

Gem and Jewellery Skill Council of India (GJSCI)

Skilling Indian Gems & Jewellery Sector

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Prepared by



ICRA Management Consulting Services Limited

Skilling Indian Gems and Jewellery Industry, 2014

1. Foreword

The Indian gems and jewellery industry is well established and recognised world over for its craftsmanship and variety. It is labour intensive and involves not just workmanship but a lot of patience and dedication to the art of jewellery making. The industry employs about 4.6 million persons directly and employment is expected to double in the next 10 years.

In the post-Gold control era, i.e., since mid-1990s, the industry is undergoing transformation. While on the one hand, there is greater emphasis on multiplicity of products which is driven by demand, on the other hand competition is driving mechanisation and technology adoption. This poses a challenge to the industry which has been dependent on traditional craftsmen who manufacture exquisite products by hand. The dilemma is how to retain this traditional talent which India is well known for without losing out to the rapidly mechanising segment that is process driven rather than craftsmanship? While this debate may take its own course, it is well accepted that both kinds of workers will be required in the coming years.

In order to attract the large number of workers required in the next 20 years, it is essential that the industry initiates measures such as promoting and supporting training and certification among new and existing employees; increasing minimum wages; providing statutory benefits as is essential now; starting welfare and education for the families; creating career progression paths; providing better work condition; and bringing in the well-deserved respectability or status to the profession.

This report captures the findings of a study conducted for the Gems and Jewellery Skill Council of India (GJSCI) by ICRA Management Consulting Services Limited (IMaCS) to develop National Occupational Standards in the Indian gems and jewellery sector. The report presents aspects of the precious metal and gemstone polishing industries that may aid skill development in the sector, given its strengths and constraints.

The report traces the regulatory environment that has affected the industry. It is followed by the benefits of liberalisation and lifting of these regulations. The report captures the processes and emerging trends in the industry. Finally, it presents the existing segment-wise employment and the impact of changing scenario on employment in the coming years. We hope that this report presents a comprehensive view on the Indian gems and precious-metal jewellery industry.

Dharmesh Sodah

2. Acknowledgement

The National Skill Development Corporation's (NSDC) initiative, to mandate various sector skill councils (SSC) to develop National Occupational Standards, emphasises on industry participation in the process.

IMaCS team expresses its gratitude to the Gems and Jewellery industry for contributing to this study. We specially thank the following organisations and persons for their active support: sub-committee members of the five sub-sectors, All India Gems and Jewellery Trade Federation (GJF), Gem and Jewellery Export Promotion Council (GJEPC), Indian Diamond Institute (IDI), Indian Institutes of Gems and Jewellery (IIGJs), Jaipur Jewellers Association Jaipur (JAJ) and SEEPZ Gems & Jewellery Manufacturers Association (SGJMA). We also thank the 230 participant jewellery manufacturing and retailing companies who have either provided access to their units for the study and their artisans and staff who have provided invaluable inputs or validated our work.

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3. Executive summary

India is among the fastest gold-jewellery demand centres in the world. As is well known, the country is also among the largest consumers of gold. Almost all of the gold demand and other key inputs are met with by imports. Despite the high level of imports, India has earned a reputation for being a large consumer of precious-metal jewellery and a preferred exporter of finished products across the world. The craftsmanship offered by Indian goldsmiths, the unparalleled variety of designs found in Indian jewellery and cost competitiveness have been the key attractions for buyers.

The Indian goldsmith is among the most skilled in the world. The bench-workers in the coloured gemstones- and diamonds-processing industry cater to demands for polishing the smallest of precious-, semi-precious- and synthetic-stones with focus on low wastage levels. There are an estimated 60,000 jewellery manufacturing units in India. The industry depends heavily on skills of its workers.

According to IMaCS analysis, the Indian gems and jewellery market was valued at about Rs. 454,000 crore in 2012-13 with a compound annual growth rate (CAGR) of about 22 per cent over last five years. The overall market growth is expected to be around 18-27 per cent in the next 10 years, depending on the segment. Precious-metal jewellery sales have stagnated over the last five years. The value growth was mainly because of high gold prices. Changing customer preference towards light-weight and fusion jewellery has brought down the average ticket-size of a jewellery purchase by over 20 per cent in the last five years, while volume of the business has almost doubled. To cater to this 'light weight' customer segment, manufacturers are increasingly adopting a mix of machine-manufactured and handmade jewellery.

Regulatory measures instituted since 1990s have benefitted the industry significantly. They have: enabled new techniques and technology adoption in jewellery manufacturing; allowed Indian and foreign retail chains to set up jewellery retail franchises; opened up prospecting for gold mining to private-Indian and foreign players; bolstered diamond and coloured gemstone processing industry; prompted greater acceptance of standardisation through assaying and grading; helped exports growth; enabled workers to enhance their expertise through training; allowed corporate entities to enter the industry; and rationalised prices to international parity.

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Indian jewellery and gemstones are sold in domestic and overseas markets. About 85 per cent of gemstones processed are exported. The gems and jewellery industry directly employs about 4.6 million. The demand for workers is expected to double by 2023. At present, there is a growing shortage of skilled workers. Typically, the workers hail from same communities and are a closed group within a segment. They are also usually from low-income families and often school drop-outs. The shortage is more acute for the highly skilled artisans who are rapidly disappearing because of lack of promise of growth to future generations. The number of training institutes existing today is too small to cater to the growing shortage for skilled labour in this industry. Formal training, reach of institutions and industry, higher wages, statutory benefits, better work conditions and a sense of respect for the profession are essential ingredients for attracting workers to the sector.

4. Introduction

Indians have accumulated gold for centuries, most of it through trading rather than from mining. For most part of history, Indian gold jewellery market has been import dependent. Jewellery exports market existed in the pre-Independence era when the Kolar Goldfields were significant mines in the world, producing gold for over 80 years. Since Independence, the gold market was subject to several types of government controls up to the 1990s. Thereafter, a liberal economy enabled international and domestic price parity via lesser restrictions on manufacturing and buying gold. However, it has resulted in unsustainably high imports leading to government intervention once again.

India is among the fastest gold-jewellery demand growth centres in the world along with Hong Kong, China, Egypt, Thailand, Turkey, Indonesia and the Middle East. As is well known, India is the also the largest consumer of gold in the world. Today India and China, together, account for about 60 per cent of the global gold jewellery demand and 50 per cent for bars and coins. India is estimated to hold over 18,000 tonnes of gold privately, accounting for nearly 12-13 per cent of the world's cumulative 'above ground' gold stocks. Almost all of the gold demand is met with by imports. Refining industry is small. In fact, most of all other key inputs for manufacturing jewellery such as silver, platinum group metals, coloured gemstones, diamonds, enamel paint and other raw materials are all imported.

Despite the high level of imports of raw materials used in the jewellery manufactured and gemstones processed in India, the country has earned a reputation not just for being a large consumer of precious-metal jewellery, but also of being a preferred exporter of finished products in the global market. The craftsmanship offered by Indian goldsmiths, the unparalleled variety of designs found in Indian jewellery and cost competitiveness have been the key attractions for buyers around the world. While Surat is globally known for its diamond processing industry, Jaipur is well known for over 500 different types of coloured gemstones processed there. In fact, every region of the country has its unique style of jewellery, historically known to suit the specific tastes of the local rulers from ancient times when India was a group of kingdoms ruled by Hindu and Muslim kings who influenced these styles.

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Indians buy precious-metal jewellery for several reasons and occasions during the year: to celebrate a festival or a birth of a child or wedding in the family; to be lucky in wealth by buying on the annual 'auspicious day for buying precious-metal' called Akshaya Tritiya or on Diwali; to invest and save for a rainy day and pawn for cash; to make offerings to deities; to enhance self-status in the community or gathering; to secure loans against gold from banks; to use in industry; and to wear every day. The proportion of buying jewellery to acquiring investment products such as coins and bars varies from year to year. It is usually governed by factors such as surplus disposable income remaining after buying necessary jewellery for the year, arbitrage opportunity driven by government's import policies of the time, attractiveness of products in loans against gold, opportunities for investments available in alternative investment products such as real estate or equity, and general risk perception in the economy. According to the World Gold Council, almost 50 per cent of the gold bought in India is for the purpose of gifting during weddings. Usually, annual demand for precious-metal jewellery surges during the wedding and festival seasons.

Unlike in the jewellery manufactured around the world where the product designs do not change much over the years, jewellery manufacturers in India have had to constantly innovate on design because the Indian buyer wants to see a new design on display when she visits the local jewellery store. This is why the Indian goldsmith is among the most skilled in the world, having to create new designs regularly. Similarly, the bench-workers in the coloured gemstones- and diamonds-processing industry cater to demands for polishing the smallest of precious-, semi-precious- and synthetic-stones with focus on low wastage levels. Both, the jewellery manufacturing and the gemstones polishing industries, depend heavily on skills of their workers for producing customised designs rather than using machines that cater to the mass market requirements.

Common logic says that the more customised or handmade content in the jewellery, the higher its cost of production and the higher its value as compared to mass produced items. Unfortunately for the manufacturer, that does not always hold good for want of customer awareness. Perhaps, the unorganised nature of the industry can provide reasons for this. In today's global market scenario, the handmade segment of the Indian gems and jewellery industry faces significant challenges. Jewellery being a non-essential and luxury item, buyers

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either defer their decision to buy or purchase cheaper substitutes when driven by necessity. Traditionally large jewellery markets such as the US, the UK, Europe and the Middle East face economic slowdown today. Barring very high-value jewellery, typically sold in the most discerning and almost always recession-resistant consumer segments, precious-metal jewellery sales have stagnated or declined over the last five years although there has been growth in terms of value because of high gold prices. Also while there is demand growth from South East Asian economies, the pace of growth is slower now and competition from within the region, such as Thailand and China, has prompted Indian manufacturers to adopt a mix of machine-manufactured and the customised-handmade jewellery.

The need for deploying more machines over man is evident in the gemstones processing segments as well. While the diamond processing industry has moved away from manual processing to mechanised and technology driven, the coloured gemstones industry is still wrestling with the dilemma of maintaining its high-value, genuine quality identity or moving towards high-volume machine processed gemstones and substitutes that allow for higher levels of wastage.

To be globally competitive, the Indian gems and jewellery industry has two immediate mandates: 1) to drive a world-wide awareness campaign on high-value and genuine versus low-cost and synthetic; and 2) to achieve a balance between low-cost, high-volume, machine-made jewellery and high-value handmade jewellery. A consequent challenge is that of upgrading the skills of traditional artisans in a way that they adopt new technology and acquire certifications, while retaining their traditional expertise and artistic appeal for maintaining profitability. The industry also needs to make sales more transparent by adopting grading and hallmarking of products.

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5. Regulating the gold-crazy Indian market

The history of Indian gold mining begins and almost ends with the Kolar Gold fields of Mysore district in Karnataka. Mining activity in the gold fields, and some others nearby, can be traced back to the Gupta era or the Fifth Century AD. The mines produced gold for over 130 years since the 1870s when they were transferred to British individuals and concessionaires who prospected and developed them technologically. In 1956, the mines were transferred back to the Government of Mysore and in 1962 to the Ministry of Finance, Government of India. In 2001, the mines were closed down, having gone progressively deeper up to about 3,980 meters to tap gold reserves and with corresponding fall in yield. There are efforts to revive the fields to retain livelihoods of the resident miners' community, but with abysmal low yields viability remains a serious concern. The fortunes of Kolar Gold Fields significantly bolstered post-Independence Indian Government's 'gold control' policies.

5.1. History of regulation

Gold imports were officially banned up to the early 1990s. This may have benefited the Kolar Gold Fields that produced economic gold up to the 1970s, but it hurt the Indian gems and jewellery market in the long run as the demand grew and the industry deteriorated. Unlike the Europeans who prospected overseas for precious commodities that had local market but no local reserves, e.g., coffee, cocoa, sugarcane, precious metal and gemstones, Indians did not venture outside the country's boundaries to acquire mines overseas in order to serve the growing domestic demand. The ban resulted in demand growth for illegal gold that was smuggled from overseas.

According to a speech by Dr. Y. V. Reddy, former Governor of the Reserve Bank of India (RBI), since the Independence, the gold control policy was aimed at achieving the following purposes: curtailing demand for gold; regulating supply of gold; reducing domestic prices; and stopping smuggling. As we see later, the long term impact was on the contrary on pretty much all accounts. The Gold Control Rules, 1963, prohibited manufacturing of gold ornaments of more than 14 carat purity. Gold holdings had to be declared. Goldsmiths were not allowed to hold more than 100g of gold and licensed dealers up to 2 kg. Dealers and goldsmiths were not allowed to trade with each other. Refineries were prohibited from producing gold of over 14 carat. By 1964, the Government had complete control over gold distribution and trade.

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In 1966, the ban on manufacturing gold jewellery of up to 14 carats was lifted. However, gold control rules set the upper limits on the amount of gold holdings and gave control over refineries and dealers to the Government. These rules became the Gold (Control) Act in 1968. The Act was subsequently amended several times, but with minor changes. It barred gold holdings in any form other than jewellery.

Up to the 1990s, the Government also issued bonds against gold several times with varied intentions: mobilising gold reserves and restraining demand; converting unaccounted cash held by individuals to legal money; and economising idle gold holdings. Only a few issues were successful in retrieving gold from the public. Most of it continued to be in the hands of individuals and households, mainly, with the women folk in the Indians towns and villages. If there is one economic product that Indians have been attached to emotionally, without much importance attached to monetising it – that is gold jewellery. Popular belief indicates that it is to be monetised only in times of distress. The Gold (Control) Act was abolished in 1990 when India started liberalising the economy after a near brush with foreign exchange default scenario when the country had to pledge its gold reserves.

The Gold Control Era (1962-1990)

- Substantial legal exports in the pre-Independence era.
- Bullion imports and exports banned under Foreign Exchange Regulation Act, 1947
- Control over gold production assumed by the Mysore Government in November 1956; Official gold stocks of the RBI re-valued.
- Proportional reserve system replaced by Minimum reserve system for note issue.
- RBI advised commercial banks to consider recalling loans made against gold.
- Forward trading in gold banned in November 1962.
- The Gold Control Rules, January 1963, promulgated to control diversion of savings into the bullion market.
- Manufacturing of gold ornaments of more than 14 carats prohibited; In July 1963, refineries prohibited from producing gold of more than 14 carat purity.
- Forward trading in gold banned in November 1962.
- Rules lifted ban on the manufacture of ornaments of more than 14 carat purity in November 1966; Upper limits set on individual holdings and extended control over refineries and dealers.
- The Gold (Control) Act, 1968, was passed in September 1968.
- Gold Bonds issued or deposit schemes started in November 1962, March 1965, and October 1965.
- Except for some minor modifications incorporated in the Act in 1969, 1972 and 1973, the structure remains same.
- Voluntary Disclosure of Income and Wealth (Amendment) Ordinance, 1975, granted immunity

The Gold Control Era (1962-1990)

from confiscation, penalty and prosecution under the Gold (Control) Act, 1968, to disclosures of wealth and income in the form of gold for a stipulated period.

- Gold auctions undertaken through RBI in 1978-79 to bridge the budget deficit of and curb smuggling; Unsuccessful and discontinued.
- About 505 tonnes consumption in 1995; Annual domestic production of 2-3 tonnes.
- During the period 1968 to 1995, gold smuggled into India in quantities varying from 10 to 217 tonnes per year.
- The Gold (Control) Act, 1968, abolished in 1990; Holding gold bars and coins permitted.

5.2. Impact of gold control era

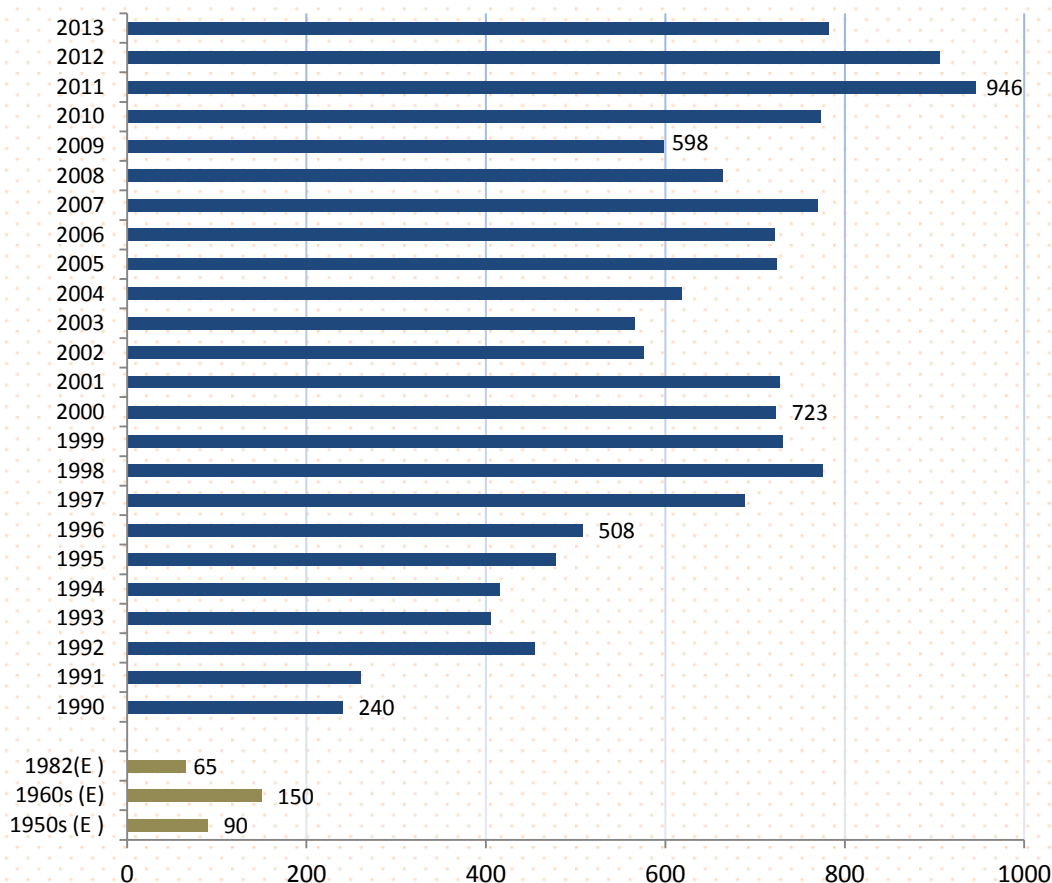
By the 1970s, the Kolar mine reserves had depleted significantly. Gold production was decreasing progressively. A continuing import ban coupled with limitations on: quantity that could be held and trade, as well as rising demand without much heed to successive Governments' gold-market related concerns and stipulations – all these factors contributed to the growth of India's parallel economy, that of black money. While the war with China in 1962 may have been one of the key triggers for the Government to initiate the 'Gold Control' policy, historical precedents indicate that gold purchases increase in times of distress, especially, in economies with little social security to depend on.

The practice of individuals holding gold or silver for distress may also have originated from the Proportional Reserve System for notes issued as followed by the RBI up to 1956. According to the RBI Act, 1933, a minimum 40 per cent of the total assets (notes) of the Issue Department were to be backed by gold bullion, gold coins and foreign securities. Further, the gold coins and bullion were not to be less than Rs. 40 crore at any time. For the people living in those times and well into the 1960s, proportional pegging of the Rupee against gold may have reinforced the importance of gold holdings as insurance even though trading was not permitted then. Since making 14-carat jewellery meant substantial amount of silver amalgamated with gold, silver also assumed a significant position as insurance.

In the Gold Control era, new jewellery was made from either recycled gold and more often from smuggled gold. Official gold market virtually disappeared, cash dealings increased as a result, and a large black market developed for gold. As the official gold economy almost got wiped-off, a majority of traditional goldsmiths lost legitimate business and became an essential part of the black market. Not only were families of many gold jewellery manufacturers devastated because

of loss of business, the gold-smithy workers became a part of the unorganised sector with little scope for career or new skill development.

Figure 1: Historical gold imports growth
(Tonne)



Sources: RBI; News Reports; IMaCS Analysis

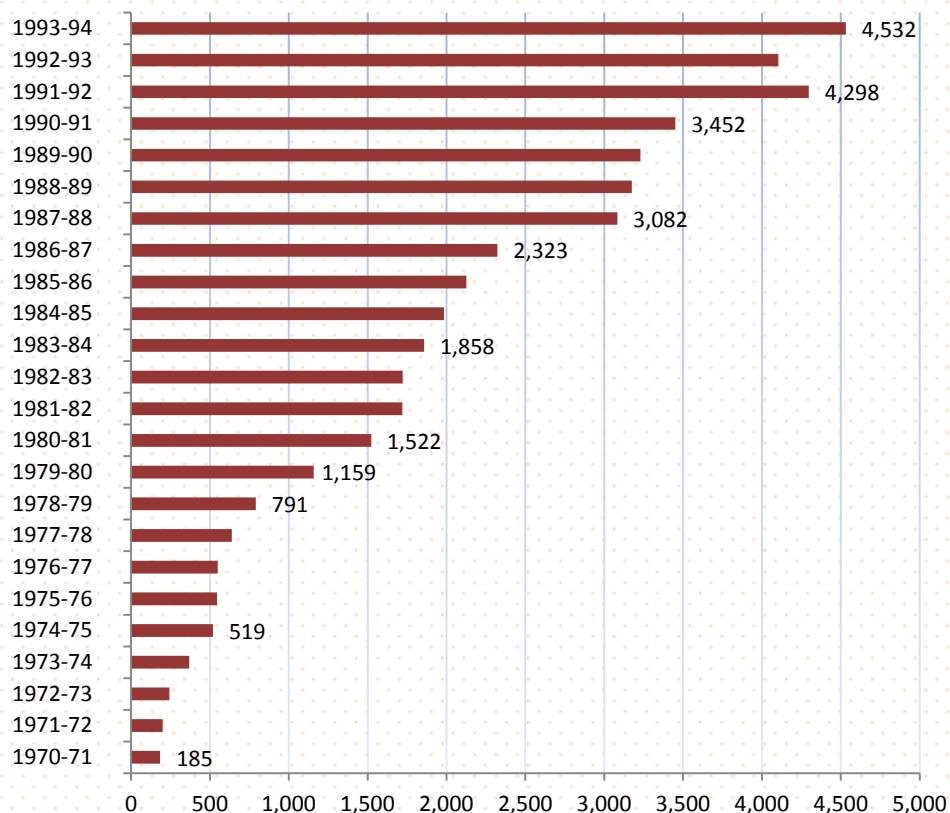
However, the gold control policy was unsuccessful in stopping citizens from purchasing gold. Some estimates indicate that over 3,000 tonnes of gold was smuggled into India between 1947 and the early 1990s, although it is impossible to put a firm figure. In the 100 years to 1931 about 40 tonnes of gold was imported, annually. In the 'Great Depression' era of 1930s, it increased by almost about four times. Even with restrictions imposed in late 1940s, annual imports were 80-90 tonnes in the 1950s, up from about 30 tonnes in the early 1940s. In period between 1960s and early 1970s, imports were almost 150 tonnes. After a brief period of illegal exports in

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the 1970s when international prices were higher than domestic market, import growth continued and reached 240 tonnes in 1990. It was finally time for Government to free imports.

Apart from the inability to control imports or growth of household gold holdings, the Gold (Control) Act failed to control price rise too. Between 1970 and 1991, gold prices increased over 18 times, despite ban on gold imports.

**Figure 2: Gold prices in the Gold Control era
(Rs. per 10 gm)**

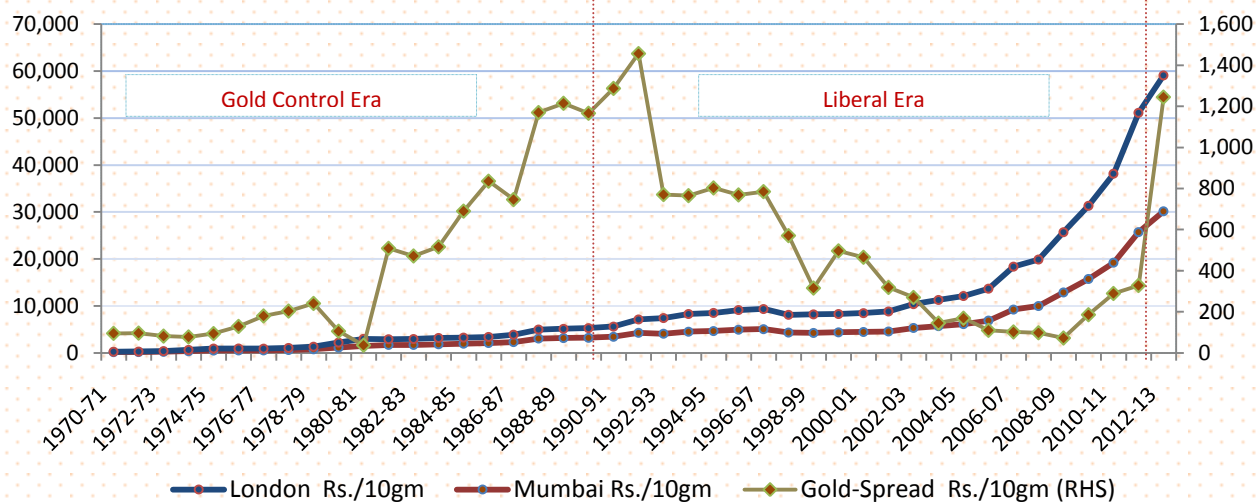


Sources: RBI; IMAcS Analysis

In fact, gold bullion prices were much higher in domestic market than internationally. The price differential between London and Mumbai was Rs. 95 per 10 gm in 1971 and increased to Rs. 1,500 in 1993. The price differential continued to increase, barring the short period of re-export and the Gulf War in 1981 and 1991, respectively. With the Gold (Control) Act abolished in the

early 1990s, 'legal' gold gradually started to enter India and price differential decreased. Although smuggled gold market exists even today, but it is primarily driven by arbitrage opportunities offered by higher import duty in India.

Figure 3: Gold price spread
(Rs. per 10 gm)



Sources: RBI, IMaCS Analysis

5.3. Impact of regulations post gold control era

With a liberal economy, the same old challenges have come up again. Imports have increased, although, mostly legal so the Government stands to earn revenue from taxes and duties. Uncertain global economic scenario, since 2008, has revived the age-old 'gold as insurance' instinct leading to higher purchases and hence, more imports. Before the economic downturn of 2008, Indian economy was growing at a fast pace and disposable incomes increased, so more gold was being bought by the average middle-class Indian than ever before. As the demand and imports increased, so did the prices and foreign exchange outflows. While now the Government was better able to track the commodity's movement, it watched the current account deficit increase to unsustainable levels. This was primarily driven by oil and non-monetary gold imports coupled with fall in merchandise exports vis-a-vis imports. Free trade agreements, especially with Thailand at concessional duty rates, aided a spurt in jewellery imports.

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In 1997, the RBI allowed commercial banks to import gold for sale or loan to jewellers or exporters. Since then banks have become the key suppliers of legal gold. Non-resident Indians (NRI) may bring in gold for their own use or on behalf of others, although there have been suspicion of this contributing to the illegal supply. In 2013, the Government decided once again to control unabated imports of gold as the current account deficit soared to constitute over 4 per cent of GDP. In short, gold has become an important factor in fiscal policy decision making and exchange rate management.

Liberalisation of Gold (1991-2013)

- The Gold (Control) Act, 1968, abolished in 1990; Holding gold bars and coins permitted.
- Non-resident Indians (NRI) allowed to bring in 5 kg gold every six months by paying a nominal duty of Rs. 220 per 10 gm.
- Import of plain gold allowed under Special Import Licence Scheme for sale in domestic market;
- Special categories of exporters allowed to repatriate overseas earnings by importing goods.
- The scheme subsequently relaxed, allowing imports of gold jewellery and coins in addition to bullion.
- In 1993, gold and diamond mining opened to private and foreign investors.
- 100% FDI allowed in gems and jewellery through automatic route, 74% in mining of diamonds and precious stones and 100% in mining of gold, silver and other minerals
- In 1997, overseas banks and bullion suppliers allowed to import gold into India
- In July 1997, RBI authorized commercial banks to import gold for sale or loan to jewellers and exporters
- In 1999, RBI issued guidelines authorising designated banks to start Gold Deposit Schemes in order to reduce dependence on imports, providing income on idle gold and holding as 'Gold Certificate'.
- The Kimberley Process Certification Scheme (KPCS) implemented in India in 2003 to allow legitimate diamonds as per the UN resolution and to curb trade of 'conflict' diamonds.
- RBI announced fiscal stimulus measures in December 2008 to revive the economy including following for the gems and jewellery sector: increase in pre and post shipment rupee credit period; interest subvention; capped refund of service tax on exports while availing duty drawback.
- In 2009, Surat recognised as town of export excellence; export-oriented units personnel allowed to carry 10 kg gold per year; import restrictions removed on worked corals.
- Foreign Trade Policy, 2009-2014, identified the gems and jewellery sector as a thrust area with prospects for export expansion and employment generation.
- Import of gold of 8 carat and above allowed under replenishment scheme and accompanied by an Assay Certificate
- Duty Free Import Entitlement of consumables and tools, for precious metal jewellery, cut and polished diamonds, consumables, samples, rejected jewellery:
- Import of diamonds allowed for grading, certification and re-export by authorised agencies of Gemological Institute of America (GIA) in India or other approved ones.
- Personal carriage of gems and jewellery products in overseas exhibitions increased to US\$ 5 million and to US\$ 1 million for export promotion tours and samples up to US\$ 1 million.
- Extension in number of days for re-import of unsold items in case of participation in an exhibition in the US increased to 90 days.
- In 2012, the import duty on gold and silver changed to percentage of value from the flat duty.
- In 2012, custom duty on import of gold findings decreased from 10% to 4%.

Regulatory measures instituted since 1990s have benefited the industry in many ways. It has enabled new techniques and technology adoption in jewellery manufacturing. It has allowed Indian and foreign retail chains to set up jewellery retail franchises. Prospecting for gold mining has been opened to private-Indian and foreign players. New areas such as diamond and coloured gemstone processing have flourished. Standardisation through assaying and grading has gained acceptance. Exports of gems and jewellery have increased over the years. It has allowed the goldsmiths and artisans to enhance their expertise. Jewellery design has become a popular area of skill training. Institutions have come up to provide certificate and diploma courses in jewellery design and manufacturing as well as gemstone processing. Special economic zones dedicated to gems and jewellery have come up in states such as Rajasthan, Maharashtra and Andhra Pradesh. These have helped create employment in factory environment as against the traditional cottage industry based employment. Revival of the traditional and design for new jewellery products has emerged as a key trend. New products have entered the market catering to different customer preferences and pricing levels. Today, the average customer does not have to pay significantly higher prices than that prevalent in the international markets.

5.4. Recent developments

To control the current account deficit from going out of hand, especially, on account of non-monetary gold, the following measures have been announced in the last two years: increase in import duty on gold from 1 per cent in January 2012 to 8 per cent in June 2013; restricted gold imports on consignment basis by banks and all nominated agencies including star trading houses; 100 per cent cash margins to be provided for letters of credit; imports to be booked against payments and not just acceptance; and modified gold deposit scheme to enable trading of dematerialised gold certificates.

To reduce demand for gold and monetise existing gold holdings, a 'working group' appointed by the RBI has submitted the following key suggestions on Gold Loans market in February 2013: introduction of new gold backed financial products; investor education on investment in gold related instruments; recycling of domestic gold; tax incentives to attract investing in gold based instruments rather than holding physical gold; and setting up of a 'Bullion Corporation' that develops the investment and trading ecosystem.

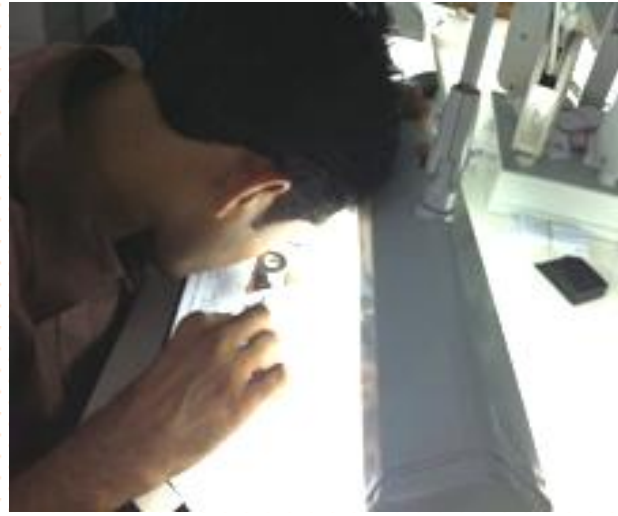
Industry's Recommendations – Stakeholders in Mobilising Gold Deposits

In 1999, RBI issued guidelines authorising designated banks to start Gold Deposit Schemes (GDS). GJF recommended the following additional measures to vitalise the existing scheme:

- Make jewellers stakeholders in GDS and use their cross country presence for mobilising gold deposits
- Jewellers to act as Intermediaries, agents, redemption centres or distributors for Banks
- Jewellers to be authorised to certify purity of gold with BIS Hallmarking
- For jewellery, coins and bars - purity testing with melting loss to be assessed using standardised processes.
- Jewellers to deposit gold received on weekly basis to nominated banks with required statements and documentation in 995 gold bars.
- The Gold Deposit Scheme needs to be made more attractive by:
 - reducing minimum cap to 100 g;
 - fixing 3-4% interest cost and bank charges up to 1%;
 - decreasing lock-in period to 5-6 years;
 - providing flexible partial or early withdraw facility;
 - issuing gold certificate in 15-30 days;
 - simplifying documentation and 'Know Your Customer' (KYC) norms based on grams, purity and type of deposit;
 - keeping provisions for explained and unexplained source of deposit that is linked with maturity and redemption;
 - setting norms for taxation, risk management; transferability, monitoring, reporting and publicity;
 - making mandatory, the use of standardised software by jewellers;
 - integrating with existing financial controls mechanisms such as through CIBIL reports, deposit control numbers, etc.

Sources: Gems and Jewellery Federation; IMaCS Analysis

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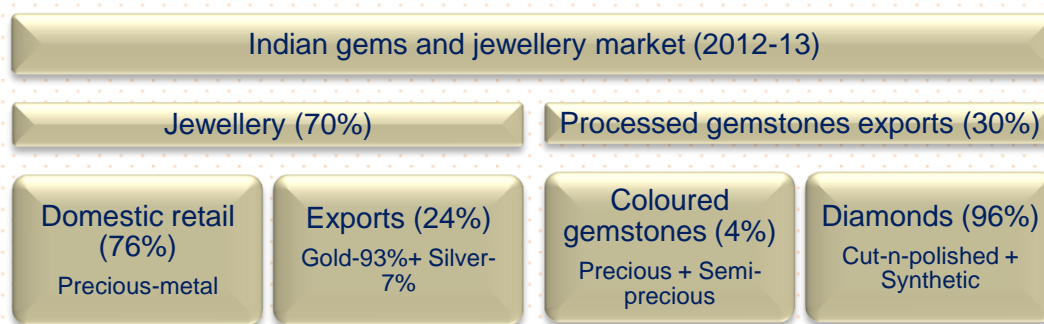
6. Gems and jewellery industry structure

The Indian gems and jewellery sector can be segmented in many different ways because of the diversity of products and regional influences. The two obvious broad segments are jewellery and gemstones. Within jewellery, there is the traditional handmade segment and then the machine-made. Both these types of jewellery can be either plain or set in diamonds or coloured gemstones or enamelled and plated. Machine-made jewellery can be either cast or machined or electroformed. Diamonds and coloured gemstones can also be either machined or hand polished.

6.1. Market structure and segments

Both jewellery and gemstones are sold in domestic as well as overseas markets, although about 85 per cent of gemstones processed are predominantly exported. Jewellery exports include silver and gold. Gemstone sales include precious and semi-precious coloured gemstones and pearls, cut-and-polished diamonds and synthetic diamonds. The synthetic-coloured-gemstones business is still small in India.

Figure 4: Broad market segments



Source: IMaCS Survey and Analysis

The jewellery industry can further be classified by: types of products traded, different types manufacturing processes, regional influence, industry players and key sources of artisans.

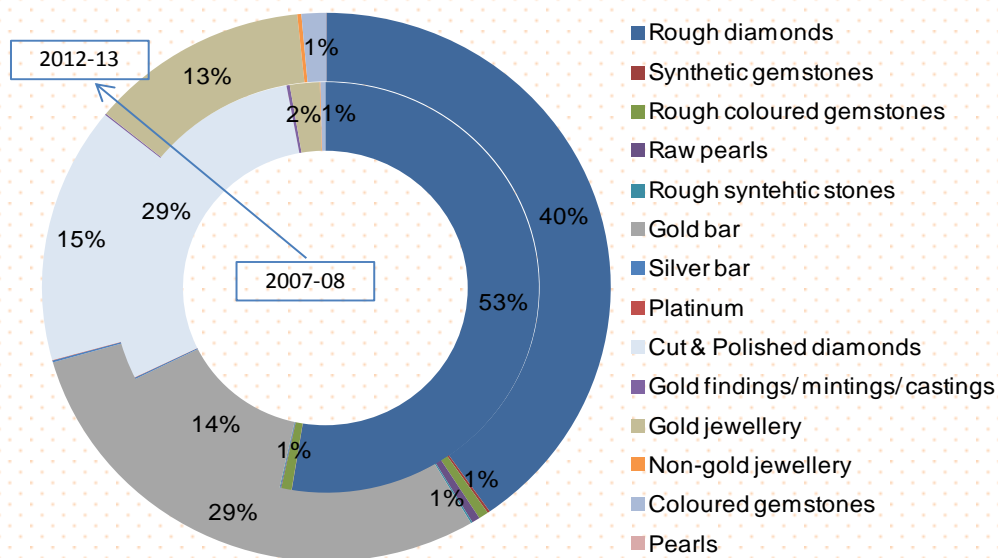
6.2. Trade dependence

The Indian jewellery market imports almost all of its precious metal and gemstones. A substantial proportion of imports include rough diamonds, gold in the form of bars, cut and polished diamonds and gold jewellery. Over the five-year period between 2007-08 and 2012-13,

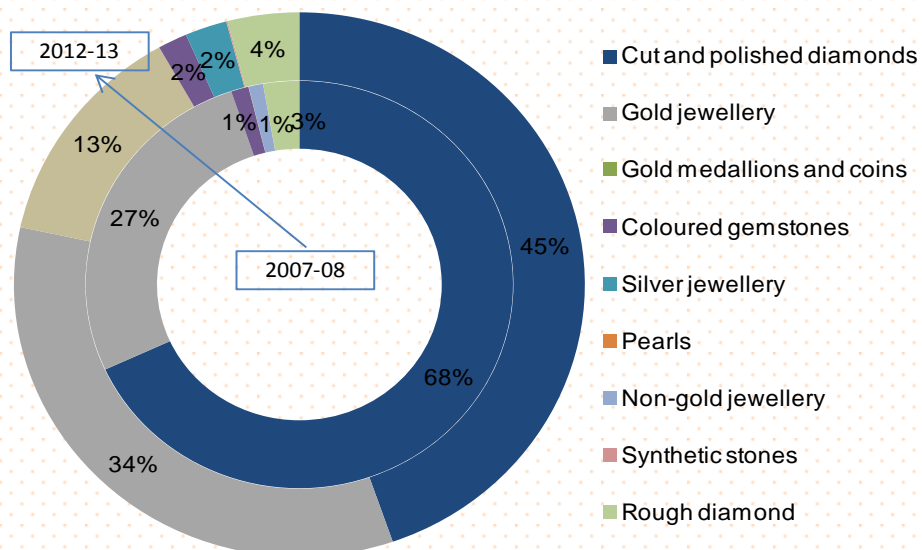
gold and gold jewellery imports have increased, driven mainly by higher prices. While tonnage demand increased about 40 per cent, gold price increased by over 200 per cent.

Figure 5: Precious metal jewellery – traded materials

Imports



Exports



Source: Gems and Jewellery Export Promotion Council; IMaCS Analysis

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Import of rough diamonds decreased from 172 million carats to 148 million carats, during this period and that of cut-and-polished diamonds increased from 2,225 million carats to 3,031 million carats, indicating a rising trend of trading over polishing.

Exports of rough diamonds have increased in terms of carats by about 1.2 times and in terms of value by about 4 times, indicating better margins from trading. Exports of cut-and-polished diamonds have declined marginally in terms of carats, although they have increased about 1.7 times by value.

Mumbai' domestic-tariff area (DTA) and Surat are the traditional import centres for cut-and-polished diamonds. However, lately, the demand for cut and polished diamonds has increased from non-traditional demand centres, including Delhi, Jaipur, Kolkata, Vishakhapatnam and Chennai.

Falling imports of roughs by volume and growing export indicate a trend for trading of roughs, while higher imports and lower exports of cut-and-polished diamonds also point towards growing domestic market for the diamond-processing industry, which was earlier dominated by plain-gold jewellery. They also point towards growing competition for the diamond processing industry from other low-cost countries such as China, South Africa and Thailand.

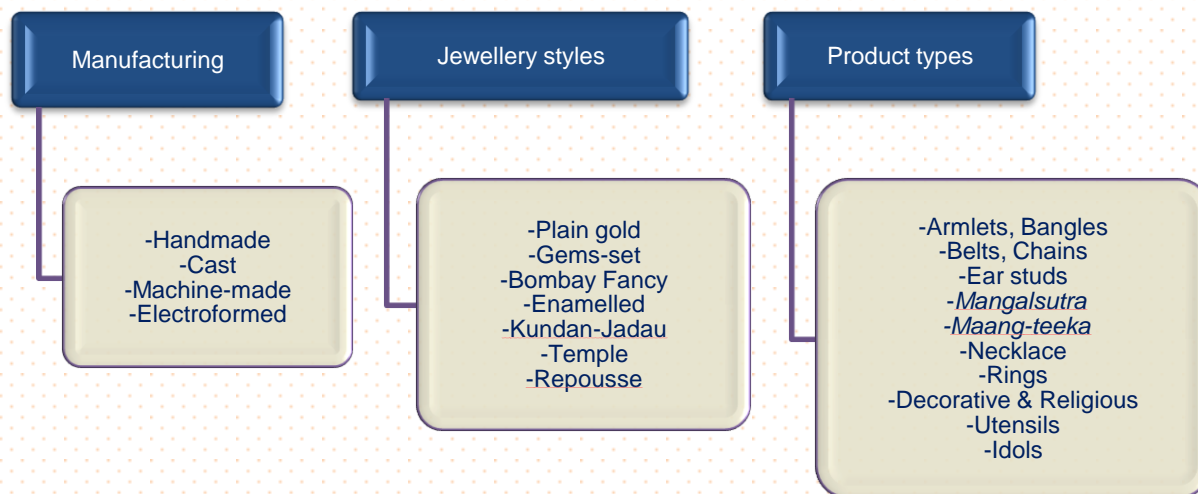
6.3. Jewellery types

Traditional handmade jewellery has been the best-seller since the times of kings and kingdoms. Gold smithy artisans or "*Karigars*" used mainly hand tools that they themselves made to create designs and make the entire jewellery right from melting to frame making to gems-setting and polishing. This provided for creativity in designing jewellery and catered to niche market segments, mainly, driven by regional tastes. The high level of precision and detailing to be achieved required painstaking labour because each jewellery piece was made by hand and no two pieces could be exact replicas. Yet, in a twin-set they had to appear the same to the eye. In some regions such as that of Rajasthan, where the "*Kundan-Jadau*" style originated, the rulers of the day prompted goldsmiths to create it in order to provide an occupation to the unemployed. Over time, it became an art work and is today a must wear on weddings and special family occasions.

Unfortunately, the handmade industry is struggling now because of the advent of machine-made and cast jewellery. Even today, there are some designs that are so intricate that they can only be handmade. Many of the design available in the market today are a combination of handmade and machine-made. However, today's buyer has not been sensitised to the level of craftsmanship involved in handmade jewellery. Only the discerning few are still willing pay a premium for a handmade piece.

The blurring of importance of manmade over machine made has led to little differentiation between relative labour costs of the two. Jewellery making companies still retain traditional handmade gold smithy sections so that the craft is not lost forever. Moreover, there are some handmade processes such as linking, filing, enamel painting, cleaning and polishing that may be required for completing the jewellery and will stay for many years to come. Big retail houses have also started promoting Indian jewellery to the world, and thus playing a role in reviving traditional craftsmanship.

Figure 6: Domestic precious metal jewellery industry



Source: IMaCS Survey

Investment casting is a factory process that allows many replicas of an original design to be made in a day as opposed to handmade jewellery which may take up to several months for just one piece, depending on the complexity. Casting has overtaken traditional gold smithy process and is used by almost all major jewellery manufacturers across India. In this era of mass production, casting is the most appropriate and understandably, the most popular method of manufacturing jewellery. The end product may usually have parts of laser processed and handmade as well.

Apart from producing multiple pieces in a shorter time, casting allows for making exact replicas and reducing: rework because of defects, labour costs and precious-metal loss. In addition, the labour can be trained in modules or in specific process of manufacturing. The dependence on expert goldsmith decreases and manufacturing is more process driven. Here, creativity and designing activity is separate from manufacturing as designers trained from premier jewellery institutes now design jewellery using Computer Aided Design (CAD) software. Although hand-sketch designers also exist, the industry now demands CAD designers because of the benefits of automatic detailing, speed and accuracy in producing designs. The precision of casting machines has also improved over time. Today, there are machines that can produce 'Filigree' work known for intricate design and fine detailing. While casting may be popular because of the possibility of mass production, as explained later, it may not have resulted in higher margins for the industry, although the volume of production may have doubled.

Computer Numerical Control (CNC) machines are used for a variety of purposes in jewellery manufacturing. They include chain and strip making, wax-model making and carving. Bangles and chains are usually made using machines. Italian-make machines are used for making hollow products such as bangles. Earlier, use of CNC machines was associated with higher precious-metal or stone loss, but today high precision machines are increasingly available, making machining a preferred method. Automation decreases labour costs, although initial capital and machine maintenance costs may be high. The skill sets required are also different and tend to be more machine operations oriented rather than jewellery making.

Electroforming is a process that enables thin parts of jewellery to be formed through electro-deposition. The jewellery is as strong as the thicker counterparts from casting. It is increasingly

becoming popular as a process for making lighter weight, complex and precision jewellery. It allows high-tolerance duplication at low operating costs along with high repeatability. Today, there are just a handful of electroformed jewellery manufacturers in India. However, industry views it as a future trend in jewellery manufacturing.

6.4. Regional clusters

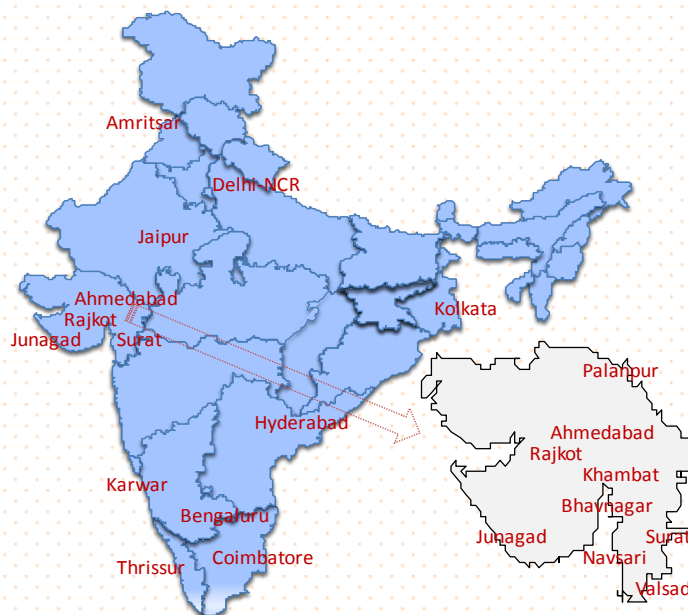
Indian jewellery is as diverse as its regional cultures. Although this design diversity exists today at regionally distinct centres, the industry has started experimenting with blend of designs which mixes regional styles. While the overall orientation is towards making lighter weight and contemporary jewellery, the jewellery sold on weddings and religious functions is still predominantly heavy and traditional.

Kolkata is a major handmade jewellery manufacturing centre, mainly, of the Filigree fame. Mumbai is a key centre for cast and diamonds-set jewellery as well as Bombay Fancy. Thrissur is a hub for plain gold Kerala-style jewellery which is traditionally associated with light-weight. Coimbatore is home to the largest electroforming jewellery manufacturer. Hyderabad is known for its gems-set jewellery. Bikaner, Jaipur and Amritsar are known for Kundan-Jadau jewellery with Minakari (Enamel), while Delhi-NCR is a hub for silver jewellery. Surat is an obvious centre for diamond jewellery, given that 11 out of world's 12 diamonds are processed in Surat and surrounding areas. Ahmedabad, Rajkot and Junagad are known for their unique jewellery styles.

Karaikudi near Madurai is known for extra-heavy jewellery which is sold for the purpose of investment or wearing on very special occasions. Karwar is another traditional jewellery manufacturing centre. Hosur and Bengaluru have also emerged as precious-metal jewellery centres in recent years, mainly, for handmade. Temple jewellery is a traditional style of South India, particularly, Tamil Nadu and Karnataka. In addition, cottage-goldsmiths can be found all over India including the North Eastern States.

Figure 7: Regional manufacturing centres

Jewellery manufacturing centres; Diamonds and coloured gemstones processing hubs



Source: IMaCS Survey

Jaipur is also among the largest coloured-gemstones processing centres in the world. Traditionally a hub for polishing precious gemstones such as emeralds, rubies and amethyst, Jaipur is now a large manufacturer of polished semi-precious gemstones including Tanzanite, popularised by the movie, Titanic. The old city of Jaipur has many small to medium gemstone processing units. Special gemstone exports processing zones have been set up by the Rajasthan Government. Apart from these, villages surrounding Jaipur have a thriving cottage industry for gemstone processing. Bikaner and surrounding areas polish flat diamonds used in Kundan-Jadau jewellery.

Surat is the main hub for diamond processing, followed by Mumbai. Other than Surat, there are several cities in Gujarat that have diamond processing centres, both, cottage and micro-small-medium enterprise (MSME) units. In the 1990s, Tiruchirapalli emerged as a major centre for polishing synthetic gemstones, particularly, Cubic Zirconia or CZ diamonds, for which India was among the largest suppliers, globally. While Trichy continues to be the country's CZ hub, competition from other countries has hit this industry adversely.

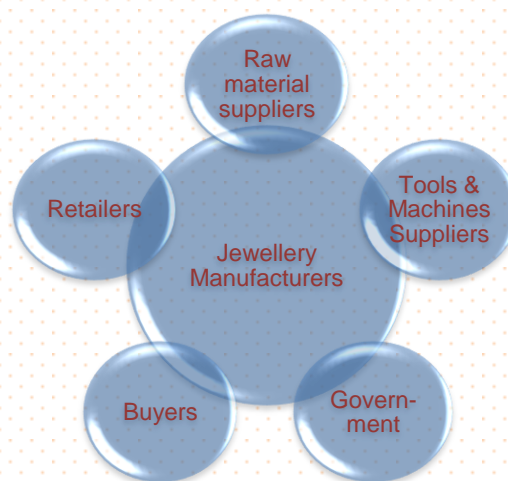
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There are several special multi-product or high-precision engineering zones or parks across India where gems and jewellery manufacturing companies have set up units to avail of Governments' benefits and infrastructure for exports. Some of the dedicated notified gems and jewellery special economic zones (SEZ) are: Hyderabad Gems SEZ Limited, Andhra Pradesh; Gujarat Hira Bourse, Surat, Gujarat; Gitanjali Gems Limited, Raigad, Maharashtra; Navi Mumbai SEZ Private Limited, Maharashtra; Omnibus Industrial Development Corporation of Daman & Diu and Dadar & Nagar Haveli; and Mahindra World City, Jaipur, Rajasthan. In all, the Government of India has approved 13 SEZs across the country of which, the six mentioned above are operational.

6.5. Market players

As mentioned earlier, there are more precious-metal jewellery manufacturing units in the cottage and MSME sectors than in the large scale. It is a highly fragmented industry. In fact, in the handmade jewellery manufacturing segment there are only a handful of large scale manufacturers. Many are job workers or contract manufacturers for aggregators who themselves may have a small group of goldsmiths employed directly. Similarly, in the gemstone processing industry of Jaipur there is still a large proportion of job workers who, essentially, work on one or two stages of polishing before sending to the next process job-worker.

Figure 8: Key market players



Source: IMaCS Survey

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Cast and electroformed jewellery, typically, requires higher level of capital investment and hence predominantly is a medium or large scale industry. Similarly, diamond processing is highly mechanised with investments in specialised machines used throughout the polishing value chain and hence, is mainly a medium to large scale industry.

Apart from gemstones and diamonds, which are among the key raw materials used in jewellery making – gold, silver and platinum-group metals (PGM) are typically acquired in the form of bars from banks or from refining and melting used and scrapped metal. A wide variety of waxes, rubber moulds, chemicals for refining and cleaning, lac, casting mix, Plaster-of-Paris mix, electrolytic solutions, buffing materials and enamel paint is used in jewellery manufacturing. These may be imported or indigenously procured depending on the quality requirement and their availability in the market. Various polishing grits and lapping materials are the main consumables in gemstone polishing.

While machine and hand tools used in jewellery manufacturing is generally purchased from market, some tools required for specific workmanship such as engraving or carving or stone setting may be custom made. CNC machines, melting furnaces and investment casting machines are made in India as well as imported, depending on the precision requirement. Sophisticated CAD software and Computer Aided Manufacturing (CAM) machines may be used in designing, while Symmetry Analysers and Inclusion Plotters are used in diamond polishing. Tumble polishers and laser machines are used both in jewellery manufacturing and gemstone processing. Rotating scaifes and laps are the key machines used in gemstone polishing.

Manufactured jewellery may be sold to an aggregator or directly to a jeweller or retailer. Polished gemstones may be sold to traders who may also trade in imported rough gemstone, i.e., traders may sell rough gemstones to the polisher and buy polished gemstones from them. However, most of the export is done either through foreign offices of the polisher or as direct supply to the large overseas buyer who has placed the order. The leading importers of polished coloured-gemstones are from the USA, Switzerland, Hong Kong, Thailand and France. They are also the largest re-exporters. Most of the world's diamonds are cut and polished in Israel, India, New York and Antwerp (Belgium). Antwerp is the largest international trade centre for diamonds. Close to 98 per cent of diamonds sold to wholesalers in Antwerp is re-exported to

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jewellery centres across the world. Antwerp also has four diamond exchanges where about 1,500 diamond companies trade.

Jewellery retailers are spread across India. They may be retailing houses of large manufacturers or their franchises or a standalone shop in the neighbourhood who may also manufacture some products or a high-end format shop of a large aggregator-cum-retailer in a mall or 'souk'. While trust is a major selling factor, mega branding on electronic media has acquired significant importance in recent times. Earlier, loyalty to the jeweller was a strong trend based on the faith that products bought meet the agreed carat and stone-quality standards. Today, the growing emphasis on hallmarking and assaying for quality standardisation has led to a decline in this trend.

The Indian buyer is demanding. Today, she is willing to experiment with the new designs and demands variety. She no more has restricted preference for traditional or familiar regional styles, but is willing to wear those from other regions and cultures. Moreover, high prices of precious metal or gemstones have not diminished her appetite for buying, but made her to demand lighter weight jewellery of lower carats than the previous preference for 22K jewellery or precious stones only. These changes in preferences along with greater standardisation have driven the jewellers to stock more variety and attract buyers of different age groups with separate types of products and discount schemes. Web-based sale has also taken off well, driven by the new generation buyer who is typically a working woman with little time to spend on shopping in the jewellery market.

The advent of jewellery retail chains and franchises has provided greater market access to the traditional goldsmiths and the new-age jewellery manufacturers. These retail chains have not only provided buyers with to access many different varieties of products, but also invested in promoting Indian jewellery in domestic and overseas markets, thereby, benefitting the industry as a whole. They have also enhanced the trust factor by adhering to prescribed standards. Industry associations are active in opinion building, information gathering, organising promotion events and fostering training and education.

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The Government departments such as Reserve Bank of India, customs and tax offices have a longstanding relationship with the jewellery industry. Even after the end of the 'gold control' era in the 1990s, there have been several occasions when the Government has intervened by imposing higher import duties for reasons such as protecting the local industry from cheaper imports and controlling the burgeoning current account deficit, sometimes leading to a discomfort in the industry. India's foreign policy consistently recognises the export orientation of the industry and has floated several schemes for market assistance and promotions overseas. Special economic or thematic trade zones have been set up in several states to promote the industry through tax breaks and incentives. It has also reviewed the free trade agreements in order to restrict dumping.

There is a need now for the Government to incentivise mechanisation and automation in some parts of the industry while balancing it with protecting the traditional skills from disappearing by promoting their 'high-value' aspect, globally. The industry's progression from use of hazardous chemicals to more environment-friendly products such as cadmium-free and related processes need global recognition. The high-level of use of technology in diamond processing and cast jewellery needs to be highlighted. Other soft aspects such as skill training initiatives also need continued and wide-spread support.



Artisans

Jewellery making has been a traditional vocation of certain families who have belonged to clans recognised by their names as artisans, goldsmiths or jewellers. Until recently, it was a 100 per cent unorganised-sector profession with family or community members working together in the cottage industry. Today, while the organised sector exists and is much more diverse in terms of employees, it is still a small part of the industry. Because of being a craft belonging to certain communities, artisans from specific regions are preferred for employment, particularly in the hand-made job roles. For example, there is a distinct preference for Bengali goldsmiths for precious-metal jewellery or diamond polishers from Saurashtra region of Gujarat or gemstone polishers from Jaipur. Filigree being a craft involving light weight metal but intricate designs, Bengali workers are not only preferred across the country, but also paid higher for their work.

With the advent of investment casting and electroforming processes however, the need for specialised craftsperson is no more as important as having employees with process orientation and ability to deliver more volumes by operating machines. That is, in this changing scenario, mechanisation requires more process workers than crafts persons, although for non-machined and high-value products, craft is still necessary.

Traditional jewellery artisans from most regions now face unemployment, low income and an uncertain future. Goldsmith families face competition from large manufacturing houses, which either employ them on contract or are direct competitors. The benefit of being traditional jewellery makers is declining because of gradual loss of regional identity of jewellery. Driven by changing demand trends, mixed designs are increasingly being manufactured as against those that maintain the 'purity' of traditional design of the region. Today, a jeweller in North India may sell Temple jewellery made locally, rather than importing from its original home in South India.

Most artisans in the jewellery and gemstone industry have poor education and economic background. Since they start working at home from an early age, it makes them vulnerable to exploitation because of lack of education and formal training. While they may be skilled in the particular part of the job in the entire process, they rarely acquire other skills in order to move up the value chain. In fact, the industry trend as it stands today is: once a filer, always a filer. In the absence of additional employment benefits such as provident fund, medical insurance or

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pension, life is difficult once out of job for the unorganised sector employee. The industry is highly cyclical, which means that job losses are not uncommon. Good eyesight is an important asset for artisans who work in sitting position for long hours, working on fine components and stones. By the time they reach middle-age, many have weak eyesight and are unable to continue to work. If an interim income is not available, the artisan is forced to seek jobs in another industry leading to complete loss of the craft to the industry.

This is a major concern today. While on the one hand craftsmen are losing their jobs, on the other hand the gems and jewellery manufacturing industry faces acute shortage of skilled labour because of migration to other industries. Managing seasonal and cyclical business cycles is proving to be a challenge in retaining employees. Multi-skilling is an imperative that can no longer be ignored by, both, the employer and employee.

Traditional or “*Khandani*” artisans are moving away from the trade and to find alternative employment elsewhere. This has led to a significant shortage of skilled artisans in the industry. Those that exist charge high premium for work. The promise of flow of artisans from one generation to another is no longer a guarantee of future pool of workers. It has prompted the industry to re-evaluate the terms of work contract even for job-work artisans. New models are being developed in order to attract them back to the industry. Employment benefits, pensions, work-from-home for ladies, mobile training centres and welfare schemes on par with other industry have become essential for retention.

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7. Jewellery manufacturing and gemstone processing

The Geological Survey of India (GSI) has identified potential mining zones of several minerals including 410,939 sq. km of reserves of gold, diamonds, precious stones and platinum group metals. However, most of the reserves of these zones is categorised as 'deficient'. While FDI has been allowed in mining of gold and diamonds, it remains to be seen if exploration will yield results such that India's complete dependence on imports is mitigated to some extent. In the long run then, better technology and technique may be required to find ample reserves that are commercially viable for mining.

China, Australia, USA, Russia and South Africa are the largest producers of gold today. While China's production is increasing, that of others is declining. Botswana, Russia, Australia, Angola, Congo, South Africa and Canada are the major diamond producing countries. South Asia including India, Africa and South America are the key producers of precious and semi-precious gemstones.

Figure 9: Key stages in gems and jewellery industry



Source: IMaCS Research

Gold and other precious metals such as silver and platinum group metals are mainly purchased from banks and some from authorised bullion dealers. Gemstones are either procured directly from mines overseas or from auction markets. Traders usually help when smaller quantities are required. Rough diamonds have been traditionally imported from Antwerp, Belgium. Lately, direct imports from African mines have increased, especially, Botswana. Some Indian diamond

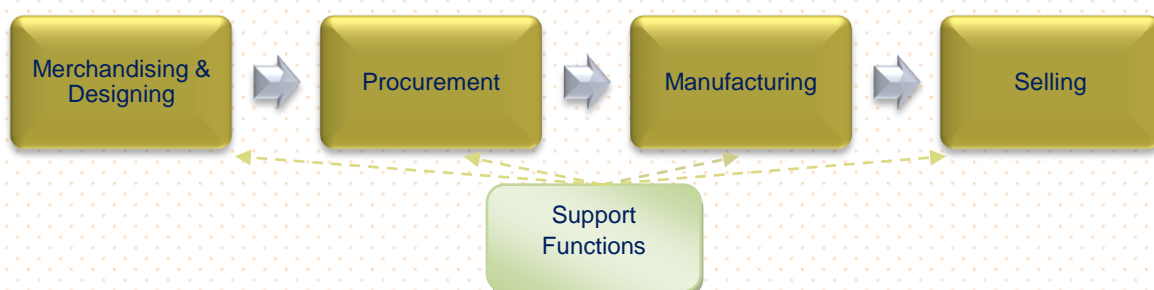
processing companies have set up polishing units in Africa and import cut and polished diamonds for sale or re-export. The Government has imposed a 2 per cent import duty on polished diamonds in order to curb the trend. Since India is the largest processing centre for diamonds and coloured gemstones, industry players have considerable bargaining power. However, diminishing global reserves as well as competition from emerging processing centres in China and Africa may have adversely affected this advantage in recent years.

Since inputs are mostly imported, India's gems and jewellery industry is primarily involved in value addition of precious metals and gemstones. The gems and jewellery manufacturing industry is known globally for its variety, craftsmanship and high-quality products. In fact, it is one of the most labour intensive industries in the country. There are several processes involved, many of which require creativity and patience for painstaking work.

7.1. Handmade gold and gems-set jewellery manufacturing

The handmade gold and gems-set manufacturing industry represents the traditional segment of this industry where by goldsmiths design their jewels and create them using mainly hand tools and basic machines. Depending on the design, once the jewellery frame is ready it may be embellished with gemstones including diamonds, or enamel paint (*minakari*) or plating. Melting, alloying and refining of gold to achieve the required purity (karat) or hue is an essential part of jewellery manufacturing process. 'Handmade jewellery' usually requires the '*Kaarigar*' to make his own tools as also to use dies, drills, wire drawing and other hand-guided machines.

Figure 10: Jewellery manufacturing industry



Source: IMaCS Survey

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The segment has a few integrated players who manufacture, market and sell their own products. However, most of it is still unorganised, with large number of jewellers either procuring from aggregators or manufacturing some jewellery in-house and contracting the rest to ‘job-work goldsmiths’ who typically work in clusters. The benefit of contracting to job workers is that the jeweller does not have to hold a large amount of unsold inventory. These can be re-melted and made into jewellery of new design depending on market demand and the job worker’s specialty. In this business model, the fixed costs are lower because most of the work is outsourced. Typically, the jeweller provides the gold and other raw materials such as gemstones to the job worker who turns them into jewellery as per the designs given. The jeweller or aggregator may hire a few jewellery designers who may work with computer aided designing (CAD) software. Often, the job worker himself creates designs by hand.

Figure 11: Key processes in handmade and gems-set jewellery manufacturing

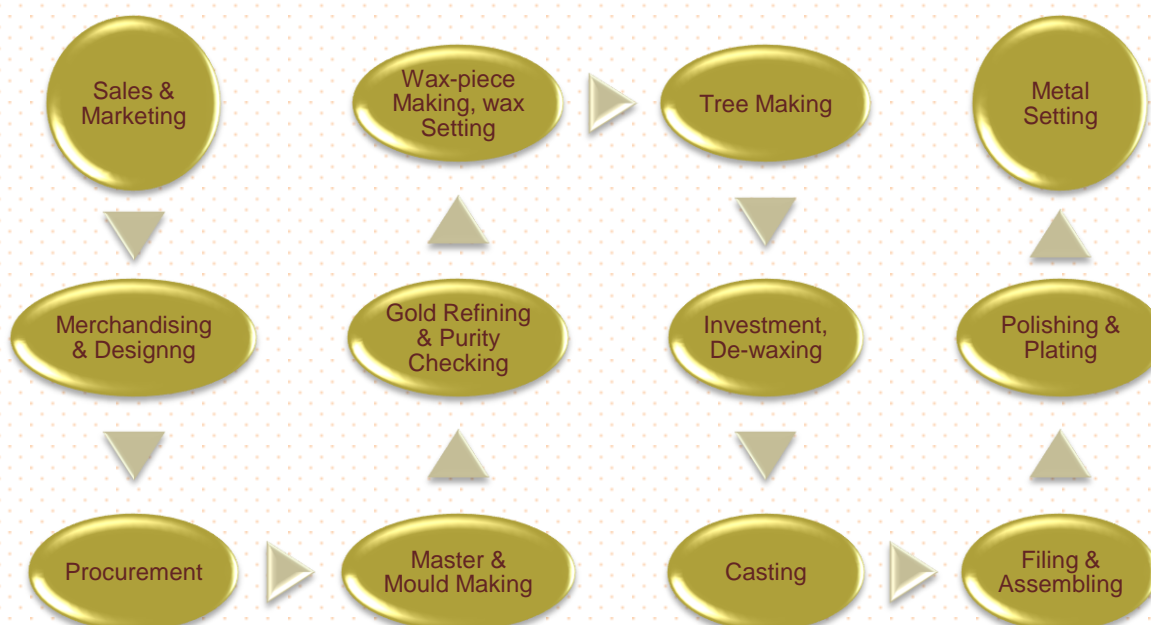


Source: IMaCS Survey

7.2. Cast and diamonds-set jewellery

Investment casting or casting has gained popularity over last 25 years for manufacturing jewellery on mass scale and with product quality. It comprises a series of controlled processes and use of mechanised systems. Advancement in casting technology over the years has brought in precision and ease of jewellery manufacturing on large scale. While a goldsmith may take up to three months to make a new piece of jewellery by hand, the casting process may help make many pieces of similar jewellery in a day or two. However, machines have limitations and only those jewellery pieces can be made in multiple numbers for which the casting machines specifications allow. This obviously means that the process requires making of moulds of products and wax models of similar products that can be mounted on a wax tree which is then invested for manufacturing the jewellery pieces.

Figure 12: Key processes in cast and diamonds-set jewellery manufacturing



Source: ImaCS Survey

Casting is most appropriate for diamonds set jewellery because it can with the heat generated during the casting process without any damage. Other hard and heat resistant gemstones can also be used in casting, although, the present trend is of casting jewellery with diamonds. Also,

with greater sophistication in casting machines, lighter weight jewellery can now be made with higher precision. Jewellery manufacturers are increasingly employing a mix of casting and handmade techniques to create new blends of designs as well improving profitability through mass production while keeping the traditional and high-value hand-manufacturing alive at the same time.

7.3. Machined and electroformed jewellery

Products such as bangles are usually made using CNC machines. Laser machines are also used for cutting and linking jewellery pieces and making fine patterns of parts of jewellery designed. Electroforming is an emerging technique with only a few players in the country. This process allows light weight jewellery to be made with fine precision that is un-achieved in the casting process. Manufacturers may make different parts of a jewellery piece using a mix of these techniques and machines and then link the parts together to form the complete jewellery.

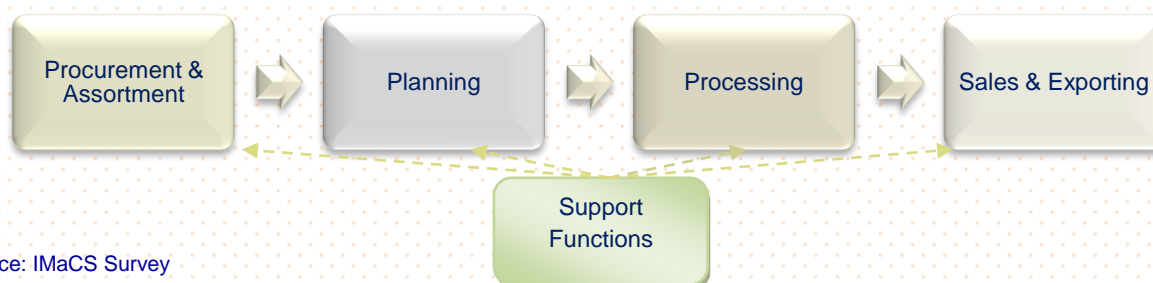
7.4. Diamond processing

Diamonds are found in many countries around the world, but the majority is found in Angola, Botswana, Democratic Republic of Congo, Namibia and South Africa. Mined rough diamonds are transported to the sorting centres and valued into different categories. There are thousands of different categories into which diamonds can be sorted, depending on size, shape, quality and colour. The best quality diamonds are used as gems for jewellery making and others are used for industrial purposes, such as cutting and drilling.

The Diamond Trade Company (DTC), controlled by De Beers, is the single largest sorter and distributor of rough diamonds. Antwerp is the largest centre for trade of roughs, although Mumbai has also become a trading centre for DTC roughs. DTC roughs are sold to selected 'sight-holders'. Gem-quality diamonds are usually distributed in select diamond cutting and trading centres such as Antwerp in Belgium, Mumbai-Surat in India, Tel-Aviv in Israel, New York in the USA. Botswana, China, Namibia, Sri Lanka and Thailand are the other smaller centres. Diamond is processed in these centres and sold to jewellers across the world through diamond exchanges. Lately, India has also started procuring non-DTC diamonds directly from African and Russian mines.

Diamond polishing industry comprises sight-holders, job workers and resellers. The sight-holder has a complete business set up, from diamond procuring and polishing to jewellery manufacturing, while the job worker may get a part of the polishing work as outsourced either by a site holder or a reseller.

Figure 13: Diamond processing industry



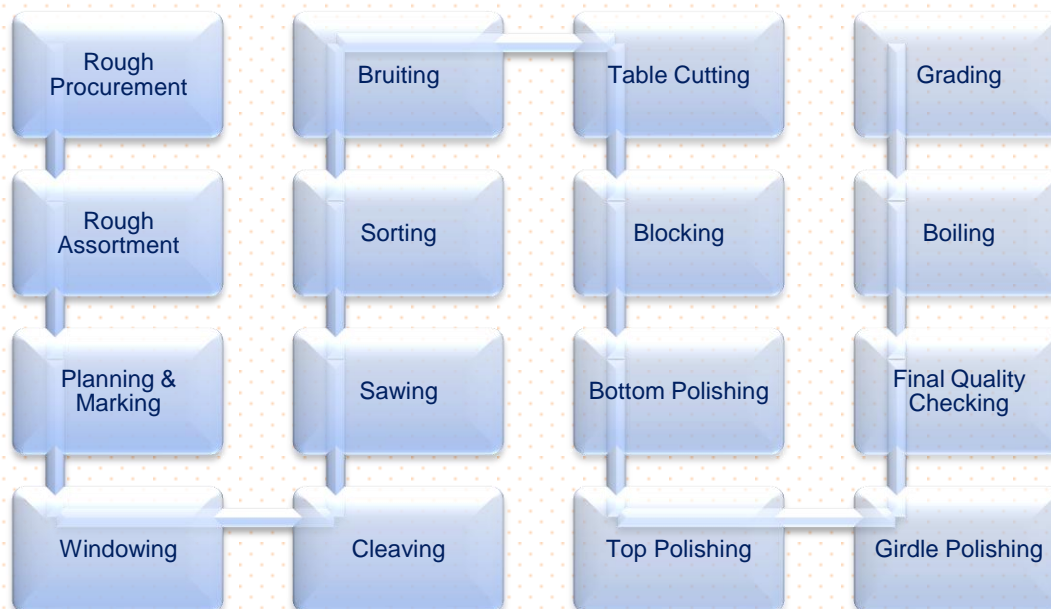
Source: IMaCS Survey

Diamond cutting and polishing requires anywhere from several hours to several months to complete. During this process, a diamond loses, on average, half of its original weight. Because of impurities that may either be on the surface or buried deep inside, a diamond stone from the mine first needs to be planned and marked for cutting, so that maximum inclusions are removed with minimum stone loss.

Bruiting, coning, faceting and polishing provide shape, texture and shine to the diamond. The more the facets, the higher is the workmanship. The fineness of the facet can be assessed by the sparkle of the finished diamonds as a result of light trapped in them. The industry has become substantially sophisticated over the years with the use of hi-technology in different processes, especially, in planning, inclusion plotting, and laser sawing.

Until recently, India was the only country with capability for polishing flat diamonds or scrap diamonds, which were mainly used in Jadau settings. It was a traditional craft introduced by the Moghul rulers of Rajasthan. Today, the craft is being adopted in some overseas industries as well and market is expanding beyond India.

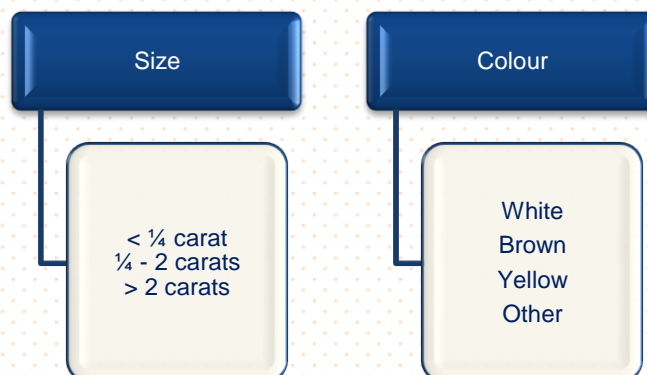
Figure 14: Key processes in diamond polishing



Source: IMAcS Survey

India is well known for craftsmanship in polishing small size diamonds with minimum stone loss. Belgium and Israel dominate in cutting and polishing of large-size and large-value diamonds of over 0.5 carats. India dominates in the small-size diamonds of less than 0.5 carats, although the trend is moving towards polishing high-value and large-size diamonds also. Grading of polished diamonds, is an established practice – the 4Cs of cut, clarity, colour and carat being the standard measure for assigning grades.

Figure 15: Diamond cutting and polishing categories



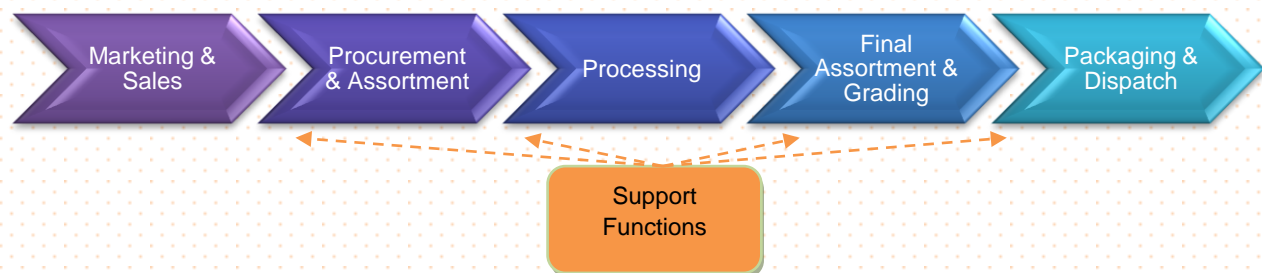
Source: IMAcS Survey

Cubic Zirconia is a synthetic diamond that is created artificially and mimics the properties of naturally found and polished diamonds. In the 1990s, India had a booming polishing industry for these low-value stones, but is now just a trading centre.

7.5. Coloured gemstones processing

Gemstones are valued based on the key factors such as rarity, brilliance, colour, and market demand. Gemstone processing has the similar stages of operations as diamond processing. However unlike diamonds the polishing is more complex because of the variety of gems polished. Gems vary in terms of refractive index, dispersion, specific gravity, hardness, inclusions and lustre. Some may be transparent while others translucent or opaque. These characteristics determine the shape, size and polishing of the gemstone. That is, there is no standard process of planning and marking as there is in diamond polishing. Each stone is unique. Popularity of a large variety of semi-precious stones has further added to the complexity in standardisation of grading.

Figure 16: Coloured gemstones processing industry



Source: IMaCS Survey

Rough gemstones are identified and assorted as per their characteristics, quality and origins. The purpose of planning and marking is to determine the shape and faceting of the gemstone. For example, an opaque gemstone may be cabochon while a transparent one may be more suited to faceting. Similarly, a high value Emerald is better polished along with its inclusions than losing carats to remove the last of impurities buried deep inside.

Figure 17: Key processes in coloured gemstone polishing



Source: IMaCS Survey

Coloured gemstones are procured from mines across the world for polishing in Jaipur. These stones may be precious or semi-precious or synthetic. Diamond, Ruby, Sapphire and Emerald are precious stones. Topaz, Opal, amethyst, Peridot and Turquoise may also fall in this category because of their historical significance as jewels. In addition, there are 400-500 stones that are processed in polishing units across Jaipur. Every day, new varieties are discovered.

In addition, there are the manufactured gemstones such as blue coloured glass which is an imitation of Sapphire, or vanadium coloured synthetic-Sapphire that looks like Alexandrite. Then there are glass filled stones such as Rubies or Emeralds. They are treated for inclusions by filling coloured glass.

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Gemstone	Country	Gemstone	Country
Agate	USA, Mexico, Germany, Italy, Brazil, China, India, Africa	Moonstone	Sri Lanka, India, Myanmar, Mexico, Madagascar
Alexandrite	Brazil, Tanzania, Sri Lanka, India, Madagascar	Opal	Australia, Mexico, USA
Amethyst	Brazil, Uruguay, Bolivia, Tanzania, Zambia, Namibia	Pearl	Japan, China
Aquamarine	Brazil, Zambia, Mozambique, Angola, Nigeria, Madagascar	Peridot	USA, China, Myanmar, Pakistan, Mexico, Sri Lanka
Coral	Sardinia	Tanzanite	Tanzania
Black Onyx	USA, Brazil, India, Pakistan, Madagascar	Ruby	Thailand, Cambodia, Myanmar, India, Afghanistan, Pakistan, Sri Lanka, Tanzania, Madagascar, Viet Nam, Nepal, Tajikistan
Citrine	Brazil, Bolivia	Sapphire	Sri Lanka, Kenya, Myanmar, Tanzania, India, Madagascar, Thailand, Viet Nam, Cambodia, Laos, Australia, US
Emerald	Columbia, Brazil, Zambia, Zimbabwe, Afghanistan, Madagascar	Topaz	Brazil, Pakistan, Russia, Sri Lanka, Nigeria, China
Garnet	India, Sri Lanka, Thailand, South Africa, USA	Tourmaline	Brazil, Tanzania, Madagascar, Australia, Sri Lanka, USA, Russia
Jade	Myanmar, China, Guatemala, Canada	Turquoise	USA, Mexico, Afghanistan, Israel, China

Source: IMaCS Research

7.6. Jewellery Retailing

Until the 1990s, jewellery retailing was mainly under local single-shop jewellers who had dedicated customers with their specific preferences and loyalties. Today, there are different types of retail formats such as single-store, chain of stores, shop-in-shop, duty free, souks or theme malls, etc.

Many large franchised stores operate with dedicated contractors who provide variety according to market demand and their speciality. For example, Tanishq and Reliance stores may buy from manufacturers across the country to provide variety across their stores as per customer's profile. They also help develop markets for new products through large scale advertising and jewellery fares.

Product merchandising is a critical part of retailing, usually involving the senior management of the retail store. They identify market trends and accordingly determine jewellery inventory and display patterns in their store(s). Inventory management, and support functions such as cash

transactions, labelling, assessment of returned jewellery and gold smithy are the typical functions in a jewellery retail store. Selling being the main objective of the stores, selling is a key function.

Figure 18: Key stages in jewellery retailing



Source: ImaCS Survey



8. Market dynamics

The jewellery manufacturing scenario has changed drastically since liberalisation in the 1990s. With the growing legitimacy, traditional goldsmiths who were a part of the unorganised sector have been replaced by a new set of jewellers. Earlier the goldsmith made jewellery at home with a well-guarded craft that was rarely shared outside the community. They also sold the jewellery directly to loyal customers. The entry of new investors, today, has meant that they ensure: the quality of gold, operate on narrow margin, act more as aggregators than as goldsmiths, shift focus to large scale advertising, provide variety of products, switch to automation and mechanisation, and cut wastage. Some goldsmiths have turned into the new-age entrepreneurs, other are fading away, losing business and their craft in the process. It is said that gold business is flourishing, not goldsmiths. Retailing has changed significantly, from small stores to large format stores with greater focus on display, merchandising and customer loyalty schemes.

In the diamond processing segment again, there has been a dramatic change. From cutting and polishing small quantities of diamonds in the 1950s, India commands a significant position in diamond processing today. Until recently, Gujarat diamonds processing industry catered to polishing of low-weight and small value roughs. However, the industry is more organised than before and uses the latest techniques and technology. Steadily, it has started cutting and polishing bigger roughs too, those which have higher value in the market.

The gemstone polishing segment is also getting more organised, although most of it is still in the unorganised sector. Demand for higher productivity is driving the industry towards mechanisation. Consequently, it is an industry in transition. In the coming years, mechanisation and automation are inevitable. This would mean that smaller players will have to give place to larger investors or turn themselves into entrepreneurs of the organised sectors. Scaling up of operations, sharing margins with workers, setting up better manufacturing facilities, investing in research and development is unavoidable.

8.1. Market growth dynamics

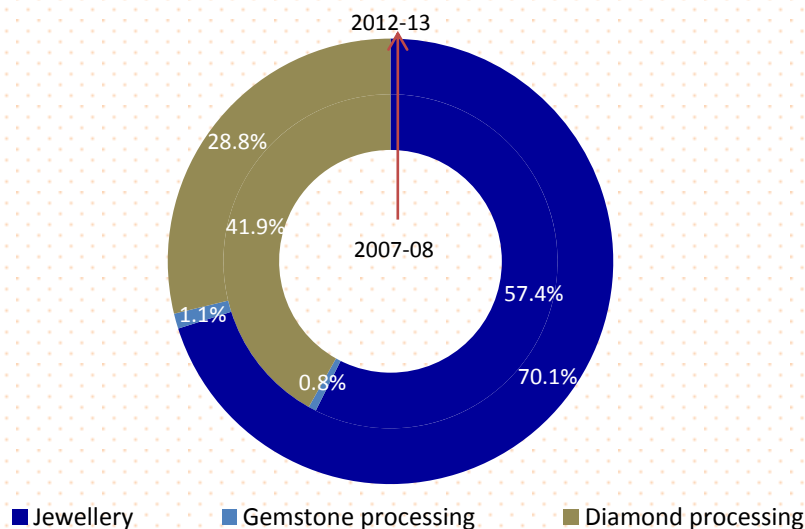
Today, India's private gold holdings are estimated at 18,000 to 19,000 tonnes, mostly in the form of jewellery. Scrap refining is estimated at about 400 tonnes. The country is the largest diamond and gemstone processing centre in the world, by volume. In terms of carat weight,

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India processes about 80 per cent of world's rough-diamond production and 58 per cent by value.

According to IMaCS, the Indian gems and jewellery market was valued at about Rs. 454,000 crore in 2012-13 with a compound annual growth rate (CAGR) of about 22 per cent over last five years. The jewellery segment increased significantly in value, driven mainly by increasing gold prices but also a steady volume of sales.

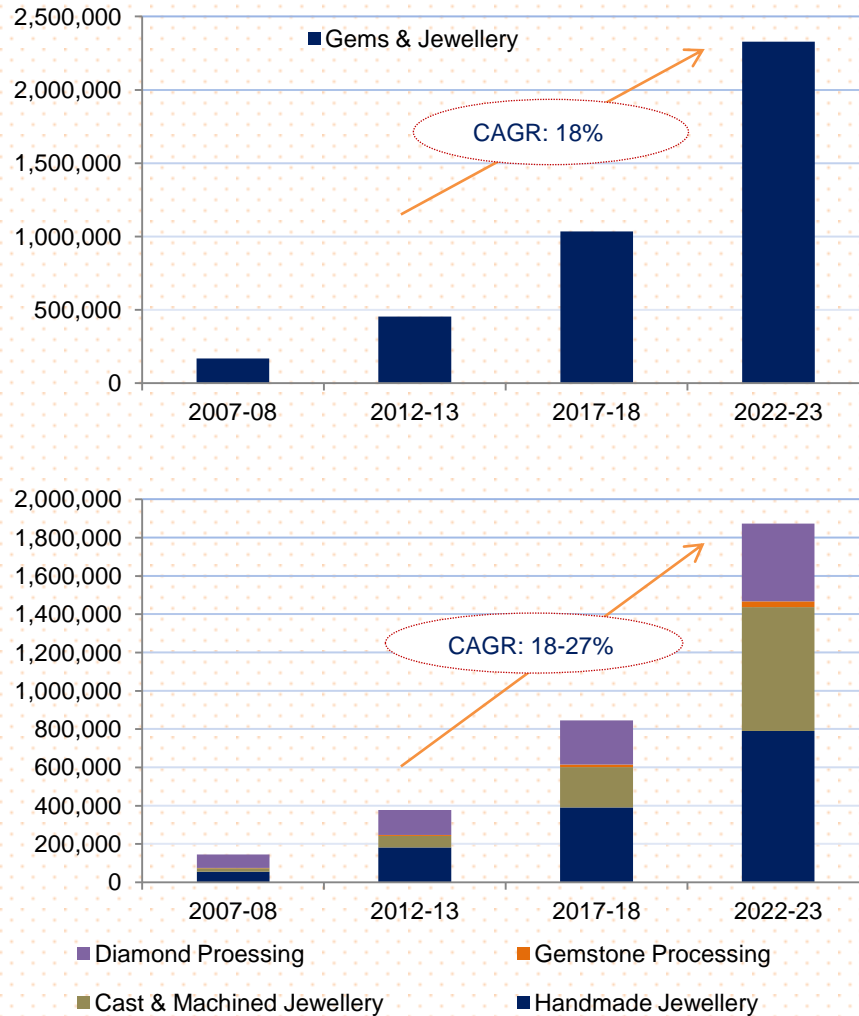
Figure 19: Gems and jewellery market share



Source: IMaCS Analysis

The gems and jewellery market is expected to grow to Rs. 2,327,750 crore by 2022-23. The cast and diamonds-set jewellery segment along with other machined products is expected to grow at a higher rate of 27 per cent CAGR, while growth is expected to be around 16 per cent in the hand-made and gems-set jewellery segment. Similarly, the diamonds and coloured gemstone processing for exports is expected to grow at about 20 per cent. The overall market growth is expected to be around 18-20 per cent. While value growth may slow down in the short term because of stricter import norms, volume growth is expected to be stable. Casting and diamond processing may grow steadily in the short term, while gemstone processing and handmade gold segment may have to operate at lower than average margins because of the changing scenario.

Figure 20: Gems and jewellery market growth projections

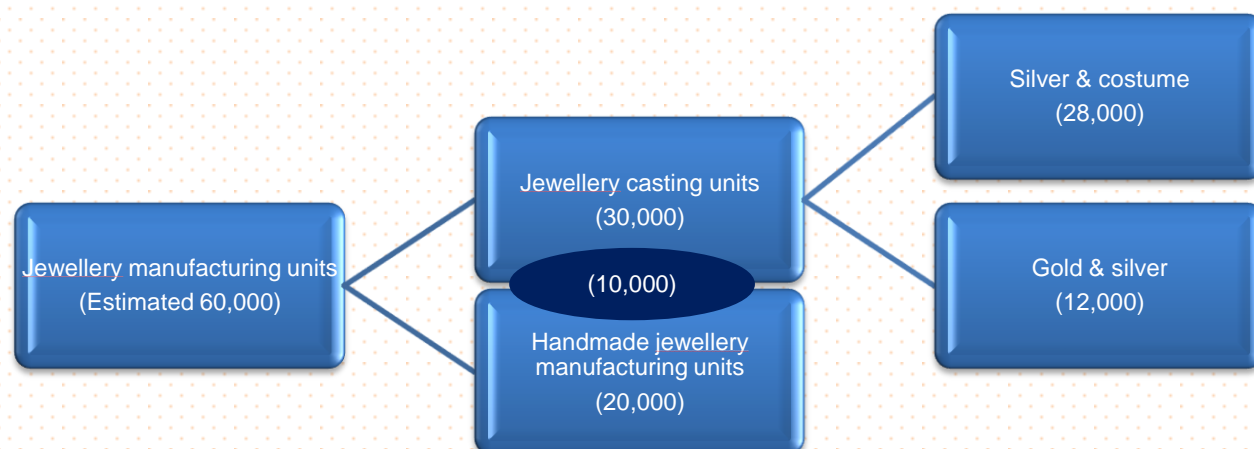


Source: IMaCS Analysis

8.2. Demand drivers and trends

There are an estimated 60,000 units manufacturing jewellery in India. Of these about 30,000 produce handmade jewellery using traditional tools and designs. There are about 40,000 casting units, which may also have handmade jewellery makers. Casting technique is predominantly used for manufacturing plain gold or diamonds-set and some gems-set jewellery.

Figure 21: Jewellery manufacturing units



Source: IMaCS Survey

Growing middle class and affordability factor is driving greater demand for lighter weight jewellery as against heavier earlier. That is, while the overall karat demand of precious metals has remained constant, the number of pieces per karat has increased doubled. Consequently, the work load has roughly doubled over the past five years, while kilograms sold has remained flat. As mentioned earlier, the jewellery manufacturing industry is moving fast towards machine-made, high volume jewellery. Consequently, the share of cast jewellery in total jewellery sold is increasing steadily. In future, it is expected that the industry would produce greater proportion of cast and fusion jewellery of handmade-cum-machine along with imported jewellery.

Today, the imperatives for the industry are: investment in new machine manufacturing techniques to cater to growing value-for-money market that is driving lower margins; training new lots of non-traditional goldsmiths and bench workers on traditional as well as machine-made jewellery making techniques as well as greater use of machines in processing of diamonds and gemstones; and building on India's leadership in handmade jewellery (traditional) and processing of diamond and gemstones through targeted advertising campaign overseas and in domestic markets. Hallmarking and refining are new growth areas of the industry.

In the diamond processing industry, the general global economic slowdown has prompted a shift towards more affordable smaller size diamond processing. The largest export destination

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for diamonds from India is the USA and Europe, mainly, for large size diamonds. However, a slowdown in these economies has prompted Indian diamond processing companies to explore markets in Asian and Middle Eastern countries. There is a lot of automation in the industry up to the bruiting stage, but polishing continues to be labour intensive. However, the industry faces shortage of raw materials, skilled labour and increasing cost of technology.

Jaipur is the largest gemstone processing centre in India, accounting for almost 98 per cent of all coloured, precious and semi-precious gemstones processed in the country. There are about 170 large units in the RIICO industrial zones and many small unorganised players or job workers in old Jaipur area. Growth is gradually shifting from unorganised to organised players. In fact, the organised sector is growing at 10-15 per cent annually, while the unorganised sector growth is declining.

Indian gemstone industry needs to adopt technology for mass products, share profit with workers and devise worldwide campaign to educate value of craftsmanship. Adoption of grading and certification is also important for the industry to create awareness on genuine versus man-made gemstones and the craft of polishing.

There are an estimated 350,000 jewellery retail stores in India. Of these, only around 5 per cent fall under the organised sector and the rest are part of a highly fragmented unorganised sector. Organised retailing is growing rapidly by capitalising on its 'variety', 'reliability' and 'quality' emphasis. These retail chains are driving the hallmarking trend. Key trends in the jewellery industry are: changing taste and preferences of customers; seasonal sales; new retail formats and preference towards branded jewellery.

The changing customer preference towards light-weight and fusion jewellery means that the average ticket-size of a customer in a jewellery retail store has come down by over 20 per cent in the last five years. The key reasons for this decline are: increase in gold price and preference for wearable jewellery versus that for safekeeping. Exchange of old gold jewellery for fresh ones is a major buying pattern and accounts for around 30-35 per cent of sales. Consumer awareness about 'quality' has increased and preference is for hallmarked jewellery. Gold

jewellery is being introduced in the men's segment as well with products such as cuff links, tie pins and ear studs.

8.3. Market risks and constraints

Presently, the market buyers cannot distinguish between a machine-made or a handmade jewellery or gemstone. Consequently, margins are similar for both types of products. Growing competition from other countries such as China, which has predominantly machine-made expertise, also mandates focussed campaigns to highlight the value of labour-intensive over machine-made and create a discerning market.

The highly fragmented nature of market is a hindrance to achieving economies of scale, necessary to expand within and outside India. In addition, industry players are heavily dependent on imports and exports and are, therefore, susceptible to exchange rate movements. Large players are creating geographical hedge by expanding to key overseas markets by setting up representative sales offices or manufacturing units. Joint ventures with overseas companies are also increasing. However, the domestic jewellery-logistics sector is underdeveloped and cause for serious safety concerns with regard to movement of goods.

While China's growing processing capability is perceived as a real threat, it is also a growing market. This has prompted several Indian processing units to set up units in China. However, driven by a welcome investment policy, diamond processing companies from Belgium, Israel and Thailand have also invested in China, thereby, posing competition to Indian companies.

Going forward, Indian gems and jewellery manufacturing units will focus on improving labour productivity, standardising manufacturing and quality practices, expanding overseas, and safeguarding intellectual property rights (IPR). Protection of IPR is a key concern and existing safeguards are largely ineffective. Problem of plagiarism, particularly, for designs is a major concern. Pooling of a large number of designers is a trend among big manufacturers.

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9. Employment in gems and jewellery industry

The gems and jewellery industry directly employs about 4.6 million. However, there is a growing shortage of skilled workers in almost all segments for several reasons. The average age of non-management workers is 25-45 years. Most of them are hired through references from existing employees, mainly, because of assurance reliability required for handling high-value materials and guarantee of low labour unrest. Consequently, the workers hail from closed groups. Also, these workers are typically from low-income families and often school drop-outs. They are either trained by an elder in the family or by a co-worker, usually, a fellow villager.

In the changing scenario of goldsmith being replaced by line worker, there is little room for learning all aspects of jewellery manufacturing, i.e., once a filer, retire as a filer. In the absence of certification either for skill or for experience, once the worker retires, he has no option but to return to the village. Weaker eyesight is usually a deterrent for jewellery workers. Many are forced to retire after reaching their 40s because of weak eyesight or back related ailments from years of working in sitting positions.

While average wage for a worker may vary from Rs. 8,000 to Rs. 50,000 per month, depending on incentives earned, work hours are usually long. While employers in the organised sector offer other benefits such as provident fund, medical insurance and funeral allowance, the large unorganised sector has traditionally refrained from sharing margins on this account. Consequently, when the worker retires on reaching middle-age he has only agriculture to fall back, if that livelihood opportunity is still available. It is not only low paying but a harder profession. Career progression is restricted to movement from one company to another in the same job role.

Growing income in other industries such as selling juice or driving auto-rickshaw sometime provides better opportunity to raise families. Hence, the next generation, which has traditionally been the source of labour in the industry – is no more interested in joining the gems and jewellery profession of forefathers. The traditional craft is dying. The cyclical nature of the industry is another deterrent. After the 2008 global economic meltdown, several workers bid adieu to the profession permanently.

A large unorganised sector implies that an industry downturn because of seasonal or cyclical reasons is commonly accepted by the workers. They usually have a fall back option planned for the months that are expected to do weak business. Opportunities provided by employment schemes such as MNREGA come in handy, although employers lose valuable worker time because such leaves usually turn out to be longer than agreed. However, sudden changes in regulations affect the workers income unexpectedly. Unanticipated increase in duty levies result in a sudden drop in business and a commensurate drop in their incentives, which form a large part of the income.

9.1. Current employment and training scenario

Typical retail margins may vary between 8-10 per cent. While the margins may be higher in the processing segments up to 30 per cent, most of it is retained by the owners. Today, there is a 25-40 per cent shortage of skilled labour, depending on the segment. While this has benefitted the existing skilled workforce, their workload has increased significantly. The shortage of skilled labour has not only prompted employers to look at machine-made jewellery option, which requires capital investment, but also to review their employee policies on better work conditions, re-training, provision of employment benefits, and salary increments.

Employers who operate in the special economic zones are able to attract employees away from the others because of the statutory requirement to provide them with benefits and better work conditions. However, as they expand business, the existing pool of workers with the current level of skills is inadequate for them.

The shortage is more acute for the highly skilled artisans, who have previously been trained by their forefathers, but are rapidly eroding community because of lack of promise of future for their children. The abysmally small numbers of training institutes in the sector provide courses in several areas of the sector. However, the popular courses are those on designing or retailing. The bench-worker level courses have not been successful because of reasons such as: minimum education requirements, or discomfort with modern ambiance or language of teaching and distance from home or work place. Nevertheless, there is interest in obtaining certification through short duration courses because a certificate is seen as an affirmation of their skilled status.

The retail and design-trained workforce finds employment more easily in the industry, although their share of employment in a company is much lower than the bench-workers. Also, a majority of designers tend to be self-employed rather than seeking employment elsewhere. Attracting entry level workers is a key challenge for the industry today. In the coming decade, the industry would have to improve work conditions, move to the interiors of the country to set up training centres there and create pools of trained workers.

Small and medium diamond processing companies from Surat have set up small units in tribal areas for training and including women in the workforce. It is estimated that such micro-scale units process diamonds valued at over Rs. 1,000 crore and earn up to Rs. 10,000 per month.

While the need for training is evident in all areas of manufacturing and processing, the emphasis is shifting towards machine-trained workers. This would require a certain minimum level of reading and writing skills as well as machine maintenance and quality orientation. Diamond polishing industry has developed work manuals in local language along with pictorial demonstration software in order to train the illiterate or semi-literate workers. In the handmade jewellery segment, skilled artisans are reluctant to adopt new methods of manufacturing or even designing jewellery. Process orientation, high productivity and low absenteeism are some of the commercial aspects of training required.

Master craftsmen or goldsmiths have traditionally been reluctant to share their skills beyond their closed communities. Gradually, in the new market order, it is important to create mechanisms to tap their expertise to share with the wider workforce so that the craft can be kept alive. Otherwise, most of them are likely to become mere labour contractors for wholesale agents and aggregators.

9.2. Existing and projected employment

The industry is expected to require about double the amount of workforce in 2022-23 as compared to today. The highest demand growth is expected to come from the cast and machined jewellery manufacturing segment and the lowest from the hand-made segment. All segments except the handmade are expected to increase productivity. This means that the fall

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in employment demand because of higher productivity is likely to be compensated by the expected 18-20 per cent average market growth. Jewellery retailing segment is expected to continue to contribute significantly to employment growth and be that largest employment segment. The gemstone processing segment is likely to turn to greater mechanisation in the coming years, thereby increasing productivity and hence lower employment creation, although in the immediate future the employment demand remains high. The diamond processing is already mechanised and hence employment generation will come from market growth.

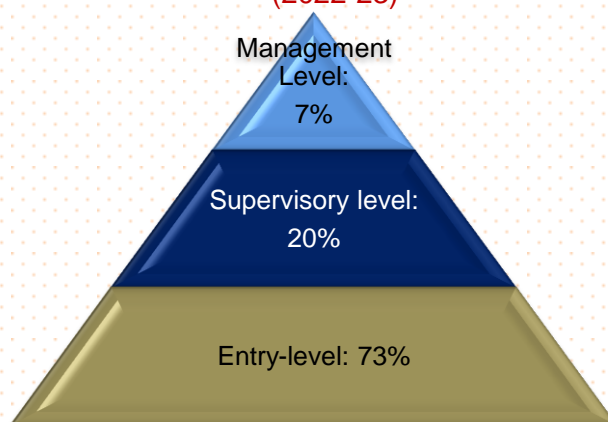
Figure 22: Anticipated employment growth in gems and jewellery sector

Employment	2012-13	2017-18	2022-23	Incremental (2013-23)
Cast and diamonds-set	607,500	1,172,457	1,869,364	1,261,864
Handmade gold and gems-set	880,297	954,416	1,218,446	338,150
Diamond processing	1,039,163	1,434,919	1,981,394	942,231
Gemstone processing	614,530	949,480	1,174,635	560,105
Jewellery retail	1,500,000	2,283,046	2,971,308	1,471,308
Total	4,641,490	6,794,319	9,215,147	4,573,658

Source: IMaCS Analysis

At the entry level or the bench-worker level, the total anticipated demand in 2022-23 is about 6.7 million. With such an increase in employment demand the current shortage worsen if skill-training capacity remains at present levels.

Figure 23: Employment demand distribution (2022-23)



Source: IMaCS Analysis

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There are only a handful of recognised training institutes catering to providing training in the industry today. Their reach is limited to main cities of the country, whereas the workforce is predominantly rural. Hence, it is imperative not only that more training institutions are set up, but also that they are brought closer to the potential supply areas. The traditional mode of classroom training may have to be supplemented by mobile centres or kiosks that provide work-cum-training at the village or district level.

Also, given the negative bias prevailing towards seeking employment in the industry it may have to be overcome by demonstrating the value of certification in terms of income growth, career stability and progression. The few existing machine-trained or new-skill trained workers, today, are benefitting from short supply of trained workforce. They may be useful in training the trainers as well as acting as ambassadors for attracting more workers into the sector.



About us:
Gems and Jewellery Skill Council of India (GJSCI)

Established in July 2012, GJSCI is the sector skill council for Gems and Jewellery sector in India. It covers all the areas and functions of the industry such as diamond processing, coloured gemstone processing, jewellery manufacturing, wholesale, retail and exports. GJSCI is responsible for: identifying skill development needs in the gems and jewellery sector in India; preparing a catalogue of types of skills needed and a skill development plan for the Gem and Jewellery sector; determining skills/competency standards and qualifications; providing affiliation and accreditation to institutes imparting training; participating in the process of examining and certifying individuals undergoing training; planning and execution of 'Train the trainer' programs; establishing 'Academies of Excellence' in the sector and a well-structured Labour Market Information System (LMIS) to assist in planning and delivery of training. (www.gjsci.org)

The founder organisations that have helped create the GJSCI are:

- The Gem & Jewellery Export Promotion Council (GJEPC)
- The All India Gems and Jewellery Trade Federation (GJF)
- The SEEPZ Gems & Jewellery Manufacturers Association (SGJMA)
- The Jewellers Association Jaipur (JAJ)

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