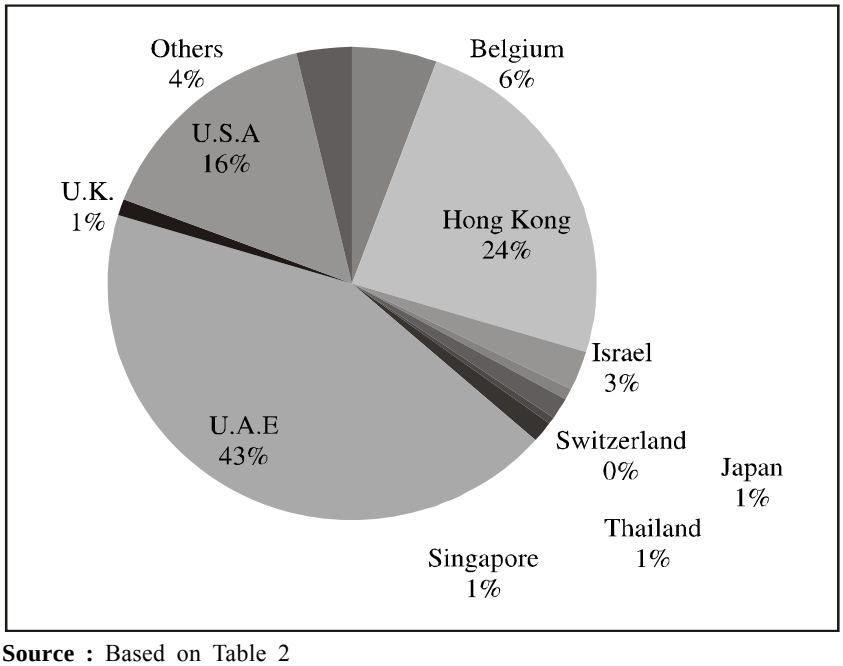
Source : Author's Calculations

Figure 3 : Destination-wise Share of Exports of Gems & Jewellery from India (1990-91)



Source : Based on Table 2

Figure 4 : Destination-wise Share of Exports of Gems & Jewellery from India (2017-18)



Source : Based on Table 2

An Analysis of Concentration/Diversification of Gems & Jewellery Exports (commodity as well as Country-wise)

Export structure is said to be concentrated when a country's exports comprise a limited numbers of commodities/products or a few number of trading clients/partners. When a country's exports depend upon one commodity or product to only one trading country's, it is defined as perfectly concentrated export portfolio. Conversely, a country export structure is said to be diversified when its exports comprise a large number of commodities and the country trades with a large number of trading partners.

Table 3
Category-wise Frequency of Commodities (1987-88 to 2017-18)

Commodities	CR(2)	CR(4)	CR(8)
Agriculture and Allied Products	9	16	26
Ores and Minerals	–	–	26
Leather and Manufactures	–	–	19
Chemical and Related Products	–	10	26
Engineering Goods	11	26	26
Textile and Textile Products	18	20	26
Gems and Jewellery	9	26	26
Handicraft (Excluding Handmade Carpets)	–	–	–
Petroleum Products	5	7	23
Others Exports	–	–	7

Source : Author's Calculation

The exports of textile and textile products are in the top two categories for 18 years of the study period, whereas exports of engineering goods, agriculture and allied products and gems and jewellery dominated top 2 categories out of 11 categories for 11 years and 9 years (for agriculture and allied products and gems and jewellery) years as shown in Table 3. The exports of petroleum goods from India dominated in top 2 categories for 5 years. In case of CR(4), exports of engineering goods and gems and jewelry are in top 4 categories for all the 26 years. Whereas, the exports of textile and textile products, agriculture and allied products are dominating in top 4 categories for the 20 years and 16 years. The remaining categories i.e. the exports of chemical & related products for 10 years and petroleum products for 7 years come under CR(4). In CR(8), the exports of agriculture and allied products, ores and minerals, chemical and related products, engineering goods, textile and textile products

and gems and jewellery are in top 8 categories for all 26 years of study period. While the exports of petroleum products for 23 years, leather and manufactures for 19 years and other exports for 7 years are in top 8 categories.

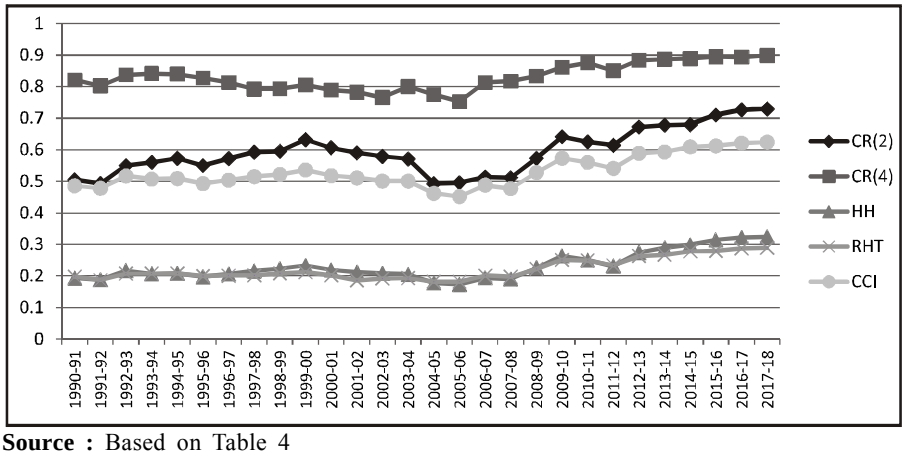
Table 4
Geographical Concentration of Gems & Jewellary Exports

Years/Concentration	CR(2)	CR(4)	HH	RHT	CCI
1990-91	0.505	0.821	0.193	0.197	0.486
1991-92	0.493	0.802	0.188	0.187	0.478
1992-93	0.55	0.837	0.217	0.207	0.517
1993-94	0.560	0.842	0.207	0.207	0.507
1994-95	0.573	0.840	0.208	0.208	0.509
1995-96	0.550	0.827	0.197	0.200	0.493
1996-97	0.572	0.813	0.206	0.201	0.504
1997-98	0.592	0.792	0.216	0.202	0.515
1998-99	0.595	0.793	0.223	0.208	0.522
1999-00	0.632	0.805	0.233	0.212	0.536
2000-01	0.606	0.789	0.219	0.202	0.518
2001-02	0.590	0.782	0.212	0.186	0.511
2002-03	0.579	0.765	0.208	0.192	0.501
2003-04	0.571	0.800	0.205	0.193	0.501
2004-05	0.493	0.775	0.178	0.182	0.462
2005-06	0.496	0.752	0.173	0.182	0.452
2006-07	0.514	0.813	0.194	0.201	0.488
2007-08	0.512	0.817	0.190	0.197	0.477
2008-09	0.573	0.833	0.226	0.222	0.528
2009-10	0.641	0.862	0.263	0.251	0.573
2010-11	0.625	0.876	0.250	0.249	0.560
2011-12	0.614	0.851	0.231	0.233	0.541
2012-13	0.672	0.884	0.274	0.263	0.589
2013-14	0.678	0.887	0.289	0.267	0.593
2014-15	0.679	0.889	0.298	0.278	0.609
2015-16	0.710	0.895	0.314	0.279	0.612
2016-17	0.726	0.894	0.321	0.287	0.621
2017-18	0.729	0.899	0.324	0.289	0.624

Source : Author's Calculations

The values of geographical concentration of gems and jewellery exports have been shown in Table 4. The concentration values given by CR(2) are higher than 0.50 for the study period except 1991-92, 2004-05 and 2005-06 (i.e. less than 0.50) and higher value has been found to be 0.672 for the year 2012-13. Hong Kong and USA are top two exporting countries of India for 21 years and 18 years of the study period, whereas UAE and Japan for 5 year and 2 years only. CR(4) gives concentration values which are higher than 0.75 and lower than 0.88 for all the years during study period. USA and Hong Kong are in top four countries for all the years, whereas Belgium, UAE and Japan fall under CR(4) for 20 years, 13 years and 10 years respectively.

Figure 5 : Geographical Concentration of Gems & Jewellary Exports



Source : Based on Table 4

The HH concentration measure gives values higher than 0.16 for all the years and high concentration value is 0.274 for the year of study of 2012-13. The RHT concentration measure gives the values which are higher than 0.18 and lower than 0.26. The concentration measure H ranges from 0.13 to 0.20 throughout the study period. The concentration values given by CCI are higher than 0.45 for all the years and high value of concentration is 0.586 for the year 2012-13. All the measures show increase in concentration during the period of study.

The time-series plot of geographical concentration of leather exports with the help of different measures shown in Figure 5. All the measures provide similar movements over the period under study. The values computed by CR(4) are higher than other measures, while RHT and HH have similar low values in the study period.

In general, export instability can be defined as year to year fluctuations in export earnings. Mathematically, it can be expressed as the difference between actual value of export and estimated value of export (Devkota, 2004). Export instability is an average of the unexpected or unpredicTable changes in export revenue over a given period of time (Glezakos, 1973).

Table 5

Geographical Export Instability of Gems and Jewellery (1987-88 to 2017-18)

Countries	LEII	EEII
Belgium	36.51	24.78
Hong Kong	58.64	18.48
Israel	33.83	46.36
Japan	25.09	25.34
Singapore	76.42	79.58
Switzerland	39.81	39.29
Thailand	36.28	24.78
U.A.E.	79.44	37.37
U.K.	36.76	29.56
U.S.A	18.97	23.96
Others	90.18	78.70

According to the measure of LEII, the value of geographical export instability of India's gems & jewellery exports has been observed to be higher in case UAE, Singapore and other countries. LEII measure of instability also shows relatively lower values of geographical export instability in case of USA, Japan and Israel. On the contrary, EEII measure has been found to be higher value of instability in case of Singapore, Israel and other countries. India's exports of gems & jewellery exports to Hong Kong, Japan and USA show relatively lower export instability as per EEII measure.

MAJOR CHALLENGES FACED BY GEMS & JEWELLERY INDUSTRY IN INDIA

Firstly, gems and jewellery industry is highly dependent on import for meeting its raw material requirements and among the imported commodities, rough diamonds account for almost 50% of the imports. India imports rough diamonds mainly from Belgium, the UK, Israel and the UAE etc. while gold jewellery is

imported from Switzerland, South Africa, the UAE and Australia etc.

Secondly, Gems and Jewellery industry is influenced by the exchange rate (rupee/dollar) because it is export & import-oriented industry. Any variation in the exchange rates directly affects the players of the market (Lamba and Saini, 2015)

Thirdly, Global marketing requires keeping pace with changing fashion of Gems and Jewellery particularly in the context of very high prices of diamond, gold and silver. Due to change of fashion, demand starts decreasing and eventually it finishes. This situation blocks the manufacturer's capital and huge stock is collected.

Fourthly, although India is the dominant player as a processing hub for diamond, but it faces future threats in terms of competition from various countries; one of them is China, due to cheap economic labour, infrastructure and a welcoming government. Technology is another aspect where the Indian gems and jewellery industry faces a major threat from China. The diamond producing nations are also building infrastructure for diamond processing to gain economic advantages.

Lastly, gems and jewellery sector comprises a big range of products like cut and polished diamonds, Gold jewellery, non-gold jewellery, coloured gemstones, pearls, costume/fashion jewellery, rough diamonds and synthetic stones. The discriminative feature of the industry is that, too, much emphasis has been given on one item, i.e., diamonds. Diamonds alone account for about 85 per cent the total exports of gems and jewellery. On the other hand, very little attention is paid to utilize the export potential of other items of gems and jewellery (Kumar, 2013)

Some of the factors related to workforce in India are as under :

Firstly, the manpower associated requires a feast of practical knowledge, despite that the number of training institutions linked are very less and only put up conceptual knowledge which are inadequate.

Secondly, Casteism is blindly followed in this sector; distinct castes have possession of specific works of processing. On an account of this outlook, inefficient persons have entered in this occupation whereas workers with real aptitude are kept out of the industry.

Thirdly, the workers are facing despair situation due to ill-suited working conditions and lack of set schedule. When required they work for more than 12 hours and in situation of no work labourers are left helpless.

CONCLUSION

The study shows that there is a continuous increase in the export of gems and Jewellery in India. Gems and Jewellery industry plays a vital role in the development of an economy. It can expand its markets in the global economy and can be recognized as a global to the exporters of the other countries and prove to be equally good in the export. India's merchandise exports concentrated to gems and jewellery exports among top two exporting commodities for 9 years, while it concentrated among top four and eight commodities through all the period of study. Although the exports share of gems & jewellery to USA declined from 31.76 per cent in 1990-91 to 15.54 per cent in 2012-13, but still it constituted higher share in exports. The share of exports to UAE significantly increased from 1.19 per cent to 43.15 per cent and that of Hong Kong increased from 13.46 per cent to 24.07 per cent for the respective years. Value of geographical export instability of India's gems & jewellery exports has been observed to be higher in case of UAE, Singapore and other countries. However, gems and jewellery sector is facing various problems for its survival from machine-made goods and efforts must be made for revival and survival of traditional gems and jewellery goods.

In the end, the study suggests the needful actions that should be followed by the government in order to increase gems & jewellery exports from India. As imported raw material is the basic requirement of the trade, therefore, it is necessary that the rough material should be available in good quality, sufficient quantity at reasonable prices. It should establish more designing institutes of jewellery patterns especially in major cities. There should be a provision to organize trade fairs and exhibitions. As the markets have become international, natural exchange or near orientation of techniques and scientific methods can be made.

The government must liberalize the custom duties and procedures.

The government has to encourage the domestic exporters and help them to export their products in International Market.

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