

Cluster Mapping Study of the Gems & Jewellery Sector in India

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Cluster Mapping Study of the Gems & Jewellery Sector in India

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GJEPC

About the Cluster Mapping Study of the Gems & Jewellery Sector in India

The GJEPC Cluster Mapping Study of the Gems & Jewellery Sector seeks a comprehensive understanding of the gems and jewellery (G&J) sector in terms of mapping of clusters, assessment of skill and technology gaps, contribution to economy pertaining to gross value added, employment etc.

About GJEPC

The Gem & Jewellery Export Promotion Council is the apex body set up by the Ministry of Commerce, Government of India, driving India's export-led growth in the gem and jewellery sector, since 1966. The GJEPC has been continuously working for the development of the sector. The council's major focus areas include promoting Brand INDIA through participation in International Jewellery shows; facilitating better interaction on trade-related issues between the industry and the Government of India via various ministries, regulatory authorities and agencies; spreading education by running training institutes that impart manufacturing skills, technical and design excellence training, working on innovation and infrastructure by providing MSMEs with affordable modern machines and tools at Common Facility Centres and setting up Jewellery Parks across the country. For more information about GJEPC, visit <https://gjecp.org>.

While this report has been supported by GJEPC, the content and opinions are those of authors alone and do not reflect the views of GJEPC or any of its affiliates.

पीयूष गोयल
PIYUSH GOYAL



सत्यमेव जयते

वाणिज्य एवं उद्योग,
उपभोक्ता मामले, खाद्य और सार्वजनिक
वितरण तथा वस्त्र मंत्री, भारत सरकार
MINISTER OF COMMERCE & INDUSTRY,
CONSUMER AFFAIRS, FOOD & PUBLIC DISTRIBUTION AND
TEXTILES, GOVERNMENT OF INDIA



MESSAGE

India has made progressive strides under the guidance of our Hon'ble Prime Minister Shri Narendra Modi ji in the Gem and Jewellery sector. It is one of the most enterprising sectors in the country, and has become a world leader in cutting and polishing diamonds. The industry is one of the biggest revenue earners for the country and hires nearly 50 lakh people

I am pleased to note that the Gem & Jewellery Export Promotion Council (GJEPC) and the National Council of Applied Economic Research (NCAER) have undertaken a statistical analysis of this \$36 billion export industry. This study will go a long way in understanding the sector and mapping its contribution to the economy.

The proven benefits of development in clusters aligns with the Government's vision to uplift the MSME sector, which constitutes nearly 80% of this industry. I congratulate GJEPC and NCAER for the publication of this valuable study, and hope that the report's findings contribute positively to India's Gem and Jewellery sector, especially in its quest to reach \$75 billion in exports in the next few years.

Piyush Goyal

FOREWORD

India is one of the largest exporters of gems and jewellery (G&J) in the world. It has become the world's largest centre for cutting and polishing of diamonds and has achieved a remarkable position in jewellery manufacture. Over 2013-2017, on an average, the G&J sector accounted for about 14.2 per cent of India's total merchandise exports. After engineering goods and petroleum products, G&J accounts for the third highest share in total Indian merchandise exports.

Despite India's status as a global leader in gems and jewellery, there is a lack of credible information on the number of clusters, units, and workers the industry employs. For policymakers to promote the sector and optimise its potential, it is imperative to identify key industry characteristics such as the regions specialising in specific G&J segments, the skills and technology used, supply chains, and the contribution to the economy.

To fill this gap, the Gems and Jewellery Export Promotion Council (GJEPC) requested NCAER to evaluate the key industry characteristics, its competitiveness, and its employment potential. GJEPC, set up by the Ministry of Commerce in 1966, is the apex body of the G&J industry, and enjoys a membership today of more than 6,000 G&J Indian exporters.

This NCAER Gems & Jewellery study provides a comprehensive map of G&J clusters in each industry segment based on the number of units and workers. The NCAER team surveyed a total of 6,743 G&J units, 5,139 urban and 1,604 rural, in 19 Indian States. The NCAER team also undertook a comprehensive workforce mapping and an analysis of the skills and technology gaps in the sector. G&J units are often closely held family enterprises and can be reticent in sharing financial information. The NCAER study therefore relied on the latest public data sources combined with a primary survey to calculate the industry's contribution to the economy. The study collected information on input sources and output destinations and analysed India's position

in world markets for each major G&J segment. A qualitative analysis of how association members, G&J unit owners and managers, and G&J exporters perceive government policies for the sector outlines their awareness, expectations from the government, and the impact of current policies on their business.

The NCAER study finds that 9.9 lakh units and 42.9 lakh workers are currently engaged in the Indian G&J industry. It has identified 390 districts of India as G&J clusters. A composite index of important economic industry parameters shows that the cutting and polishing of diamonds and gemstones is the sector's top segment. Other key segments catering to domestic and world markets include manufacture of synthetic stones, coins and legal tender, and gold jewellery. Overall, the study estimates that the direct and indirect contribution of G&J is 2.5 per cent of India's Gross Value Added. And for every new job the sector creates, 3.91 jobs are created in the economy.

Gems and jewellery account for a much higher share of output and gross value added in the Indian economy than other sectors such as beverages, leather and related products, wood and related products, paper and related products, and furniture. Within the manufacturing sector, G&J falls under "Other Manufacturing", which further falls under "Others". Given the relative importance of the G&J sector it should be considered a separate segment under NAS as in the cases of other sectors such as those mentioned above.

I wish to express our gratitude to Mr Sabyasachi Ray and Ms Rashmi Arora of GJEPC for offering their constant support and valuable insights during the study. They helped connect the NCAER team to important officials at the Gem and Jewellery Skill Council of India and various regional offices of the GJEPC. The NCAER team had very useful meetings with key association members of various G&J segments, industry experts, and institutes. We owe all

of them a large debt and truly appreciate their passion for excellence and interest in advancing the sector and remaining at its cutting edge.

The NCAER team that undertook this pioneering study was jointly led by NCAER Senior Fellow Mr K. A. Siddiqui and Fellow Mr P. K. Ghosh. The team included Senior Fellow Dr Poonam Munjal; Associate Fellow Dr Shayequa Z Ali; Senior Research Analysts Mr Asrar Alam and Dr Palash Baruah; and Research Associates Ms Sundus Usmani, Ms Gargi Pal, and Mr Animesh Sharma. I am grateful to NCAER Senior Advisor Dr G. C. Manna, Senior Consultant Dr B. B. Singh, and Consultant Mr S. K. Modal for their

encouragement and expert guidance. The project was carried out under the overall supervision of Dr Shashanka Bhide, NCAER Research Director. I wish to thank the entire team for their tremendous efforts in producing this pioneering study in the face of many challenges. I trust it will help the GJEPC and the Ministry of Commerce take a close look at the many ways in which the industry could make a much larger contribution to the Indian economy.

October 2020

Dr Shekhar Shah
Director General
NCAER

CHAIRMAN'S MESSAGE

In the 50-plus years since its formation, GJEPC has been instrumental in taking India's exports of gems and jewellery to unprecedented heights. Though the industry largely remains unorganized today, identifying various gem and jewellery clusters PAN India, mapping skills and technology of the identified clusters and doing gap analysis with respect to infrastructure, skill development, production system and logistic, etc. was imperative and critical to facilitate further growth of the sector.

GJEPC with the objective to reach out gems and jewellery manufacturers situated in remote areas of the country, and identify gems and jewellery clusters at the pan-India level , commissioned the National Council of Applied Economic Research (NCAER) to initiate a comprehensive study on the cluster mapping of the gems and jewellery sector

The report assists us in charting projects as per the requirement/size of the clusters through a 3 step development plan. On infrastructure front, GJEPC has plans to set up Common Facility Centre for small clusters, Mega CFCs for medium clusters, and Jewellery Park/Bourse for large G&J clusters. The industry would be able to take benefit of the TUF scheme, thus infusing advanced technology to enhance productivity, reduce cost, improve quality and spur innovations. This will also help us to upgrade

the skills of existing employees and making them conversant with rapidly evolving technologies. Moreover, the report would be useful in effectively implementing the various initiatives and schemes of the council – Parichay Card, Swasthya Ratna, Swasthya Kosh, and other schemes for the welfare and growth of karigars of the industry.

The Study conducted by NCAER and reports captured are in-depth and exhaustive. I express my sincere gratitude to the entire team at NCAER for successfully completing this project. At the same time, I would like to sincerely thank the members of COA for the extensive time spent by each member in order to accomplish the project.

The report has empowered us take decisions and implement projects for the further development of the industry with more clarity and conviction. This would help address the challenges of various identified clusters by providing them the requisite resources and finally make them exportable clusters with the enough capability to generate employment and promote exports which are the major objectives of the Government and Industry under Atmanirbhar Bharat program of Government.

October 2020

Mr Colin Shah
Chairman
GJEPC

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We would like to thank the members of Committee of the Administration (COA) for helping and guiding us through the course of the study. A very special thanks to Mr. Manish Jivani, Convener, Audit & Finance, GJEPC and Mr. K. Srinivasan, Convener, Gold Jewellery & Other Precious Metal Jewellery Panel, GJEPC for their guidance at all the stages of the study.

We would like to thank Mr. Sabyasachi Ray, Executive Director of the Gem and Jewellery Export Promotion Council (GJEPC), for offering his insights and critical inputs through the course of the study. Special thanks go out to Ms. Rashmi Arora (Assistant Director, Statistics Dept., GJEPC, Mumbai) who assisted the NCAER team in every step of the way from the inception to the completion of the study.

It would not have been possible to complete this study and to understand the working of the gems and jewellery sector had we not had interactions with the officials of the regional GJEPC offices viz., Ms. Jilpa Sheth (Sr. Director, Surat), Mr. KK Duggal (Director, Trade and Policy, Delhi), Mr. Sanjay Singh

(Regional Director, Jaipur), Mr. Surya Narayanan (Dy. Director, Chennai), Mr. Nitin Khandelwal (Dy. Director, Jaipur), Ms. Suruchi Khindria (Assistant Director, Delhi) and Mr. Kaushik Ghosh (Senior Manager, Kolkata).

We would also like to take this opportunity to acknowledge the valuable support extended by Mr. Sanjay Kothari, Chairman, Gem and Jewellery Skill Council of India (GJSCI) and Mr. Rajeev Garg (Executive Director & CEO, GJSCI). They helped the research team from NCAER conduct the survey in all the regions and meet with the important institution and association heads and office bearers.

We would also like to thank Ms. Kalyani Sahoo, Research Associate, GJEPC and Mr. Alfred Cyril, Statistician, GJEPC for providing support in the study.

Finally, it would have been extremely difficult to bring this report to its fruition had we not had our team of Research Associates who were there to assist us whenever they were called upon. Therefore, big thanks go out to Sonal Jain, Rahat Hasan Khan and Elizabeth Lyn.

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ABBREVIATIONS AND ACRONYMS

Units used in the Report

1 crore = 10 million

1 lakh = 100 thousand

AMFUs	Agromet Field Units
ABSS	Akhil Bharatiya Swarnakar Sangha
AGR	Annual Growth Rate
ASI	Annual Survey of Industries
BIS	Bureau of Indian Standards
CAD	Computer-aided Design
CAGR	Compound Annual Growth Rate
CAM	Computer-aided Manufacturing
CFC	Common Facility Centre
CHCDS	Comprehensive Handloom Cluster Development Scheme
CI	Composite Index
CSO	Central Statistics Office
DGCI&S	Directorate General of Commercial Intelligence and Statistics
DPRS	Detailed project reports
EUS	Employment–Unemployment Survey
FDI	Foreign Direct Investment;
FTA	Free Trade Agreement
G&J	Gems and jewellery
GCF	Gross Capital Formation
GJEPC	Gem and Jewellery Export Promotion Council
GJSCI	Gem & Jewellery Skill Council of India
GoI	Government of India
GST	Good & Services Tax)
GVA	Gross Value Added
HS	Harmonised System
IES	Interest Equalisation Scheme
IFLADP	Indian Footwear Leather & Accessories Development Programme
IGJDP	Indian Gem & Jewellery Development Program
IIGJ	Indian Institute of Gem & Jewellery
IO MODEL	Input Output model
ITC	Input Tax Credit
LM	Lean Manufacturing
MMTC	Metals and Minerals Trading Corporation of India
MOSPI	Ministry of Statistics and Programme Implementation
MSDE	Ministry of Skill Development and Entrepreneurship
MSECDP	Micro and Small Enterprises - Cluster Development Programme
MSME	Micro, Small and Medium Enterprise
NAS	National Accounts Statistics
NCAER	National Council of Applied Economic Research
NMDC	National Mineral Development Corporation
NIC	National Industrial Classification
NSDC	National Skills Development Corporation
NSS	National Sample Survey
NSSO	National Sample Survey Office
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
R&D	Research and Development
RBI	Reserve Bank of India
RCA	Revealed Comparative Advantage
SCBTS	Scheme for Capacity Building in Textile Sector
SIDBI	Small Industries Development Bank of India
SNA	System of National Accounts
SNZ	Special Notified Zones
STC	The State Trading Corporation of India
SUTS	Supply and Use Tables
TEQUP	Technology and Quality Up-gradation
TUFS	Technology up gradation fund scheme
UNIDO	United National Industrial Development Organization

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EXECUTIVE SUMMARY

Introduction

India is one of the largest exporters of gems and jewellery in the world. In fact, the subcontinent has risen to be the world's largest centre for cutting and polishing of diamonds and has achieved a remarkable position in the field of jewellery. During the period of 2013-14 to 2017-18, on an average, the gems & jewellery sector accounted for about 14.2 per cent of the total merchandise exports of India. This sector accounts for the third highest share in total merchandise exports after engineering goods and petroleum products.

Despite India's status in the global G&J sector, there is a dearth of credible statistics on the exact number of clusters, units, and workers employed in the sector in the country. Further, there is also a need to identify certain other key industry characteristics, which may be useful in promoting the industry and formulating policies for it.

It is in this context that the Gem and Jewellery Export Promotion Council (GJEPC) commissioned the National Council of Applied Economic Research (NCAER) to conduct a detailed study on India's G & J sector. The GJEPC was set up by the Ministry of Commerce, Government of India, in 1966 as an apex body of the gems and jewellery industry with a membership of more than 6,000 exporters in the sector within India.

The broad objectives of the NCAER study are:

- Development of a comprehensive understanding of the G&J sector, including an overview of the key segments from sourcing of raw materials to retail;
- Qualitative assessment/overview of government policy measures affecting exports and growth of the sector, including demonetisation and introduction of GST;

- Assessment of the contribution of the G&J sector to the Indian economy in terms of income and employment, through direct and indirect channels;
- Identification of variables that affect the domestic and international demand for gems and jewellery, and creation of a strategy that would enable GJEPC to enhance exports of Indian gems and jewellery; and
- Analysis of India's manufacturing potential and supply constraints with respect to infrastructure, skill development and the production system along with recommendations to overcome these gaps.

Cluster Mapping

As a part of the study commissioned by GJEPC, NCAER conducted a survey of 6,743 G&J units for cluster mapping, 5,139 of which were from urban areas and 1,604, from rural. The sample was spread across 19 states, covering 118 districts, comprising 117 towns and 400 villages.

The study was undertaken across:

- Six major regions covering 19 Indian States which are: North (Delhi, Haryana, Punjab and Uttar Pradesh); East (Assam, Bihar, Jharkhand, Odisha, Tripura and West Bengal); West (Madhya Pradesh and Maharashtra); South (Andhra Pradesh, Karnataka, Kerala, Tamil Nadu and Telangana) Gujarat and Rajasthan¹ and
- Five major segments, including handmade jewellery (plain and studded), machine-made jewellery (plain and studded), diamonds (cutting and processing), gem stones, and retail/wholesale of gems and jewellery units.

As no standard guidelines are available for defining a cluster of the G&J sector, except that it is an agglomeration of units performing a common activity of manufacturing and trading in gems and jewellery, NCAER *defined the Cluster as*

¹Gujarat and Rajasthan are considered regions by themselves by the GJEPC.

“an agglomeration of large concentration of workers employed in units performing similar activities, so as to capture the concentration of both units and workers employed.”

Therefore, the cluster mapping exercise was done based on both, numbers of units and workers. The cut offs to qualify as a cluster and the various size categories (with size being defined by the number of units/workers within clusters in a district) for of unit and worker clusters were different. They were decided after numerous consultations with experts from GJEPC and major associations of the sector.

The clusters were also further classified into:

- Homogeneous Clusters- which deal in any one G&J segment like manufacturing of jewellery, manufacturing of imitation jewellery, cutting and polishing of diamond and gem stones or trading etc. having more than 50 per cent units/workers.
- Heterogeneous Clusters- which deal in more than one segment but none of them having a concentration of 50 per cent or more units/workers.

The NCAER study used data from the Enterprise Surveys conducted by the NSSO to arrive at the number of units/workers by districts and segments. The G&J clusters in India were mapped by districts; by size categories; and by the type of activity being undertaken in the gems and jewellery segments. The key findings of the cluster mapping study are delineated below.

- The NCAER survey data reveals that, in 2019, there were a total of 9.89 lakh units and 42.89 lakh workers in the G&J sector in India. Since the geographical area of a district can be very vast, the threshold was restricted to at least 250 Gems & Jewellery units or minimum 1000 workers to be considered as cluster.
- A total of 390 districts are identified as clusters based on number of units working in Gems and Jewellery sector. When classified based on number of workers engaged in Gems & Jewellery sector, 341 district clusters were found.

- Based on the number of workers, the major regional clusters for each segment were identified as follows:
 - For diamonds: Gujarat, accounting for 100 per cent of the workers;
 - For gemstones: Rajasthan, accounting for 100 per cent of the workers;
 - For hand-made jewellery: The East and West regions, accounting for 26 and 20 per cent of the workers, respectively;
 - For machine-made jewellery: Rajasthan and the North region, accounting for 40 and 35 per cent of the workers respectively; and
 - For the trade segment: The South and North regions, accounting for 34 and 22 per cent of the workers, respectively.

Manpower Mapping

This section in the study maps the manpower by size and type of employment in different regions and segments of the G&J sector. The sample size was, suitable for providing estimates only at the regional and segment levels.

The employment size categories were examined across segments and regions.

Following are the findings of the segment-wise analysis:

- The sector is primarily and overwhelmingly filled with traders and artisans making hand-made jewellery, accounting for 51.75 and 44.08 per cent respectively. The other three segments, of diamonds, other gems and semi-precious stones, and machine-made jewellery, each accounted for a share of less than 1.82 per cent, with the segment for other gems and semi-precious stones having the smallest share 0.75 per cent among all enterprises.
- The segment on hand-made jewellery mostly consists of own account enterprises. Also, while the segments for hand-made jewellery and traders have a rural orientation, the other three segments are primarily urban.

The findings of the region-wise analysis are as follows:

- The East is the most rural enterprises based region, accounting for an employment of 42.6 per cent in rural areas, whereas Gujarat, in contrast, has the lowest level of employment of just 3.58 per cent in rural areas.
- The average employment per enterprise differs widely among the regions and segments. As compared to an average employment of 4.3 workers per unit in this sector, the Gujarat region has the maximum average of 12.82 workers per unit, followed by Rajasthan, with an average of 6.10 workers per enterprise.

An analysis of employment by type revealed the following:

- The region wise analysis showed that Gujarat accounted for the maximum level of formal employment, with the proportion of employees on the payroll in the G&J sector being as high as 90.15 per cent. The region has 9.35 per cent of unpaid family members and proprietors, which is the lowest amongst all the six regions. It is followed by Rajasthan region with a payroll employment as high as 80.91 per cent, while unpaid family members account for 13.08 per cent of the employment.
- The segment-wise analysis showed that both the segments pertaining to diamonds, and other gems and semi-precious stones fall in one category, accounting for almost 97 per cent of the formal employees, while these segments very few unpaid family members, who may have been proprietors only. The hand-made jewellery sector had almost the same number of employees on the payroll and as unpaid family members.
- Almost one-tenth of the employees, or specifically 10.57 per cent were female. As regards the participation of female workers, the West emerged as a front-runner at 27.62 per cent, followed by the South, at 20.87 per cent of the total. The other four regions accounted for a female participation in the range of 3.64 per cent in Gujarat to 7.02 per cent in the North. As far as the segment-wise analysis is concerned, the maximum level of female participation was witnessed in

the trade sector, at 19.81 per cent, while the minimum was that for diamonds, at 3.06 per cent. The other three segments accounted for female employment in the range of 5.28-6.79 per cent.

Skill and Technology Mapping and Gaps

The study found that the G&J sector needs skilled manpower and superior technology in order to diversify its activities as per the increasing demand, as well as to stay export-competitive and increase its share in the gross value added of the economy. The primary survey conducted by NCAER collected information from the enterprises on a few relevant indicators relating to the existing skills and technology, and the needs of the sector.

The level of skills was mapped by asking the unit owners to rate each worker by the jobs done by the latter on a scale of 1 to 5, with 1 being the least skilled and 5 being the most. The skill gap was measured using the following criteria: (i) Observed Skill Gap: In this case, the employees needed to move from basic skills (skills rated at 1-3) to superior skills (skills rated at 4-5); (ii) Present Skill Gap: In this case, the employees needed to upgrade their skills; and (iii) Additional Skill Gap: In this case, additional skilled employees would be required in the next two years.

Following were the key findings of the skill mapping exercise:

- An analysis of the region-wise skill gap in specific segments reveals that in the hand-made jewellery segment, the southern region had the highest skill gap while in the trade segment, the western region had the highest skill gap.
- The machine-made jewellery segment, which is otherwise rich in skilled employees, has a skill gap of more than 26 per cent in the southern region. The northern and eastern regions, and the regions of Gujarat and Rajasthan did not have any skill gap in the machine-made jewellery segment.

Technology mapping was done by asking the unit owners if they used primitive/basic, average or advanced technology while performing each task. It was found that in the Sector, overall, 39 per cent of the enterprises were using superior technology for some of the processes in some of the segments in the sector. The following three parameters were created to measure the technology gap: (i) The Present Gap, representing the willingness to upgrade the existing technology; (ii) the Additional Gap, representing the willingness to upgrade technology subject to the hindrances of lack of finance, lack of skilled manpower, and lack of awareness about the availability of technology; and (iii) The Total Gap, which is a sum of the Present and Additional Gaps.

Following were the key findings of the technology mapping exercise:

- The region-wise comparison revealed that the eastern and western regions were far ahead of the other regions, with 62 per cent of their enterprises, way ahead of the North with 25 per cent of its enterprises, and the South and Gujarat, with 17-18 per cent of their enterprises using superior technology. Meanwhile, Rajasthan was at the other end of the list, with just 7 per cent of its enterprises using superior technology.
- The segment-wise analysis revealed that almost all the diamond units were willing to upgrade their technology if the various hindrances were taken care of, which were responsible for about 99 per cent of the total technology gap. However, machine-made and hand-made units reported only about 55 per cent and 66 per cent of the total gap in technology.

Sources of Input and Output destinations

In its primary survey, NCAER has collected data on the sources of inputs from different sources and the sale of outputs to different destinations for the products manufactured/traded by the enterprises in the G&J sector. The chapter pertaining to input sources and

output destinations has two sections. While the first section basically provides the theoretical framework of the key products involved in the G&J sector from the source of the input to the destination of the output, the second section depicts the distribution of units by the source of the inputs and destination of the output for five groups of related products, viz., diamonds, gemstones, gold, silver, and platinum. Some major findings relating to the same are as follows:

- Wholesalers were reported as an input source for 47.96 per cent surveyed units for procuring diamonds, 31 per cent for gemstones, and 35.62 per cent for gold.
- Manufacturers were reported as a second source of input by 13.93 and 17.26 per cent of the units procuring diamond and gold respectively, whereas in case of gems stone 6.47 per cent units relied on imports.
- Overall, as a source of input, 48.62 per cent, 21.79 per cent, and 11.08 per cent of the surveyed units relied on the wholesalers, manufacturers and retailers respectively for procuring gems and jewellery products.
- In the case of destinations for gems and jewellery products, 46.05 per cent of the units reported sale of diamonds directly to consumers, 15.42 per cent to retailers and 15.17 per cent stated that they exported their products.
- In cases of gemstones and gold related products, 36.45 per cent and 60.14 per cent of the units, respectively, reported direct sales to consumers.
- With regards to exports as an output destination, the regions were divided into two groups, with Gujarat and Rajasthan falling in one group, accounting for more than 9 per cent of the surveyed units reporting exports of their products. The other four regions in the second group reported negligible exports.

Mapping of Economic Parameters

Due to the sensitivity of financial information, the economic parameter mapping was done using secondary data by regions and the type of activity.

One of the major limitations of the secondary data used was that though the National Sample Survey Organisation (NSSO) provides information on manufacturing, trading and service units, the ASI covers only manufacturing units. Hence, there is bound to be a measure of under-estimation that cannot be overcome by existing data sources or secondary data analysis. Also, this analysis varies slightly in terms of the segments as NIC-2008 at five digits has been used for the same, which may not correspond entirely to the classification used for the primary survey. For instance, the NIC code 32112 corresponds to both diamonds and gemstones, and cannot be broken down further. However, an attempt has been made to make the results as comparable as possible.

The overall performance of the G&J sector was evaluated based on six crucial indicators/ratios, viz., (i) the share of workers in the organised sub-sector of the region/segment, (ii) average size of the enterprises or firm size (number of workers/number of enterprises), (iii) enterprise productivity (total output/number of enterprises), (iv) working environment (emoluments per worker), (v) contribution to the Indian economy (Gross Value Added/number of workers), and (vi) capital intensiveness of the enterprises (total fixed assets/number of enterprises). This was done for each region and segment separately. Based on the focus of the reader, these critical ratios can be used to judge the performance of the manufacturing (organised and unorganised) and unorganised trading and service segments.

Given the importance of manufacturing and also availability of data for both organised and unorganised units, a composite index (CI), based on the six indicators mentioned above, was constructed to examine the performance of G&J manufacturing across segments and regions. The Composite Index is the arithmetic mean of the performance scores of all the indicators. To make the data comparable across indicators, the region/segment-wise data for each of the indicators was rescaled from its raw value to a score ranging from 0 to 1, with 0 indicating the lowest performance and 1, the highest performance.

The values obtained for all the six indicators across the regions/segments indicate that higher performance leads to higher values. Also, the CI methodology used gives equal weightage to all the indicators to avoid any bias. If the analysis had been done for profits generated for the enterprise owners, the output per unit would probably have had a higher weightage, or if the study was intended to examine the welfare gains accruing to artisans involved in the industry, a higher weight would have been assigned to the emoluments per worker.

The composite index values revealed that:

- The top two performing regions in the G&J manufacturing were Gujarat and the West, followed by Rajasthan, South, North, and the East, respectively.
- The CI value of the Eastern region was the lowest compared to other regions. Given that the East had the largest number of manufacturing units, its relative poor performance does not bode well for the G&J sector.
- Diamond and gemstone (D&GS) was the top performing segment (0.93), followed by those units engaged in manufacture of gold and silver jewellery (G&SJ).
- Although Imitation Jewellery (IJ) accounted for 22 per cent of the total number of manufacturing units, its performance was relatively poor.

Contribution of the G&J Sector to the Domestic Economy

The gems and jewellery industry is an amalgamation of different segments, each belonging to different sectors of the economy. For example, hand-made and machine-made jewellery fall under the manufacturing sector whereas trade and repair work are part of the services sector. In order to estimate the contribution of the gems and jewellery industry to the overall economy, the contribution has first been extracted from manufacturing, trade, and repair services. The major findings based on these estimations are as follows:

- Within the manufacturing sector, gems and jewellery fall under “Other Manufacturing”, which further falls under “Others”. The National Accounts Statistics (NAS) provides actual values of the output and value added for both these broad sub-sectors.
- The values of output and value added for trade and repair services are also available at an aggregate level. According to NAS 2019, while overall manufacturing contributes 32.3 percent to the output and 16.4 percent to the GVA, “Others” contribute just 2.4 percent and 1.3 percent to the same, respectively. The shares of “Other Manufacturing” within “Others” in the output and VA are further lower at 0.8 percent and 0.2 percent in 2017-18.
- Notably, the share of “Other Manufacturing” in the overall GVA has remained at 0.2–0.3 percent since 2011-12. The GVA of “Other Manufacturing”, as per NAS 2019, is Rs37,907 crore. The proportion of gems and jewellery manufacturing in this is estimated from the Supply and Use Tables (SUT). Accordingly, the GVA for gems and jewellery manufacturing is estimated at Rs 36,311 crore.
- Besides the manufacturing segment, the gems and jewellery industry also comprises the wholesale and retail trade segment and repair segments. For these two segments, no disaggregated data are available from NAS or SUT. Hence, for estimating the share of gems and jewellery in the total output and value added, the unit level data of enterprise surveys have been used. The units surveyed in these surveys correspond to the five-digit codes of the latest industrial classification scheme, the National Industrial Classification (NIC-2008).
- The survey estimates suggest that of the total trade output, only 4.2 percent is accounted for by the gems and jewellery trade segment, and of the total repair output, 3.6 percent is on account of the gems and jewellery repair segment. The corresponding shares in value added are 3.5 percent and 4.3 percent, respectively. If these shares are imposed on the values of GVA of the trade and repair sectors, the GVA of the gems and jewellery trade sector works out to be Rs 59,202 crore, and of the gems and jewellery repair sector to be Rs 220 crore.
- Taking all the components together, the total GVA of the G&J sector is estimated at Rs 95,733 crore. This translates to 0.62 percent of the total GVA of the economy for 2017-18, which is the direct share of the G&J sector in the economy.
- The combined G&J sector is kept as a separate sector in the Input-Output Table (IOT) to derive the indirect share of the sector to the economy, using the IO model and the output multipliers obtained through this model. The model suggests that the sector has strong backward linkages with other sectors of the economy, with the value of its output multiplier to be 4.0308. This means that with a unit increase in demand generated in the G&J sector, a total output equivalent to 4.0308 units is produced in the economy, owing to the interlinkages and thereby the spill-over effect. Consequently, the total share, including both the direct as well as indirect shares, of the G&J sector, is 2.5 percent of the total GVA of the economy.
- Finally, the direct share to total number of jobs stands at 0.64 percent. The employment multiplier, as per IO model, is 3.9105. This means that with one new job created in the sector, a total of 3.9105 jobs are created in the economy. Hence, the total share (direct as well as indirect) of G&J sector in the number of jobs is 2.5 percent.

Trade Competitiveness

The G&J sector in India plays a significant role in the world market. Although India is ranked 18th in the world, when measured by its share in exports for all the products, it ranks 6th as far as the G&J sector is concerned. The major segment-wise analysis pertaining to trade competitiveness revealed the following points:

- The segment on cut and polished diamonds is a dominant group in the G&J sector, contributing 60.89 per cent to the total gems & jewellery exports of India, followed by gold jewellery. The other segments of the sector that contribute significantly to exports include rough diamonds, coins including legal tenders, silver jewellery, and coloured gemstones.
- Indian cut and polished diamonds account for 27.48 per cent of the exports in the world market, while the second important segment of gold jewellery accounts for a world market share of 11.25 per cent, going up from 8.94 per cent in 2017.
- Coins, including legal tenders, constitute a small share of 2.10 per cent in the national exports, but their contribution to the world market of coins is very impressive, at 19.04 per cent.
- Although synthetic stones account for just 0.66 per cent of the share in national merchandise exports, they contribute a handsome 19.78 per cent to the world exports.
- Silver jewellery, which has share of 2.07 per cent in the share of India's gems and jewellery exports, accounts for a contribution of 10.78 per cent to the total world exports. In fact, in 2017, silver jewellery constituted 10.45 per cent of the Indian exports and 36.63 per cent of the total world exports. The share of the G&J sector in the Indian merchandise export gradually increased from 12.67 per cent in 2014 to 16.01 per cent in 2016, but declined to 14.20 per cent in 2017 and 12.32 per cent in 2018.
- The world share of the G&J sector exhibited a similar pattern, increasing gradually from 2.36 per cent in 2009 to 4.33 per cent in 2013, and thereafter falling to 3.57 per cent in 2014, and to 3.99 per cent in 2016, followed by a further decline over the last two years, touching 3.21 per cent in 2018.
- The surplus share index for the Indian G&J sector comes out to be just 1.09, which means that a 1 per cent increase in the share of G&J sector in national exports will lead to an increase of 1.09 per cent in the world market.
- The G&J sector needs to upgrade its products technologically in order to increase its surplus share index, and consequently its world market share. India achieved a positive growth of 5.45 per cent in its surplus share index in 2012-13, then experienced negative growth in the next two years, followed by a massive growth of 9.75 per cent in 2015-16. However, this diminished to a growth of only 0.77 per cent the subsequent year, with the growth rate standing at -5.24 per cent for 2017-18.
- In the case of world exports, the sector exhibited a similar pattern, with positive growth witnessed from 2012-13, at 15.73 per cent, to 2015-16 (at 4.26 per cent), followed by negative growth over the last two years. In 2017-18, the decline in world exports of gems and jewellery was 1.09 per cent, which was much smaller compared to the decline of 5.24 per cent seen in the Indian G&J sector in 2017-18. The same scenario was witnessed for both the Indian and world sectors as far as surplus growth was concerned. However, the Trade Competitiveness Index, as measured by the Relative Competitive Advantage, was 3.86 in 2017 and 3.78 in 2018.

Impact of Demonetisation, GST and Other Government Policies on Exports and Growth in the G&J Sector

The G&J sector has benefited from Government policies and schemes in many ways. Following are the findings of the perception-based analysis of unit owners with regard to various recent policies of the Government:

- A majority of the enterprises were of the opinion that GST simplifies the process of filing taxes, they were able to claim refunds on the input costs under input tax credit, and it was also easy to obtain a refund on input tax credit but there were delays in getting refunds.
- The enterprises expressed the opinion that post demonetisation, the demand for

products in the G&J sector had decreased considerably. It was also observed that many of the initiatives and schemes were not known to the enterprises.

- More than 70 per cent of the enterprises did not have any idea about Foreign Direct Investment (FDI), Free Trade Agreement, and the interest equalisation scheme.
- Almost half the enterprises were also not aware of skill development schemes, which are crucial for business development in the sector. However, one-third of the enterprises reported that they had experienced a positive impact of skill development schemes.
- A majority of the enterprises also did not know about schemes of technology upgradation and lean manufacturing competitiveness, as well as about special notified zones and jewellery parks.
- Two-third of the enterprises was aware of the common facility centres and almost half of the enterprises who were aware of the latter had a positive perception about the scheme.
- A majority of the enterprises had positive perceptions about hall marking standards. Policy planners and implementers of Government schemes in the sector have the responsibility of starting awareness programmes on a large-scale basis to enable the benefits of these schemes to trickle down to the enterprises.

The Way Forward

Finally, two other sectors that are just as labour intensive as the G&J sector but seem to have received more attention and assistance from the government are the leather and textile sectors. The share of the G&J sector in the value of output of manufacturing is 2.3 per cent as compared to corresponding figures of 1.0 per cent for leather and 1.8 per cent for wearing apparel. Textiles, as a whole, account for a share of 8.4 per cent. However, the output multiplier for the G&J sector is 4.0308, which is much higher than the corresponding figures of 2.1689 and 2.4687 for the leather and textiles sectors,

respectively. The employment multiplier for the G&J sector is 3.9105, which is slightly higher than the corresponding figure for the leather sector (at 3.0187) and lower than that for the textiles sector (at 5.2746). Having a very high output multiplier, the G&J sector can have an impact that would be more significant and higher in magnitude as compared to that of the leather and textiles sectors. A high output multiplier signifies stronger backward linkages of the sector with other sectors of the economy. This implies that an increased demand and subsequently, increased output in this sector triggers activities in other sectors of the economy, much faster than that caused by sectors with comparatively lower multiplier values. In order to optimise the potential productivity of this sector, NCAER recommends the implementation of certain policy measures, as delineated below:

- **Linkages to the Economy:** The G&J sector has very high backward linkages as compared to the other major sectors of the economy such as leather and textiles. This sector needs government intervention for its further development and growth. Similar to “Block Level Cluster Development Scheme” of textiles, this sector can also grow faster if a “District Level Cluster Development Scheme” is initiated for it. Despite the very high demand for Indian Jewellery in the world, the G&J sector in the country is informal in nature, and therefore needs assistance in skill and technology upgradation.
- **Clusters:** The cluster mapping exercise highlights that 47.4 per cent of the units and 51 per cent of the workers in the G&J sector account for manufacturing clusters, a majority of which (units and workers) are unorganised. Also, a large section of the clusters fall under the medium to micro range of units, and the potential categories need special attention so that they do not fall by on the wayside. Further, these small units cannot undertake the exercise of brand creation by themselves. For instance, the handmade jewellery manufactured in India is unique and should be promoted in a big way by the Government. **Jewellery Park(s)** could be set

up in Large clusters; **Mega CFCs** could be set up in Medium clusters and **CFCs** could be set up in Small to Potential clusters.

- **Skill and Technology:** The economic importance of the G&J sector, in particular, is underlined by the fact that it is one of the most labour-intensive sectors, thereby providing huge employment opportunities to artisans with traditional and modern skills. There is a Lack of skill set that is traditional. Craftmanship/skills unique to Indian G&J sector have been depleting. Scheme of Fund for Regeneration of Traditional Industries (**SFURTI**) and Entrepreneurship and Skill Development Programme (**ESDP**) are needed for the sector to upgrade the skills of existing employees and to attract youth to the industry. Given that the skill gap component of the technology gap is significantly high in most segments, skill development should also be a priority, and the industry should ensure the availability of infrastructure to provide vocational training to students/artisans over the next few years. Also, since technology gap is one of the major challenges of the gem and jewellery sector in India, technology upgradation is needed to enhance productivity, reduce cost, improve quality and also to face global competition. Technology Upgradation Fund (**TUF**) scheme should be designed and provided exclusively for G&J sector. The focus on skilling and technology (by segments and regions) and thereby, the establishment of mega clusters should be based on these findings. Another area that needs to be considered is the creation of shared facilities in the major jewellery manufacturing clusters to enable them to avail of the advantages of modern technology, which is otherwise unaffordable for many small and informal units. Focus on skilling and technology upgradation should be based on the requirements specific to segments and regions.
- **Domestic and International Economic importance:** The focus on specific segments should be based on their performance in the domestic and international markets.

In the domestic economy, the diamonds and gemstones segments accounted for the highest output per unit, followed by the gold and silver jewellery segments. In fact, the gold and silver jewellery segments had the highest GVA/worker, followed by the cutting and polishing of diamond and gemstones segments. The results of the analysis of the Composite Index (of key economic parameters) revealed that the cutting and polishing of diamond and gemstones segment was ranked first among all the segments. The region-wise analysis showed that Gujarat was the best performing region. However, the clusters engaged in these activities need to be given special attention to facilitate development and growth of the sector.

The segments of cutting and polishing of diamonds, synthetic stones, and gold and silver jewellery had the highest trade competitive index values in 2017 and 2018. Since the available funds need to be spent judiciously, efforts should be made to focus on these segments and the concerned regions in the G&J sector to enable them to optimise their potential and boost the performance of the sector.

- **Supply chain bottlenecks:** should be removed by reducing restrictions on the supplies of inputs like gold.
- **Impact of Major Policies:** The other areas that need attention include an analysis of the impact of demonetisation on the G&J sector, addressing the delay in obtaining refunds under the GST scheme, ensuring quality control including the nation-wide implementation of hallmarking, and ensuring easy financing options for enterprises in the sector.
- **Awareness and Brand creation:** It is imperative to undertake an awareness drive in the sector, as lack of awareness about some very helpful schemes/policies including FDI, FTA, interest equalisation, TEQUP, the lean manufacturing upgradation scheme, SNZs, and skill development hinders optimal performance by the sector. Only through awareness can units exploit the resources available to them. This would also

aid in creating a special brand for Indian jewellery and promote it in a big way in the international markets.

- Collaboration between stakeholders:** The G&J sector would also benefit from collaboration between industry and knowledge partners, for consultations with regard to policy-making and highlighting of issues that are important for all stakeholders. Universities and other research institutions can help in promoting innovation and capacity building, and increasing awareness among the enterprises about the schemes and facilities available.
- NIC codes:** Within the manufacturing sector, G&J falls under “Other Manufacturing”, which further falls under “Others”. Given the relative importance of the G&J sector it should be considered a separate segment under NAS as in the cases of textile and leather.
- G&J Census:** Finally, conducting a G&J Census will lead to a more exact and clear-cut identification of the clusters, segments, and beneficiaries, which, in turn, will facilitate the efficient implementation of policies, thereby helping make India a leading G&J manufacturing and trading hub in the world.

Gems & Jewellery Sector at a Glance

Indicators	East	Gujarat	North	Rajasthan	South	West	Total
Number of Units	226237	74908	171950	81743	271684	162851	989372
Number of Workers	792266	959954	591942	498479	864831	581451	4288925
Value of Output (Rs. Crore)	43445	77715	50195	26111	51064	73679	322208
Value Added (Rs. Crore)	11418	15432	20009	6838	25201	16835	95733
% Share in Value Added	11.9	16.1	20.9	7.1	26.3	17.6	100.0
Number of Clusters (Identified Based on No. of Units)							
Manufacturing	46	12	44	21	36	26	185
Trade	46	9	52	5	51	42	205
Trade Clusters with Potential for Manufacturing	12	2	14	1	16	10	55
Total	92	21	96	26	87	68	390
Number of Clusters (Identified Based on No. of Workers)							
Manufacturing	41	14	39	22	35	23	174
Trade	31	7	40	5	50	34	167
Trade Clusters with Potential for Manufacturing	7	2	13	1	17	10	50
Total	72	21	79	27	85	57	341

Indicators	East	Gujarat	North	Rajasthan	South	West	Total
Number of Manufacturing Clusters by Size (Identified Based on No. of Units)							
Mega (>20K)	2	1	1	1	0	1	6
Large (15K-20K)	1	0	0	0	0	1	2
Medium (10K-15K)	2	0	0	0	4	0	6
Small (5K-10K)	2	2	3	2	5	1	15
Micro (1K-5K)	15	3	12	6	16	11	63
High Potential (0.5K-1K)	10	3	16	6	6	4	45
Moderate Potential (0.25K-0.5K)	14	3	12	6	5	8	48
Total	46	12	44	21	36	26	185
Number of Trade Clusters by Size (Identified Based on No. of Units)							
Mega (>20K)	0	0	0	0	0	1	1
Large (15K-20K)	0	1	0	0	0	0	1
Medium (10K-15K)	1	0	0	0	3	0	4
Small (5K-10K)	2	0	6	0	6	0	14
Micro (1K-5K)	14	3	21	4	23	13	78
High Potential (0.5K-1K)	13	3	11	0	15	9	51
Moderate Potential (0.25K-0.5K)	16	2	14	1	4	19	56
Total	46	9	52	5	51	42	205
Total Number of Clusters by Size (Identified Based on No. of Units)							
Mega (>20K)	2	1	1	1	0	2	7
Large (15K-20K)	1	1	0	0	0	1	3
Medium (10K-15K)	3	0	0	0	7	0	10
Small (5K-10K)	4	2	9	2	11	1	29
Micro (1K-5K)	29	6	33	10	39	24	141
High Potential (0.5K-1K)	23	6	27	6	21	13	96
Moderate Potential (0.25K-0.5K)	30	5	26	7	9	27	104
Total	92	21	96	26	87	68	390
Number of Manufacturing Clusters by Size (Identified Based on No. of Workers)							
Mega (>50K)	3	5	1	2	2	1	14
Large (20K-50K)	5	3	4	3	5	2	22
Medium (10K-20K)	5	1	1	3	6	0	16
Small (5K-10K)	5	2	8	2	10	5	32
Micro (2K-5K)	10	1	12	9	7	7	46
High Potential (1K-2K)	13	2	13	3	5	8	44
Total	41	14	39	22	35	23	174

Cluster Mapping Study of the Gems & Jewellery Sector in India

Indicators	East	Gujarat	North	Rajasthan	South	West	Total
Number of Trade Clusters by Size (Identified Based on No. of Workers)							
Mega (>50K)	0	0	0	0	0	2	2
Large (20K-50K)	1	0	6	1	8	0	16
Medium (10K-20K)	1	1	2	2	4	4	14
Small (5K-10K)	6	2	6	1	8	3	26
Micro (2K-5K)	8	2	17	0	20	9	56
High Potential (1K-2K)	15	2	9	1	10	16	53
Total	31	7	40	5	50	34	167
Total Number of Clusters by Size (Identified Based on No. of Workers)							
Mega (>50K)	3	5	1	2	2	3	16
Large (20K-50K)	6	3	10	4	13	2	38
Medium (10K-20K)	6	2	3	5	10	4	30
Small (5K-10K)	11	4	14	3	18	8	58
Micro (2K-5K)	18	3	29	9	27	16	102
High Potential (1K-2K)	28	4	22	4	15	24	97
Total	72	21	79	27	85	57	341
Skill Gap	24.98	0.47	6.63	10.75	41.17	22.4	20.48
Technology Gap	76.52	96.11	61.6	69.68	83.5	92.53	75.85
Input Sources and Output Destinations (% of Units Reporting)							
Diamond Cutting & Polishing							
Input Source within the State:							
Miner	0.0	2.1	0.0	0.0	0.0	0.0	2.1
Agency	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale	0.0	53.4	0.0	0.0	0.0	0.0	53.4
Retail	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manufacturers	0.0	18.6	0.0	0.0	0.0	0.0	18.6
Exchange	0.0	1.3	0.0	0.0	0.0	0.0	1.3
Outside the State	0.0	4.6	0.0	0.0	0.0	0.0	4.6
Import	0.0	27.1	0.0	0.0	0.0	0.0	27.1
Output Destination within State:							
Wholesale	0.0	64.2	0.0	0.0	0.0	0.0	64.2
Retail	0.0	62.7	0.0	0.0	0.0	0.0	62.7
Manufacturers	0.0	17.6	0.0	0.0	0.0	0.0	17.6
Consumer	0.0	4.2	0.0	0.0	0.0	0.0	4.2
Outside the State	0.0	27.9	0.0	0.0	0.0	0.0	27.9
Exports	0.0	55.2	0.0	0.0	0.0	0.0	55.2

Indicators	East	Gujarat	North	Rajasthan	South	West	Total
Gemstone Cutting & Polishing							
Input Source within the State:							
Miner	0.0	0.0	0.0	0.3	0.0	0.0	0.3
Agency	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale	0.0	0.0	0.0	73.5	0.0	0.0	73.5
Retail	0.0	0.0	0.0	74.7	0.0	0.0	74.7
Manufacturers	0.0	0.0	0.0	7.8	0.0	0.0	7.8
Exchange	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Outside the State	0.0	0.0	0.0	30.3	0.0	0.0	30.3
Import	0.0	0.0	0.0	25.2	0.0	0.0	25.2
Output Destination within State:							
Wholesale	0.0	0.0	0.0	69.2	0.0	0.0	69.2
Retail	0.0	0.0	0.0	89.1	0.0	0.0	89.1
Manufacturers	0.0	0.0	0.0	10.0	0.0	0.0	10.0
Consumer	0.0	0.0	0.0	37.5	0.0	0.0	37.5
Outside the State	0.0	0.0	0.0	52.7	0.0	0.0	52.7
Exports	0.0	0.0	0.0	40.8	0.0	0.0	40.8
Plain Gold Jewellery							
Input Source within the State:							
Miner	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Agency	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale	70.0	96.8	82.3	68.3	77.1	83.9	79.6
Retail	17.0	2.7	2.4	40.2	21.8	9.1	12.8
Manufacturers	43.7	28.2	41.9	13.4	35.2	29.5	36.1
Exchange	56.4	24.2	37.9	15.4	18.1	37.8	34.4
Outside the State	1.8	10.6	20.0	33.0	10.9	21.2	14.0
Import	0.0	0.0	0.3	3.7	0.0	0.0	0.2
Output Destination within State:							
Wholesale	26.4	4.1	23.7	3.6	14.3	7.9	16.7
Retail	15.5	6.3	21.1	58.7	41.0	34.2	29.3
Manufacturers	11.2	6.6	8.8	10.6	6.9	7.0	8.6
Consumer	77.6	88.2	84.7	85.2	76.5	86.7	81.2
Outside the State	0.4	3.2	3.9	4.1	8.8	1.3	4.0
Exports	0.1	0.4	0.8	5.8	0.0	0.0	0.6

Cluster Mapping Study of the Gems & Jewellery Sector in India

Indicators	East	Gujarat	North	Rajasthan	South	West	Total
Gold Jewellery- Studded with Diamonds							
Input Source within the State:							
Miner	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Agency	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale	44.8	69.8	54.1	37.9	79.5	68.1	62.7
Retail	0.0	0.0	3.1	35.0	19.1	5.0	8.5
Manufacturers	63.0	54.3	59.7	19.7	47.7	37.7	48.9
Exchange	21.9	33.8	27.4	33.4	19.3	53.1	30.2
Outside the State	34.0	23.6	38.5	23.2	31.3	23.9	30.9
Import	0.0	0.0	1.1	0.0	0.0	0.0	0.4
Output Destination within State:							
Wholesale	5.3	6.1	14.4	13.7	15.5	4.1	11.7
Retail	20.1	15.1	35.0	34.9	21.8	20.7	26.0
Manufacturers	1.4	1.6	1.3	1.4	6.8	2.2	3.3
Consumer	80.3	85.5	93.9	72.6	96.1	88.6	91.6
Outside the State	1.5	1.2	13.4	18.0	14.9	0.0	10.1
Exports	2.9	2.7	2.2	37.4	0.0	0.0	2.5
Gold Jewellery-Studded with Gemstones							
Input Source within the State:							
Miner	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Agency	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale	87.5	80.2	76.7	69.8	71.1	61.0	74.7
Retail	10.7	15.9	3.1	29.7	24.7	12.9	15.1
Manufacturers	48.3	48.4	48.5	30.6	36.7	40.1	42.5
Exchange	53.5	27.6	67.2	32.6	13.7	63.0	43.5
Outside the State	1.7	24.7	28.3	43.5	15.6	2.9	13.8
Import	0.0	0.0	0.8	5.5	0.0	0.0	0.4
Output Destination within State:							
Wholesale	13.4	8.0	28.5	5.0	29.8	16.1	14.0
Retail	13.1	11.1	20.3	56.4	5.0	25.7	26.6
Manufacturers	14.8	7.1	15.5	1.7	85.7	5.3	8.7
Consumer	92.2	92.3	94.6	91.9	13.4	66.8	86.3
Outside the State	0.1	0.0	9.2	3.2	0.0	2.0	6.0
Exports	0.2	0.9	1.3	7.1	0.0	0.0	1.1

Indicators	East	Gujarat	North	Rajasthan	South	West	Total
Plain Silver Jewellery							
Input Source within the State:							
Miner	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Agency	0.5	2.2	0.0	0.0	6.3	0.2	1.7
Wholesale	67.2	92.9	83.1	74.6	71.8	82.3	77.0
Retail	14.1	10.1	8.1	19.1	18.2	12.0	13.3
Manufacturers	33.2	26.1	42.1	24.6	34.0	30.5	33.7
Exchange	73.9	45.2	34.3	21.8	24.6	36.3	41.2
Outside the State	8.1	10.8	16.1	22.0	3.5	20.8	12.4
Import	0.0	0.0	0.3	1.8	0.0	0.0	0.2
Output Destination within State:							
Wholesale	21.9	9.1	22.9	4.4	7.9	11.3	14.5
Retail	15.8	8.2	22.1	44.9	30.6	34.6	25.9
Manufacturers	12.8	3.0	8.1	2.9	12.7	4.2	8.9
Consumer	83.0	83.0	86.4	93.0	77.5	82.4	83.0
Outside the State	0.3	3.0	4.5	4.5	9.3	1.6	4.1
Exports	0.0	0.0	1.0	5.0	0.1	0.0	0.6
Silver Jewellery- Studded with Diamonds							
Input Source within the State:							
Miner	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Agency	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale	77.7	84.9	47.5	37.4	83.6	52.2	64.7
Retail	5.2	6.1	6.0	38.7	6.5	1.5	6.2
Manufacturers	41.3	50.6	69.9	32.3	25.2	43.0	46.3
Exchange	28.2	18.9	16.1	32.7	27.7	53.4	29.2
Outside the State	1.7	50.9	13.2	4.4	9.6	5.2	10.9
Import	0.0	0.0	1.4	0.0	0.0	0.0	0.4
Output Destination within State:							
Wholesale	3.3	3.3	9.5	8.8	5.0	0.7	5.6
Retail	9.0	10.4	32.4	65.1	23.4	3.1	23.6
Manufacturers	0.6	1.1	1.5	2.5	2.7	0.5	1.6
Consumer	99.4	90.2	93.5	81.5	96.1	96.8	94.2
Outside the State	0.0	0.0	9.1	7.4	1.4	0.0	3.8
Exports	0.0	0.0	1.4	12.0	0.0	0.0	1.3

Cluster Mapping Study of the Gems & Jewellery Sector in India

Indicators	East	Gujarat	North	Rajasthan	South	West	Total
Silver Jewellery- Studded with Gemstones							
Input Source within the State:							
Miner	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Agency	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wholesale	89.5	81.4	75.9	68.1	66.4	60.7	73.3
Retail	13.8	0.0	22.3	49.8	21.1	24.7	24.6
Manufacturers	35.5	52.8	78.1	19.5	28.3	38.6	39.2
Exchange	38.5	27.5	67.1	22.1	15.9	53.5	38.3
Outside the State	0.4	33.1	27.1	18.7	7.9	9.4	11.5
Import	0.0	0.0	0.8	2.2	0.0	0.0	0.5
Output Destination within State:							
Wholesale	15.0	8.8	27.4	6.7	7.7	15.5	13.6
Retail	11.6	12.7	14.4	38.6	25.6	21.9	21.2
Manufacturers	10.2	13.0	10.4	3.0	3.4	3.7	6.4
Consumer	93.0	91.8	96.6	92.1	89.4	68.2	87.8
Outside the State	0.0	0.9	6.0	3.4	8.5	0.6	3.3
Exports	0.0	0.0	0.8	5.5	0.0	0.0	0.9
Platinum and Products							
Input Source within the State:							
Miner	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Agency	0.0	1.2	2.2	0.0	0.0	11.5	2.9
Wholesale	69.0	74.5	46.1	73.2	74.1	86.2	65.6
Retail	3.2	6.1	14.0	26.2	13.8	1.8	12.5
Manufacturers	31.0	58.4	67.2	2.9	59.7	12.3	48.4
Exchange	9.3	0.0	1.6	0.0	0.0	12.7	2.9
Outside the State	31.0	56.5	51.1	20.3	47.7	11.7	40.4
Import	0.0	10.0	0.2	0.0	0.0	0.0	0.6
Output Destination within State:							
Wholesale	22.5	14.6	22.7	0.0	0.2	11.2	12.7
Retail	0.0	14.6	36.1	31.7	22.4	7.5	24.5
Manufacturers	22.5	5.9	5.4	0.0	7.1	12.1	7.4
Consumer	92.8	70.8	83.1	61.0	88.9	88.8	85.1
Outside the State	7.2	0.0	0.6	21.0	36.8	0.0	11.8
Exports	0.0	0.0	2.0	37.6	0.0	0.0	1.6



INTRODUCTION

1.1 Context of the Study

India is one of the **largest exporters** of gems and jewellery in the world. In fact, the subcontinent has risen to be the world's largest centre for cutting and polishing of diamonds and has achieved a remarkable position in the field of jewellery. During the period of 2013-14 to 2017-18, on an average, the gems & jewellery sector accounted for about 14.2 per cent of the total merchandise exports of India. This sector accounts for the third highest share in total merchandise exports after engineering goods and petroleum products.

It may be noted that India is also one of the **largest markets** for gems and jewellery, which provides strong domestic support to this sector by acting like a sort of insurance against international fluctuations. Thus, the manufacturing ecosystem of the G&J industry in the country has evolved over time to meet the challenges of both global as well as domestic markets. The economic importance of the sector is underlined by the fact that it is one of the **most labour-intensive sectors**, thereby providing huge **employment opportunities** for artisans **with traditional and modern skills**.

Many G&J manufacturing units operate in the interior villages and/or small towns and use obsolete technology, as they do not have the financial resources to acquire or upgrade to advanced equipment. In other words, the G&J sector in India is still largely **unorganised** and fragmented. There is thus a need for **skill upgradation** by training the artisans engaged in the sector in the use of the latest **technology**.²

Only very recently has the Indian G&J industry started moving towards becoming an organised sector associated with **big brands** though this phenomenon is still a gradual one. Simultaneously, the global competition is also growing. In particular, countries such as China, Thailand, and other South-east Asian countries are adopting new strategies for sourcing of raw material, mass production, and creation of dynamic designs while offering products at lower prices. The trade-off between fashion statements and store value of the products has also become important.

Despite India's status as a leader in the international G&J market, no accurate data is available on-

- the exact number of clusters units, and workers employed therein;
- the status of the skill of workers and technology base of units;
- the key segments needing focus in each cluster
- international market demand of specific kinds of gems and jewellery; and
- size and segment specific key characteristics of the sector which may be useful for promoting the industry and formulating policies for it. For instance, suggestions to competent public or private institutions/organisations to invest on a say mega jewellery parks (for large clusters) and/or small Common Facility Centres (for small clusters).

In order to ensure that the Indian G&J industry retains its position as one of the leading

²<https://gjepc.org/cfc.php>

countries in the international G&J sector, it is essential to assess India's **internal capabilities**, particularly with respect to **production in the Micro, Small and Medium Enterprises (MSMEs)** and in the **unorganised sector**. There is a need to identify the skills gaps and **skill development needs**, determine skills and **competency standards** and qualifications, plan training programmes as per the requirements of the industry, provide support **infrastructure facilities** to the industry, and **design better schemes**, provide **financial assistance** to the unit holder and finally to create and promote an India specific brand. This will not only improve the standard of human capital involved in the sector, it will increase employment, contribution to domestic economy and create a bigger presence of the Indian G&J sector in the international market. For this purpose it is indeed necessary to have access to **well-structured sector specific information**, followed by **analysis of data** to assist in the planning and delivery of various benefits extended by the government to this sector. For the official assistance to be effective and meaningful, it is important to develop methods to monitor outcomes in terms of the impact on employment and income, brand value, and other performance indicators.

It is in this context that the Gem and Jewellery Export Promotion Council (GJEPC) commissioned the National Council of Applied Economic Research (NCAER) to conduct a detailed study on India's G & J sector. The GJEPC was set up by the Ministry of Commerce, Government of India, in 1966 as an apex body of the gems and jewellery industry with a membership of more than 6,000 exporters in the sector within India. The study will analyse and evaluate the sector's competitiveness and employment potential of this sector, especially with respect to the changing global environment. The study shall present a detailed G&J cluster map based on the numbers of unit and workers with special focus on each segment. An exhaustive analysis of the manpower, the status of their skills and the gaps therein each job role of every segment will be included in this report as well. The segment wise status of technology

and the gaps in each process will form a segment of the report. The study shall also report the perceptions of important stakeholders with regards to the important government policies, the most important sources of raw materials and the popular destinations of the final products as well. The study shall also look at the economic parameters of each segment across the regions and that information shall be used in order to compute the contribution of the sector to the economy. India's performance in each G&J segment in the world market shall also be examined.

1.2 Objectives of the Study

The main aim of this study is to map and measure the health of various clusters across the G&J sector in India. This primary objective would be achieved through:

- Development of a comprehensive understanding of the G&J sector, including an overview of the key segments from sourcing of raw materials to retail, in the sector;
- Qualitative assessment/overview of government policies affecting exports and growth of the G&J sector, such as demonetisation and GST;
- Assessment of the contribution of the G&J sector to the Indian economy in terms of both income and employment, while considering direct and indirect channels;
- Identification and examination of trends in variables related to domestic and export demand, and accordingly, development of a strategy and initiatives by the GJEPC to effect improvements in the G&J sector; and
- Analysis of India's manufacturing potential and supply constraints with respect to infrastructure, skill development, production system, and logistics gaps; and recommendations for overcoming these gaps.

1.3 Scope of the Study

The broad scope of the study is derived from the above objectives as also some other suggestions and directions provided by the GJEPC. Most of the analysis has been done at the level of regions,

States, and districts on the basis of secondary data and a primary survey conducted to fill in the gaps wherever required. The study includes discussions on the following aspects of the G&J sector in India:

- Cluster mapping in terms of the geographical concentration of the G&J units/workers across the country;
 - Unit mapping in terms of the total number of units by the major segments of the sector—the estimated number of units and workers is presented in terms of other important parameters like the type and size of enterprise, Manpower mapping in terms of the number of persons employed by gender, educational and technical qualifications, G&J-specific training certificates, training received (both formal and informal); and the job role-wise number of years of experience;
 - Examination of the skills gaps in terms of the job role-wise and segment-wise observed competencies vis-à-vis the required competencies for the workforce in the sector, along with the number of additional skilled workers required;
 - Analysis of the technology gap in terms of the process-wise existing technology vis-à-vis the need for advanced technology—the latter is determined with respect to the readiness of the enterprises to invest in upgradation of technology and overcoming hurdles in this task;
 - Mapping of economic parameters including the number of enterprises, number of workers, gross value added, and emoluments per worker, segment-wise at the regional level, and development of a composite development index to assess the comparative strength of each of the regions;
 - Trade competitiveness of the sector in terms of the comparative advantage it enjoys in exports over other sectors, and a comparison of the trading status of the country with respect to other countries.
- Sources of inputs to the destination of sale by the segment-wise type of activity.
 - Analysis of the impact of demonetization and GST, and other Government policies on the growth and exports by the G&M sector— It is based on secondary sources and primary survey soliciting response of the enterprises on the impact of the Government policies and schemes on their business.
 - Policies and regulations impacting the G&J sector, and measures and guidelines proposed by the study for the development of the sector based on the availability of infrastructure, skills, raw materials, and investments.

1.4 Data Support for the Study

Secondary Data: In the study, the following secondary sources of data have been utilised:

- i) The Sixth Economic Census conducted by the Central Statistics Office (CSO) under the Ministry of Statistics and Programme Implementation (MoSPI), during January 2013- April 2014, which contains data on the number of establishments and the number of persons employed, activity-wise for all the sectors including the G&J sector—this data has been used as a sample frame for conducting the primary survey.
- ii) The National Sample Survey, 73rd Round (July 2015-June 2016) on Un-Incorporated Non-agricultural Enterprises Relating to Manufacturing, Trade and Other Services (Excluding Construction), conducted by the National Sample Survey Office (NSSO), which covers the unorganised sector, providing detailed information on the number of enterprises, number of employees, fixed assets, inputs, outputs, and gross value added. A total of 2.90 lakh enterprises were canvassed in this survey. This data has been used for mapping the segment-wise clusters and the capabilities therein.
- iii) The Annual Survey of Industries (ASI) for the year 2015-16, conducted by the CSO, which deals with the registered sectors of the economy and covers the factories registered

under Sections 2m(i) and 2m(ii) of the Factories Act, 1948, that is, the factories employing 10 or more workers using power and those employing 20 or more workers without power—the ASI provides detailed data on the number of establishments, employment, inputs, products, and gross value added, among other things. This data, along with data on the unorganised sector through NSS surveys, has been used for estimating the economic parameters at the State and the regional levels.

- iv) The Fifth Annual Employment Unemployment Survey (2015-16), conducted by the Labour Bureau, has been used for estimating employment in the G&J sector by major segments. This is a household survey, in which a total of about 7.82 lakh household members were canvassed from a sample of about 1.57 lakh households. The survey deals with important parameters, namely, the Labour Force Participation Rate, Worker Population Ratio, Unemployment Rate based on the Usual Principal Status Approach and Usual Principal and Subsidiary Status Approach, distribution of employed persons by different activities, and the extent of under-employment, among other things.
- v) The Annual Export and Import data, compiled and disseminated by the Directorate General of Commercial Intelligence and Statistics, Ministry of Commerce, has been used for international trade analysis. The time series

data on the 8-digit HS codes in Chapter 71 has the product-wise import and export data. This provides details of trade competitiveness and policy and regulations for the relevant segments of the G&J sector, with similar data compiled and researched by the GJEPC.

- vi) India-specific detailed time series data on consumer demands and supply for gold, and the Lamba gold price, as compiled and released by the World Gold Council, have also been used for the study.

All the economic activities of the economy are classified under the National Industrial Classification (NIC), which is an essential statistical standard for developing and maintaining a comparable database according to economic activities. Here, manufacturing establishments under the G&J sector have been classified under Division 32, that is, “Other Manufacturing”.

The manufacture of jewellery, bijouterie, and related articles falls under the broad 3-digit NIC (2008) category of 321. Within this, NIC code 3211 comprises the manufacture of jewellery and related articles under the 4-digit category of the same. The manufacture of imitation jewellery and related articles (including the manufacture of costume or imitation jewellery), and manufacture of metal watch bands (except precious metal) fall under the broad 4-digit category of 3212. The detailed description of these economic activities (manufacturing) at the 5-digit level is given in Table 1.1.

Table 1.1: Manufacturing Activities of the G&J Sector according to NIC 2008

NIC 5- Digit Codes	Description
32111	Manufacture of jewellery of gold, silver and other precious or base metal, metal clad with precious metals or precious or semi-precious stones, or of combinations of precious metal and precious or semi-precious stones or of other materials.
32112	Working of diamonds and other precious and semi-precious stones, including the working of industrial quality stones and synthetic or reconstructed precious or semi-precious stones.
32113	Production of worked pearls.
32114	Manufacture of coins, including coins for use as legal tender, whether or not of precious metal.
32119	Manufacture of other articles of gold, silver and other precious and semi-precious metal and stone.
32120	Manufacture of imitation jewellery and related articles.

Source: www.mospi.gov.in.

Similarly, trading establishments and repair have been classified under Division 46—“Wholesale Trade, except of Motor Vehicles and Motor Cycles”; Division 47—“Retail Trade except of Motor Vehicles and Motor Cycles”; and Division 95—“Repair of Computers and Personal and Household Goods”. The broad 3-digit category for trading activities of G&J

products falls under Division 464 (Wholesale Trade of Household Goods), Division 477 (Retail Sale of Other Goods in Specialised Stores), and Division 952 (Repair of Personal and Household Goods). The 5-digit codes for trading activities of the G&J sector as per NIC 2008 have been presented in Table 1.2.

Table 1.2: Trading Activities of the G&J Sector according to NIC 2008

NIC 5-Digit Codes	Description
46498	Wholesale trade of precious metals and jewellery
47733	Retail sale of jewellery and imitation jewellery
95293	Repair and alteration of jewellery

Source: www.mospi.gov.in.

These industrial classifications have been used in the Economic Census and the surveys carried out by NSSO and the Labour Bureau.

Primary Data: As a part of the study NCAER conducted a survey of 6,743 G&J units for cluster mapping, 5,139 of which were from urban areas and 1,604, from rural. The sample was spread across 19 states, covering 118 districts, comprising 117 towns and 400 villages.

The study was undertaken across:

- Six major regions covering 19 Indian States which are: North (Delhi, Haryana, Punjab and Uttar Pradesh); East (Assam, Bihar, Jharkhand, Odisha, Tripura and West Bengal); West (Madhya Pradesh and Maharashtra); South (Andhra Pradesh, Karnataka, Kerala, Tamil Nadu and Telangana) Gujarat and Rajasthan³ and
- Five major segments, including handmade jewellery (plain and studded), machine-made jewellery (plain and studded), diamonds (cutting and processing), gem stones, and retail/wholesale of gems and jewellery units.

1.5 Limitations of the Existing Data

Despite the support and cooperation offered by various member organisations and their

affiliates, this the study faced serious a limitation of availability of data pertaining to one of the important sectors of the economy. The GJEPC had proximate data about the existence of clusters in the G&J sector but adequate information was not available for critical elements like cluster identification, product type, the number of units in the sector, and the employment generated by them, and the names and addresses of the relevant units.

The Economic Census has data at the NIC 3-digit level, but it was not possible to cull out information on all the sub-categories of the G&J sector. At the 3-digit level, the G&J sector falls under code 321 (NIC-2008), which covers only manufacturing. Trade and repair work in this sector gets amalgamated with other activities, and thus specific data on this is not available through the Economic Census. In order to overcome this limitation, the NSSO dataset on Enterprises was studied and analysed at the 5-digit level, which provides an overview of the unincorporated non-agricultural enterprises (excluding construction) engaged in this sector. This is the unorganised sector and segment-wise estimates for a number of parameters across the States/districts/1.5 million plus population towns, were obtained and studied. However, the segment-wise and district-wise sample sizes are too low to provide reliable

³Gujarat and Rajasthan are considered regions by themselves by the GJEPC.

estimates of the parameters for employment at the district level and for the segments in a sizeable number of States. Nevertheless, the district-level estimates have been used for cluster mapping through the number of workers but the data cannot be used for economic parameters beyond districts. The number of workers is generally under-reported in the NSS enterprise survey. These are adjusted using the Employment and Un-employment Survey of Labour Bureau.

In order to get a full picture of this sector, unit level data from the ASI was extracted and analysed to get information on the organised units. The ASI database does not cover the services sector. However, as a substantial portion of the sector falls in the unorganised category, the NSSO data on service sector could be considered as a representative sample. Another problem with the ASI data is that the units do not have a district tag and therefore, district-level estimates cannot be obtained for the organised sector.

The primary pan-India survey of 6743 units cannot provide reliable estimates of all the economic parameters. However, it did provide the necessary information on manpower and technology mapping, skills and technology gaps, as well the perceptions of the units and associations in the sector about Government policies and regulations. There were many hurdles in the survey, including non-cooperation from some of the selected units. In a sizeable number of cases, the field functionaries could not solicit financial data such as investment in plants and machinery, value of basic inputs, value of outputs, and the annual turnover required for assessing the economic health of the sector. The units were not willing to share financial information about their businesses. The primary survey mostly covers

small-size units and therefore, the survey covered only some of the jobs/roles out of total functions we intended to cover, generally using traditional hand tools in the production process. Another challenge faced by the survey team was to locate G&J units doing job work and manufacturing. They were located in residential buildings and it was difficult to locate them without assistance from the regional G&J associations. Nevertheless, it is hoped that the primary survey helped in filling the data gaps and providing a realistic picture of the sector.

1.6 Chapterisation Plan

The chapterisation for this report is as follows. Following this Introduction, Chapter 2 deals with cluster mapping of the G&J sector across the six major regions in India. Chapter 3 presents the results of the manpower mapping exercise for the sector. Chapter 4 delineates the skills and technology mapping of the sector, and also highlights the gaps prevalent in each segment of the sector across the six regions. Chapter 5 discusses the major input sources and output destinations of the raw materials and final products respectively of the G&J sector. Chapter 6 analyses the key economic parameters of the various segments of the G&J sector. Chapter 7 presents the contribution of the sector to the Indian economy. Chapter 8 outlines the export competitiveness of India's G&J sector vis-à-vis the concomitant major world players. Chapter 9 reveals the perceptions of the respondents with regard to various important Government policies that have had an impact on the exports and growth of the country's G&J sector. Finally, chapter 10 concludes the study by presenting a summary of the findings and some major policy implications.

II

CLUSTER MAPPING

“Clusters are geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition. They include, for example, suppliers of specialized inputs such as components, machinery, and services, and providers of specialized infrastructure”.

(Porter, M.E. (1998). “Clusters and the New Economics of Competition,” Harvard Business Review, November–December, 1998.)

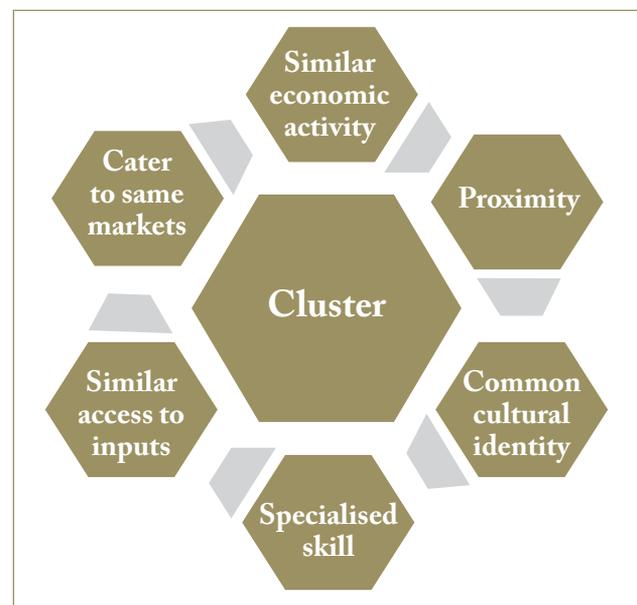
In simple words, an industrial cluster refers to a number of specialised industries of a similar kind, concentrated and functioning in a particular geographical location. According to the United Nations Industrial Development Organization, “Clusters are defined as geographical concentrations of inter-connected enterprises and associated institutions that face common challenges and opportunities” (“Making Clusters Work”, UNIDO, 2006).

In India, the Micro and Small Enterprises Cluster Development Programme (MSECDP) defines a cluster as a group of enterprises located within an identifiable and as far as practicable, contiguous area and producing same / similar products / services. Some Indian clusters, comprising small-scale enterprises, are so big that they account for 90 per cent of India’s total production output in selected products.⁴ For example, the knitwear cluster of Ludhiana; the jewellery clusters of Surat and Mumbai, which account for most of the country’s jewellery exports; and the clusters of Chennai, Agra, and Kolkata, well known for leather and leather products. On the other hand, a majority of the Indian clusters, especially in the handicrafts sector, are very small with no more than 100 workers but they are so specialised that no other place in

the world matches their skills and the quality of their output. This is the case, for example, of the Paithani sarees cluster in Maharashtra.

While there is no universally accepted way of identifying a cluster’s geographical boundary, there are some key characteristics, which are generally, but not necessarily, seen in an industrial cluster. These are presented in Figure 2.1.

Figure 2.1: Cluster Characteristics



Source: NCAER Gems and Jewellery Survey, 2019.

⁴<https://dcmsme.gov.in/clusters/clus/indsme.htm>.

Clustering is considered beneficial, particularly for medium and small enterprises, as these enterprises individually are unable to deal with the common constraints like making full use of market opportunities and sourcing inputs from suppliers and also labour at competitive rates. Clustering helps the enterprises in realising the gains through joint efforts. The advantage that accrues to a cluster from such joint efforts is referred to as ‘collective efficiency’.

2.1 Gems and Jewellery Clusters

For the Gems and Jewellery (G&J) sector, as also for the other sectors, there is no standard guideline to define a cluster except that it is an agglomeration of units performing the similar activity of manufacturing and trading in gems and jewellery.

This may be seen from two different perspectives:

- Agglomeration of a large number of units performing similar activities; and
- Agglomeration of a large number of workers employed in units performing similar activities.

The first case, that is, agglomeration of a large number of units performing similar activities in gems and jewellery, is clearly a characteristic of a cluster. However, the second case also qualifies as a cluster despite the possibility that the number of units may be fewer but the number of persons employed is large in number. Hence, we define a cluster as *“an agglomeration of a large concentration of workers employed in units performing similar activities, so as to capture the concentration of both the units and workers employed”*.

Therefore, the cluster mapping exercise was done based on both, numbers of units and workers. The cut offs to qualify as a cluster and the various size categories (with size being defined by the number of units/workers within clusters in a district) for of unit and worker clusters were different. They were decided after numerous

consultations with experts from GJEPC and major associations of the sector.

For the G&J sector, there may be two types of clusters:

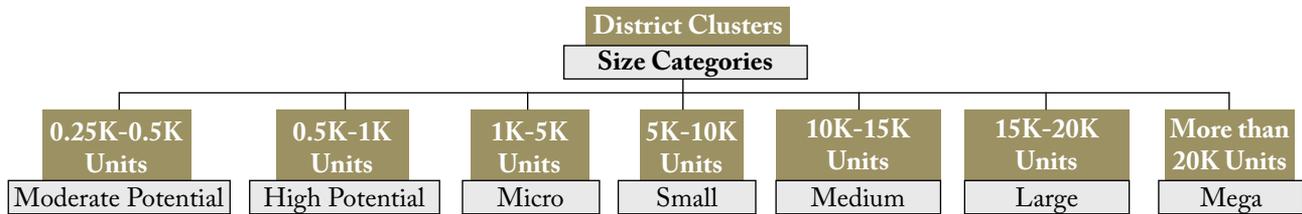
- Homogeneous— Clusters which deal in any one G&J segment like the manufacturing of jewellery, manufacturing of imitation jewellery, cutting and polishing of diamonds and gemstones or trading, having more than 50 per cent units/workers.
- Heterogeneous— Clusters which deal in more than one segment but with none of them having a concentration of 50 per cent or more units/workers.

The NSSO’s Enterprise Surveys and NCAER surveys are used to arrive at the estimates of the number of units/workers. In the case of the G&J sector, the enterprise survey is less likely to capture the total employment in the sector as many G&J workers are job-workers and are not on the payroll of the enterprise. A disclosure of actual total number of workers employed in the G&J unit is found to be less likely, as also observed in the Cluster Mapping Primary Survey. Hence, the survey conducted by NCAER also collected information from the units that were mainly doing job work to arrive at the total number of workers engaged in the G&J sector. However, the Enterprise Survey is useful for arriving at important economic characteristics and in distributing the number of units/workers by the G&J segments at the district level. The NCAER estimates of units/workers at the State level have been distributed across districts using the Enterprise Survey structure.

These datasets have been used to map the G&J clusters in India by districts; size categories (with size defined by the number of workers⁵ and units within the district clusters); and by the type of activity (G&J segment). The districts have been classified into seven categories based on the number of units and six categories based on the number of workers engaged and in them:

⁵Employment presented in terms of the number of workers which is the headcount.

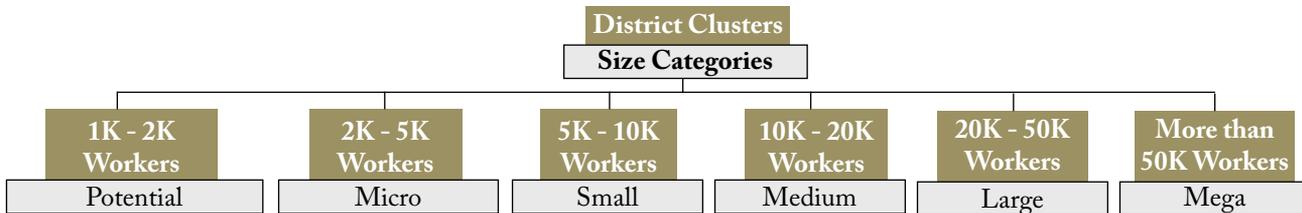
Figure 2.2: Clusters by Size Categories Based on the Number of Units



Source: NCAER Gems and Jewellery Study, 2019.

Note: K denotes 1000.

Figure 2.3: Clusters by size categories based on number of workers



Source: NCAER Gems and Jewellery Study, 2019.

Note: K denotes 1000.

The NCAER survey data reveals that in 2019, there were a total of 9.89 lakh units and 42.89 lakh workers in the G&J sector in India. Since the geographical area of a district can be very vast, we have restricted our threshold to at least 250 G&J units or a minimum of 1000 workers to be considered as a cluster. A total of 390 districts have been identified as clusters based on the number of units working in the G&J sector. When classified on the basis of the number of workers engaged in the G&J sector, 341 district clusters were found.

This chapter provides a comprehensive overview of the structure of the G&J sector in India. Each of the following sections (2.2 to 2.5) have been discussed from both angles, that of the units and the workers. Section 2.2. presents a detailed overview of the unit and worker clusters discussing issues like the number of manufacturing and trade clusters, the trade clusters that have a potential to develop manufacturing clusters within them, the number of homogeneous and heterogeneous manufacturing clusters, clusters identified as important by GJEPC experts, and the overall regional distribution of clusters. Section 2.3 discusses the various segments prevalent in the clusters across the six regions. Section 2.4 presents details of both unit- and worker-based clusters by different

size categories across each region. Section 2.5 specifically focuses on manufacturing clusters and their types—the number of homogeneous and heterogeneous clusters by size categories across each region. Section 2.6 presents a detailed descriptive analysis of each region, the segments operating within them, and their distribution by various size categories. Section 2.7 concludes the chapter discussing major policy implications of this exercise. The annexures at the end of the chapter provide a very exhaustive list of all the district clusters identified via this study for each region, separately for manufacturing and trading. The size, type, the major segments prevalent, and the towns known for the manufacture of each product have been presented in the Annexures (A1 to A12). The details of the districts which fall under “potential” categories have also been given.

2.2 Descriptive Statistics of Clusters by Units and Workers

2.2.1 Cluster Mapping by Units

The following findings emerge from the exercise of mapping of clusters by units:

- A total of 390 clusters were identified by NCAER and classified into two categories—one containing 185 units, involved mainly in manufacturing (around 48 per cent of total)

- of gems and jewellery, and 205 units involved in trading of gems and jewellery (Table 2.1).
- About 90 per cent of the manufacturing clusters were homogeneous.
 - Within some of the trade classified clusters, there were 55 (27 per cent of the total trade clusters) such clusters which had a 25 to 50 per cent units engaged in manufacturing activity.
 - Although not evident through the secondary data published by government sources, 18 clusters were deemed important by some industry experts and members of the GJEPC.
 - The regional distribution of the number of clusters based on units revealed that the North had the largest number of clusters (accounting for 24.6 per cent) followed by the East and the South. In the Rajasthan and Gujarat regions, a majority of the clusters were involved in the manufacturing of gems and jewellery. In the East, there were an equal number of manufacturing and trade clusters.
 - Paschim Medinipur, Howrah, Nadia, and South Twenty Four Parganas were the four major clusters for manufacturing of gems and jewellery in the East region.
 - Rajkot, Surat, Vadodara, and Bhavnagar were the four major clusters for manufacturing of gems and jewellery in the Gujarat region.
 - Agra, Ghaziabad, Kanpur Nagar, and Varanasi were the four major clusters for manufacturing of gems and jewellery in the North region.
 - Bikaner, Jodhpur, Nagaur, and Churu were the four major clusters for manufacturing of gems and jewellery in the Rajasthan region.
 - Chittoor, Davanagere, Coimbatore, and Salem were the four major clusters for manufacturing of gems and jewellery in the South region.
 - Mumbai, Thane, Kolhapur, and Salem were the four major clusters for manufacturing of gems and jewellery in the West region.

Table 2.1: Descriptive Statistics of Cluster Mapping by Units

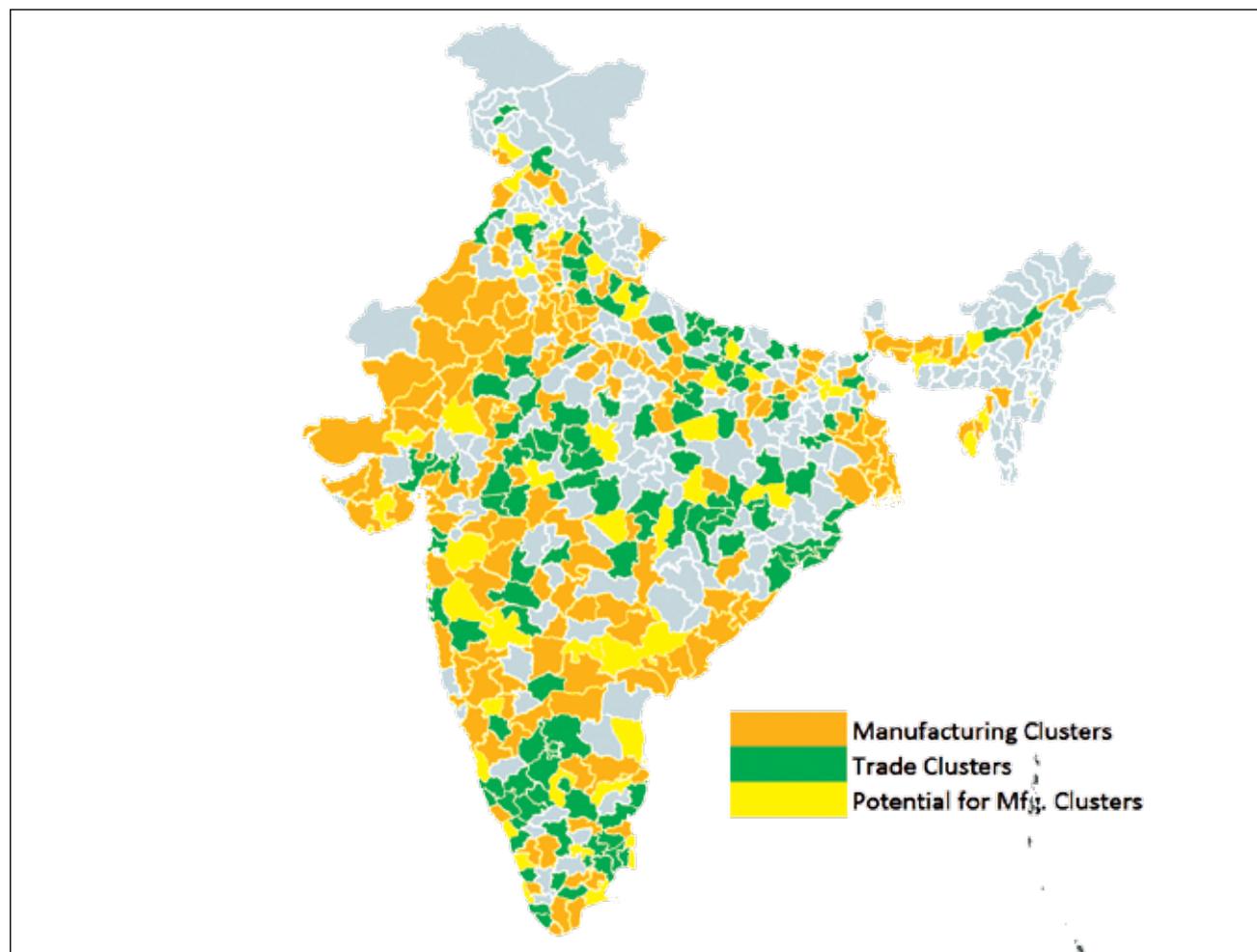
Region	Manufacturing Clusters	Trade Clusters	Total Clusters	% Share of Manufacturing in total Clusters	Manufacturing Clusters by Type		*Potential for manufacturing within Trade Clusters	Number of GJEPC Identified clusters	% Share of Regions in Total Clusters
					Homo-geneous	Hetero-geneous			
East	46	46	92	50.0	39	7	12	6	23.6
Gujarat	12	9	21	57.1	11	1	2	1	5.4
North	44	52	96	45.8	42	2	14	2	24.6
Rajasthan	21	5	26	80.8	19	2	1	0	6.7
South	36	51	87	41.4	33	3	16	2	22.3
West	26	42	68	38.2	23	3	10	7	17.4
Total	185	205	390	47.4	167	18	55	18	100.0

Source: NCAER Gems & Jewellery Survey, 2019.

Note: *25 to 50 % units belong to Manufacturing in Trade classified clusters.

- The detailed region-wise list of clusters, major products, and major centres is provided in Annexure: 2-A1 to 2-A6.

Figure 2.4: Cluster Mapping by Type of Clusters (Based on Number of Units)



Source: NCAER Gems & Jewellery Survey, 2019.

2.2.2 Cluster Mapping by Workers

The following findings emerge from the exercise of mapping of clusters by workers:

- The mapping of clusters by workers revealed a total of 341 clusters, of which 174, or 51 per cent of the total, were involved mainly in manufacturing and the remaining 167, or 49 per cent of the total, were involved in the trading of gems and jewellery (Table 2.2). A total of 27 additional clusters were identified by the GJEPC.
- About 95 per cent of the manufacturing clusters were homogeneous.
- Within the trade clusters, 50 had the potential to be developed further into manufacturing clusters as well where 25 to 50 per cent of workers in these clusters are engaged in manufacturing activities.
- The regional distribution of the number of clusters based on units revealed that the South had the largest number of clusters (accounting for 24.9 per cent of the total), followed by the North (23.2 per cent) and the East (21.1 per cent). In the Rajasthan and Gujarat regions, there were comparatively fewer clusters, most of which were involved in manufacturing.
- The existence of fewer worker clusters as compared to the unit-based ones points to the fact that the units in the gems and jewellery sector are mostly small.

Table 2.2: Descriptive Statistics of Cluster Mapping by Workers

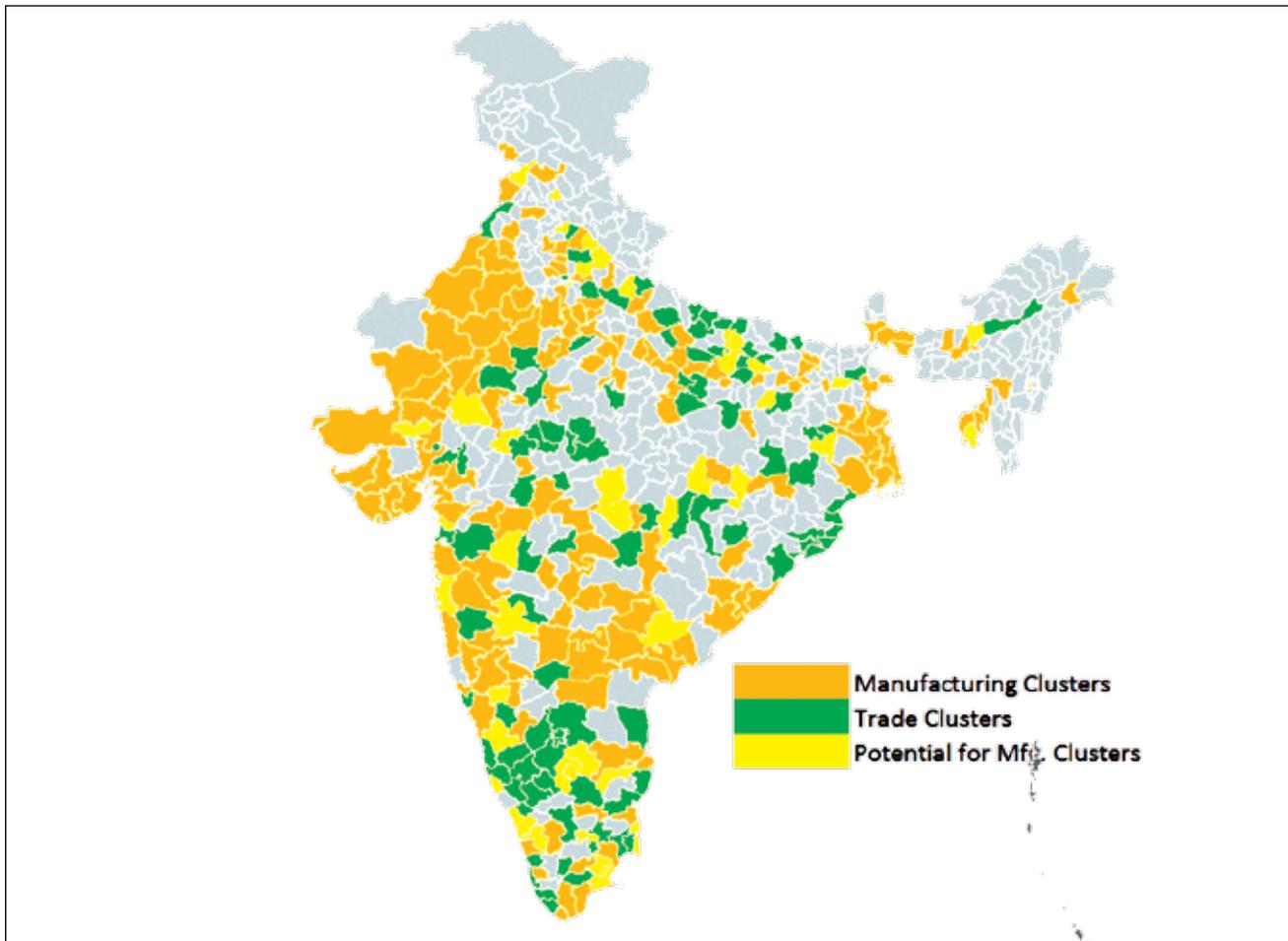
Region	Manufacturing Clusters	Trade Clusters	Total Clusters	% Share of Manufacturing in total Clusters	Manufacturing Clusters by Type		*Potential for manufacturing within Trade Clusters	Number of GJEPIC Identified clusters	% Share of Regions
					Homo-geneous	Hetero-geneous			
East	41	31	72	56.9	67	5	7	7	21.1
Gujarat	14	7	21	66.7	19	2	2	1	6.2
North	39	40	79	49.4	78	1	13	5	23.2
Rajasthan	22	5	27	81.5	26	1	1	0	7.9
South	35	50	85	41.2	79	6	17	3	24.9
West	23	34	57	40.4	56	1	10	11	16.7
Total	174	167	341	51.0	325	16	50	27	100.0

Source: NCAER Gems & Jewellery Survey-2019.

Note: * 25 to 50 % workers belong to Manufacturing in Trade classified clusters.

- Paschim Medinipur, Howrah, Nadia, Purba Mednipur, and South Twenty Four Parganas were the five major clusters for manufacturing of gems and jewellery in the East region.
- Ahmedabad, Bhavnagar, Rajkot, Surat, and Amreli were the five major clusters for manufacturing of gems and jewellery in the Gujarat region.
- Amritsar, Moradabad, Agra, Kanpur Nagar, and Ghaziabad were the five major clusters for manufacturing of gems and jewellery in the North region.
- Jaipur, Bikaner, Bharatpur, Sikar, and Jodhpur were the five major clusters for manufacturing of gems and jewellery in the Rajasthan region.
- Thrissur, Salem, Coimbatore, Davanagere, and Bidar were the five major clusters for manufacturing of gems and jewellery in the South region.
- Kolhapur, Thane, Pune, Satna, and Yavatmal were the five major clusters for manufacturing of gems and jewellery in the West region.
- The detailed region-wise list of clusters, major products, and major centres is provided in Annexures 2-A7 to 2-A12.

Figure 2.5: Cluster Mapping by Type of Clusters (Based on Number of Workers)



Source: NCAER Gems & Jewellery Survey, 2019.

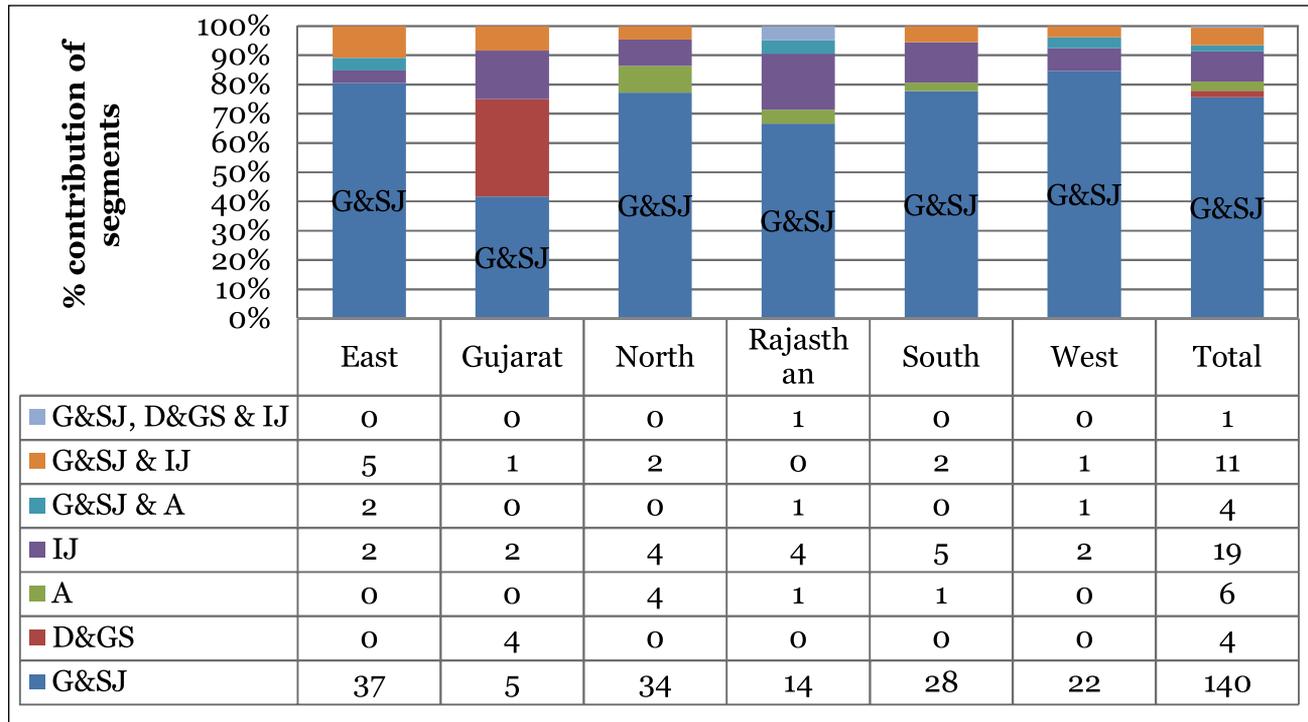
2.3 Structure of Clusters by Segments

2.3.1 Cluster Mapping by Segment-wise Distribution of Manufacturing Units—

The following findings emerge from the exercise of mapping of clusters by the segment-wise distribution of manufacturing units:

- Figure 2.6 shows that when categorised by segments, the units involved in the manufacture of precious metal-based jewellery (G&SJ) constituted the most dominant cluster. The East, followed by the North and the South, were the regions that had the maximum number of clusters in this segment.
- The four major clusters for manufacture of diamonds and gemstones clusters were found in Gujarat. This segment had a presence in Rajasthan as well but in the form of a mixed (heterogeneous) cluster, which also included manufacturing units of precious metal (G&SJ) and imitation jewellery (IJ).
- A significant number of clusters for imitation jewellery (19) were also present, spread mostly across the South, Rajasthan, and North regions.
- Heterogeneity was also observed in the regions. A total of 12 clusters were distributed across the regions where the manufacture of imitation jewellery (IJ) had a significant potential along with jewellery made of precious metals (G&SJ).

Figure 2.6: Unit Based Manufacturing Clusters by G&J Segments



Source: NCAER Gems & Jewellery Survey, 2019.

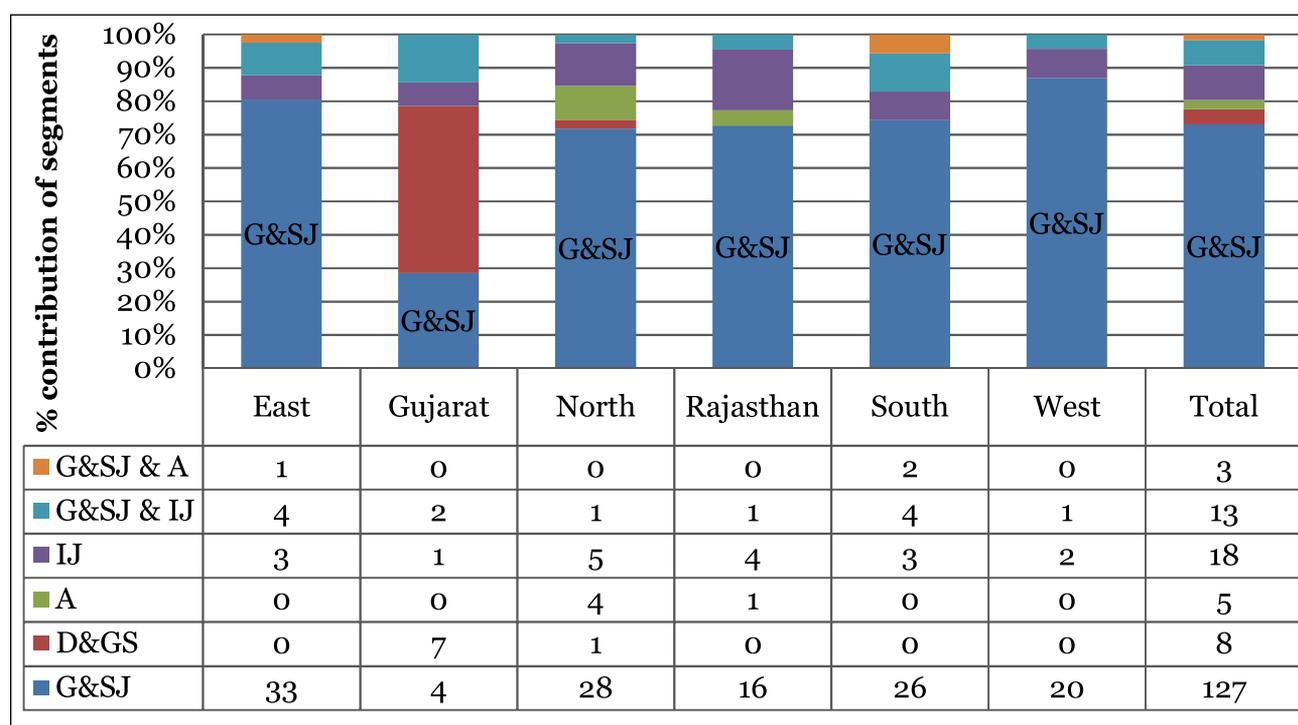
Note: G&SJ – Manufacture of plain and studded jewellery; D&GS – Cutting and polishing of diamond and gemstones; A- Articles made of precious and semi-precious metals and stones; IJ- Imitation Jewellery.

2.3.2 Cluster Mapping by Segment-wise Distribution of Workers in the Manufacturing Units

The following findings emerge from the exercise of mapping of clusters by the segment-wise distribution of manufacturing units:

- It is obvious that the worker-based cluster concentration will be somewhat in line with that of unit-based clusters. The highest number of worker clusters was those for precious metal-based jewellery manufacturing. The East, North, South, West, and Rajasthan regions had such clusters in large numbers.
- Although G&SJ clusters were found in the Gujarat region, it was mostly the D&GS units that had a strong presence in this region.
- Clusters for imitation jewellery were present as both homogeneous (18) as well as heterogeneous clusters (13) in combination with manufacturing units for the G&SJ segment. The North and Rajasthan regions had the highest number of clusters manufacturing imitation jewellery.
- In the case of manufacture of articles made of precious metals and stones, the North region, with four out of five homogeneous clusters, generated a lot of employment.

Figure 2.7: Worker Based Manufacturing Clusters by G&J Segments



Source: NCAER Gems & Jewellery Survey, 2019.

Note: G&SJ – Manufacture of plain and studded jewellery1; D&GS – Cutting and polishing of diamond and gemstones; A- Articles made of precious and semi-precious metals and stones; IJ- Imitation Jewellery.

2.4 Size of Gems and Jewellery Clusters

2.4.1 Distribution of Unit Clusters by Size Categories

The following findings emerge from the exercise of distribution of unit clusters by size categories:

- There were large numbers of micro clusters indicating that most of the G&J units in India are very small in nature. Most of them

were found in the South, East, and North regions (Table 2.3).

- The southern region has a significant share (33.3 per cent) of the total number of small unit clusters (15 in number).
- There were only 6 mega clusters distributed across all the regions but the South.
- There were large numbers of high- and moderate-potential unit clusters as well. They were mostly present in the North, South, and East regions.

Table 2.3: Distribution of Unit Clusters by Size

Region	Mega	Large	Medium	Small	Micro	High Potential	Moderate Potential	Total
Manufacturing								
East	2	1	2	2	15	10	14	46
Gujarat	1	0	0	2	3	3	3	12
North	1	0	0	3	12	16	12	44
Rajasthan	1	0	0	2	6	6	6	21
South	0	0	4	5	16	6	5	36
West	1	1	0	1	11	4	8	26
Total	6	2	6	15	63	45	48	185

(Contd.)

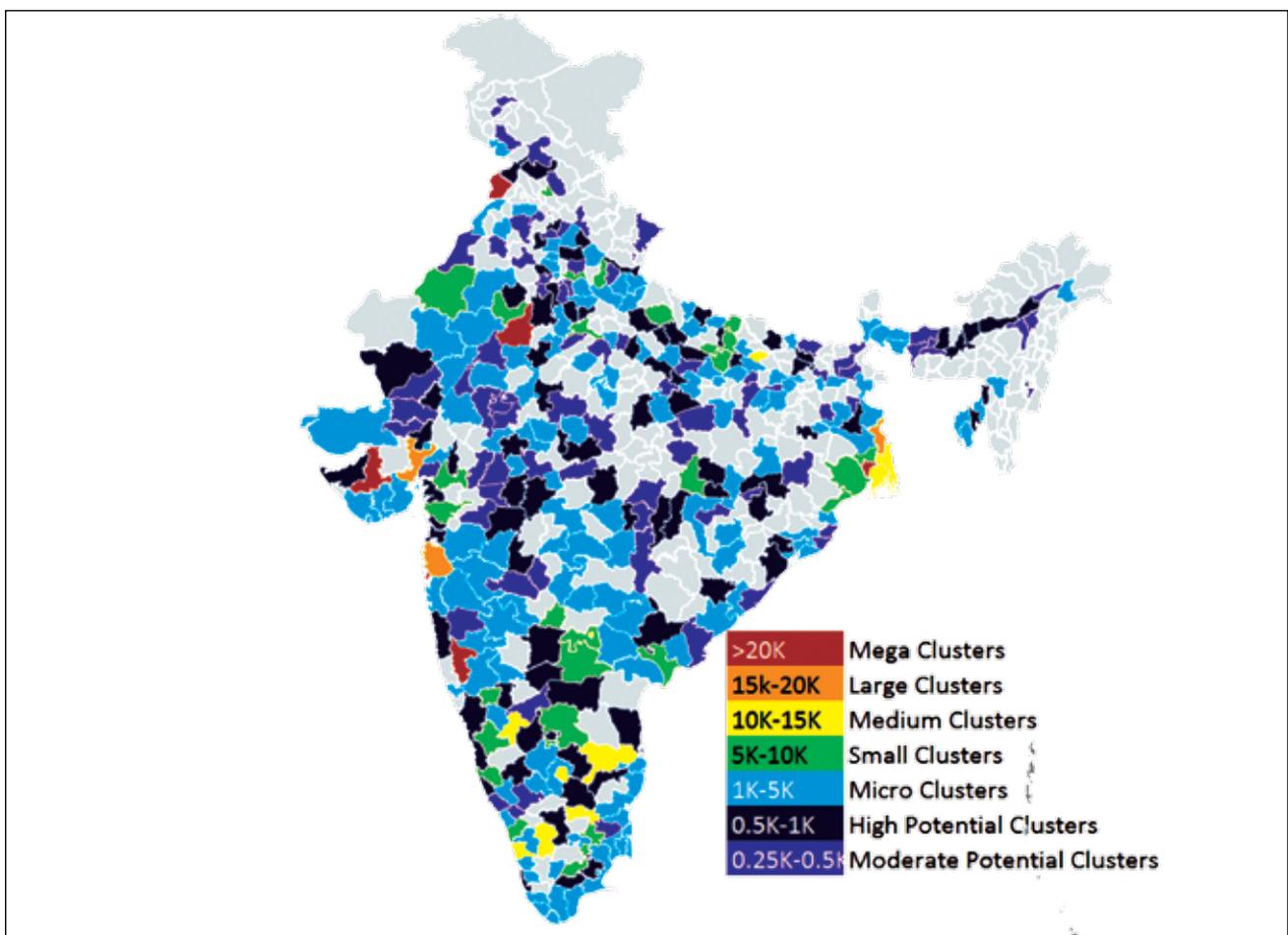
Table 2.3: Distribution of Unit Clusters by Size (Contd.)

Region	Mega	Large	Medium	Small	Micro	High Potential	Moderate Potential	Total
Trade								
East	0	0	1	2	14	13	16	46
Gujarat	0	1	0	0	3	3	2	9
North	0	0	0	6	21	11	14	52
Rajasthan	0	0	0	0	4	0	1	5
South	0	0	3	6	23	15	4	51
West	1	0	0	0	13	9	19	42
Total	1	1	4	14	78	51	56	205

Source: NCAER Gems & Jewellery Survey, 2019.

- Similar to the manufacturing clusters, a majority of the trading clusters fell under the micro category.
- There were only one each of mega and large clusters present in the West and Gujarat regions, respectively.
- Large numbers of high- and moderate-potential clusters were also observed for the trading units.

Figure 2.8: Cluster Mapping by Size of Clusters (Based on Number of Units)



Source: NCAER Gems & Jewellery Survey, 2019.

2.4.2 Distribution of Worker Clusters by Size Categories

The following findings emerge from the exercise of distribution of worker clusters by size categories:

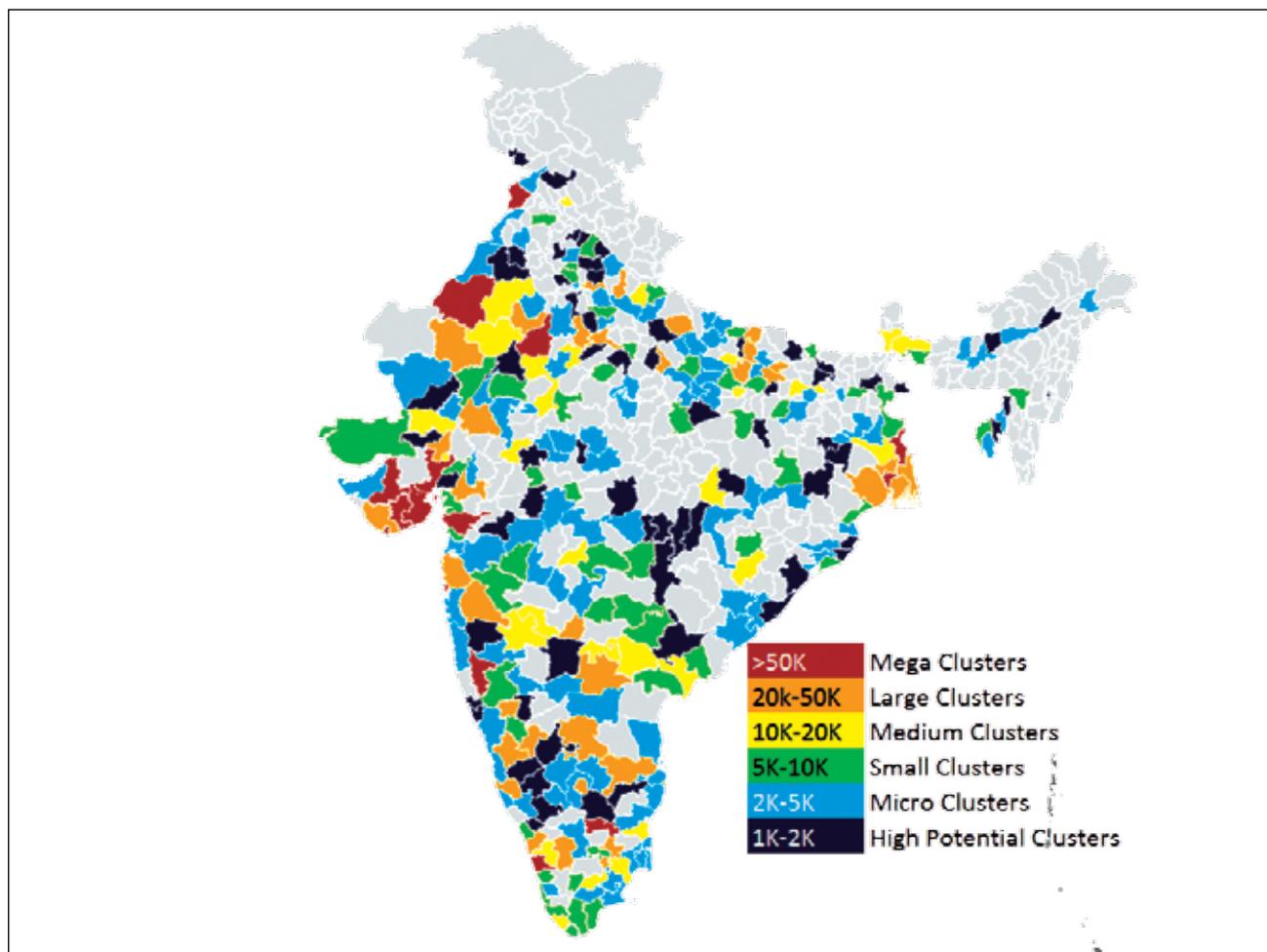
- Table 2.4 shows that there are larger numbers of mega and large manufacturing worker clusters than unit-based (manufacturing) clusters. This implies that the few units under those categories employed many workers. For instance, the one mega manufacturing unit cluster in Gujarat was found to be employing enough workers to form five mega worker-based manufacturing clusters.
- There were 22 large clusters, five of which were in the South and East region. Unlike unit clusters, there was a significant presence of mega and large worker manufacturing clusters in the South.
- As in the other cases, be it unit- or worker-based categorisation or manufacturing or trade clusters, the largest numbers were seen here in the case of micro clusters (46 out of the total manufacturing and 56 out of total trade clusters).
- Also a “high potential” was observed in the case of 44 manufacturing worker clusters implying that they employed 1,000 to 2,000 workers.
- In the case of trade-based worker clusters, only two mega clusters were found and are located in the West region. Out of the 16 large trade clusters, a majority were found in the South (8) and North (6) regions.
- The Gujarat and Rajasthan regions had the lowest numbers of trade clusters, with none of mega size. Also, these two regions had very few high-potential clusters. The West (16), East (15), South (10), and North (9) regions, on the other hand, had a significant number of high-potential trade clusters.

Table 2.4: Distribution of Worker Clusters by Size

Region	Mega	Large	Medium	Small	Micro	High Potential	Total
Manufacturing							
East	3	5	5	5	10	13	41
Gujarat	5	3	1	2	1	2	14
North	1	4	1	8	12	13	39
Rajasthan	2	3	3	2	9	3	22
South	2	5	6	10	7	5	35
West	1	2	0	5	7	8	23
Total	14	22	16	32	46	44	174
Trade							
East	0	1	1	6	8	15	31
Gujarat	0	0	1	2	2	2	7
North	0	6	2	6	17	9	40
Rajasthan	0	1	2	1	0	1	5
South	0	8	4	8	20	10	50
West	2	0	4	3	9	16	34
Total	2	16	14	26	56	53	167

Source: NCAER Gems & Jewellery Survey, 2019.

Figure 2.9: Cluster Mapping by Size of Clusters (Based on Number of Workers)



Source: NCAER Gems & Jewellery Survey, 2019.

2.5 Types of G&J Manufacturing clusters

2.5.1 Distribution of Manufacturing Unit Clusters by Type

As discussed above, manufacturing clusters may be homogeneous or heterogeneous in nature. There were a total of 167 homogeneous clusters and just 18 heterogeneous clusters. The region-wise distribution of clusters in Table 2.5 reveals the following findings:

- The North had the largest number of homogeneous clusters, most of which fall within the range of small- to moderate-potential. This region had just one mega homogeneous cluster.
- The East and West regions had one of mega and large clusters each. Most of the clusters in these regions fell under the micro-, high- and moderate-potential categories.
- The Gujarat and Rajasthan regions had an equally distributed number of homogeneous clusters of 3 and 6, respectively, all ranging between micro and potential sizes.
- The highest number of heterogeneous clusters were found in the East (7), followed by the South and West (3 each).
- There were just three mega heterogeneous clusters; one of each was located in the East, Gujarat, and Rajasthan regions.

Table 2.5: Distribution of Manufacturing Unit Clusters by Type

Cluster Size	East	Gujarat	North	Rajasthan	South	West	Total
Homogeneous Clusters							
Mega	1	-	1	-	-	1	3
Large	1	-	-	-	-	1	2
Medium	1	-	-	-	4	-	5
Small	2	2	3	1	5	-	13
Micro	12	3	11	6	15	11	58
High Potential	9	3	16	6	5	3	42
Moderate Potential	13	3	11	6	4	7	44
Total	39	11	42	19	33	23	167
Heterogeneous Clusters							
Mega	1	1	-	1	-	-	3
Large	-	-	-	-	-	-	0
Medium	1	-	-	-	-	-	1
Small	-	-	-	1	-	1	2
Micro	3	-	1	-	1	-	5
High Potential	1	-	-	-	1	1	3
Moderate Potential	1	-	1	-	1	1	4
Total	7	1	2	2	3	3	18

Source: NCAER Gems & Jewellery Survey, 2019.

2.5.2 Distribution of Manufacturing Worker Clusters by Type

- The following findings emerge from the distribution of manufacturing worker clusters by the type of cluster: There were 158

homogeneous worker clusters, most of which were located in the North (38), East (36), and South (29) regions. By size, about half of the clusters fell under the micro- and high-potential categories.

Table 2.6: Distribution of Manufacturing Worker Clusters by Type

Cluster Size	East	Gujarat	North	Rajasthan	South	West	Total
Homogeneous Clusters							
Mega	3	4	1	2	1	1	12
Large	4	2	4	2	5	2	19
Medium	4	1	1	3	5	-	14
Small	4	2	8	2	7	5	28
Micro	9	1	12	9	7	7	45
High Potential	12	2	12	3	4	7	40
Total	36	12	38	21	29	22	158
Heterogeneous Clusters							
Mega	-	1	-	-	1	-	2
Large	1	1	-	1	-	-	3
Medium	1	-	-	-	1	-	2
Small	1	-	-	-	3	-	4
Micro	1	-	-	-	-	-	1
High Potential	1	-	1	-	1	1	4
Total	5	2	1	1	6	1	16

Source: NCAER Gems & Jewellery Survey, 2019.

- There were a larger numbers of mega (12) and large (19) clusters by worker classification than by that of units (5 in total).
- There were only 16 heterogeneous worker clusters and most of them were located in the South (6) and East (5) regions.

The following section presents the distribution of unit and worker clusters by size categories across the different segments prevalent in each region (Tables 2.7 to 2.12).

2.6 Distribution of Different G&J Clusters in the Six Major Regions of India

The following findings emerge from the distribution of clusters by size in the East region:

- In the East, the predominant manufacturing cluster was that of jewellery made of precious

metals (plain/studded with precious or semi-precious stones). Most of the unit clusters fell in the micro-potential categories. A similar picture was observed for the worker clusters as well.

- The other clusters located in the East were those for articles made of precious and semi-precious metals and stones. They are very few in number in both the unit (2) and worker clusters (3).
- The East region also had two types of clusters which manufacture; (i) articles, and (ii) imitation jewellery, both in combination with jewellery made of precious metals and stones.
- There were large numbers of trade clusters in the East. They were mostly of the micro size and potential categories.

Table 2.7.1: Distribution of Clusters by size across Segments - East region

Cluster Size	32111	32120	32111 & 32119	32111 & 32120	Trade
	Gold & Silver Jewellery	Articles	Gold & Silver Jewellery and Articles	Gold & Silver Jewellery and Imitation Jewellery	Trade
Unit Clusters					
Mega	-	1	-	1	-
Large	1	-	-	-	-
Medium	1	-	-	1	1
Small	2	-	-	-	2
Micro	12	-	1	2	14
High Potential	9	-	1	-	13
Moderate Potential	12	1	-	1	16
Total	37	2	2	5	46
Worker Clusters					
Mega	1	2	-	-	-
Large	4	-	-	1	1
Medium	4	-	-	1	1
Small	4	-	1	-	6
Micro	9	-	-	1	8
High Potential	11	1	-	1	15
Total	33	3	1	4	31

Source: NCAER Gems & Jewellery Survey, 2019.

The following findings emerge from the distribution of clusters by size in the Gujarat region:

- The Gujarat region manufactures jewellery made of precious metals and stones (G&SJ) and imitation jewellery. There are also a few clusters that do both.
- Out of the 12 manufacturing unit clusters, 4 were involved in manufacturing diamonds and gemstones. In fact, in the case of the 14 manufacturing worker clusters, half belonged to this segment. Also, the D&GS worker clusters were mostly mega and large in size. This segment is, therefore, very important in the region.
- A little less than half of the total unit clusters and exactly one-third of the worker clusters were engaged in the trade of gems and jewellery in Gujarat region. They were not large in size but deserve attention because of their sheer numbers.

Table 2.7.2: Distribution of Clusters by Size across Segments- Gujarat region

Cluster Size	32111	32112	32120	32111 & 32120	Trade
	Gold & Silver Jewellery	Cutting & Polishing of Diamond & Gem Stones	Imitation Jewellery	Gold & Silver Jewellery and Imitation Jewellery	Trade
Unit Clusters					
Mega	-	-	-	1	-
Large	-	-	-	-	1
Medium	-	-	-	-	-
Small	-	1	1	-	-
Micro	2	1	-	-	3
High Potential	2	1	-	-	3
Moderate Potential	1	1	1	-	2
Total	5	4	2	1	9
Worker Clusters					
Mega	-	4	-	1	-
Large	-	2	-	1	-
Medium	-	1	-	-	1
Small	2	-	-	-	2
Micro	1	-	-	-	2
High Potential	1	-	1	-	2
Total	4	7	1	2	7

Source: NCAER Gems & Jewellery Survey, 2019.

The following findings emerge from the distribution of clusters by size in the North region:

- The G&SJ segment has a major presence in

the North region. There are a few segments focused on the manufacture of articles (A) made of precious metals and stones, and imitation (IJ) jewellery as well.

- Although one worker cluster in this region is engaged in the cutting and polishing of diamonds and gemstones, a unit cluster of the segment does not feature in the cluster mapping exercise. This implies that though a significant number of workers are engaged in this activity, they probably work in units which are not specifically categorised as those involved in the cutting and polishing of diamonds.
- There is a significant presence of trade clusters both under the unit (52) and worker (40) classifications.

Table 2.7.3: Distribution of clusters by size across segments- North region

Cluster Size	32111	32112	32119	32120	32111 & 32120	Trade
	Gold & Silver Jewellery	Cutting & Polishing of Diamond & Gem Stones	Articles	Imitation Jewellery	Gold & Silver Jewellery and Imitation Jewellery	Trade
Unit Clusters						
Mega	-	-	1	-	-	-
Large	-	-	-	-	-	-
Medium	-	-	-	-	-	-
Small	1	-	1	1	-	6
Micro	10	-	-	1	1	21
High Potential	13	-	2	1	NA	11
Moderate Potential	10	-	-	1	1	14
Total	34	0	4	4	2	52
Worker Clusters						
Mega	-	-	1	-	-	-
Large	1	-	1	2	-	6
Medium	-	-	-	1	-	2
Small	7	1	-	-	-	6
Micro	12	-	-	-	-	17
High Potential	8	-	2	2	1	9
Total	28	1	4	5	1	40

Source: NCAER Gems & Jewellery Survey, 2019.

The following findings emerge from the distribution of clusters by size in the Rajasthan region:

- The Rajasthan region has standalone clusters of G&SJ, A, and IJ segments but also some which specialise in multiple activities. The largest numbers of both unit (14) and worker (16) clusters are engaged in manufacturing plain and studded jewellery (G&SJ). Although the sizes of the unit clusters involved in this activity are small, there are two mega and one large worker clusters.
- There is one unit cluster which has a significant proportion of D&GS units along with G&SJ and IJ units.
- The share of trade clusters in Rajasthan region is not as high as that in the other regions in both the unit and worker cluster totals.

Table 2.7.4: Distribution of clusters by size across segments- Rajasthan region

Cluster Size	32111	32119	32120	32111 & 32119	32111 & 32120	32111, 32112 & 33120	Trade
	Gold & Silver Jewellery	Articles	Imitation Jewellery	Gold & Silver Jewellery and Articles	Gold & Silver Jewellery and Imitation Jewellery	Gold & Silver Jewellery, Cutting & Polishing of Diamond and Gem Stones and Imitation Jewellery	
Unit Clusters							
Mega	-	-	-	1	-	-	NA
Large	-	-	-	-	-	-	NA
Medium	-	-	-	-	-	-	NA
Small	1	-	-	-	-	1	NA
Micro	4	1	1	-	-	-	4
High Potential	4	-	2	-	-	-	NA
Moderate Potential	5	-	1	-	-	-	1
Total	14	1	4	1	-	1	5
Worker Clusters							
Mega	2	-	-	-	-	-	NA
Large	1	1	-	-	1	-	1
Medium	2	-	1	-	-	-	2
Small	2	-	-	-	-	-	1
Micro	6	-	3	-	-	-	NA
High Potential	3	-	-	-	-	-	1
Total	16	1	4	-	1	-	5

Source: NCAER Gems & Jewellery Survey, 2019.

The following findings emerge from the distribution of clusters by size in the South region:

- In the South region, out of the total, a large proportion of the clusters were involved in trade in both the unit and worker categories.
- Majority of the manufacturing clusters (unit and worker) specialised in the Gold and Silver jewellery segment. In unit clusters, there were none under the mega and large categories but in case of worker clusters more than one fifth of them were large.
- Imitation jewellery manufacturing is undertaken in standalone clusters as well as in combination with G&SJ items. Although, they were few in number, one of the combination worker clusters was of the mega size category.
- Articles made of precious metals and stones qualified as a micro unit cluster. In the worker category there are two small sized clusters of Articles, but in combination with manufacture of Gold and Silver Jewellery.

Table 2.7.5: Distribution of clusters by size across segments - South region

Cluster Size	32111	32119	32120	32111 & 32119	32111 & 32120	32120 & Trade	Trade
	Gold & Silver Jewellery	Articles	Imitation Jewellery	Gold & Silver Jewellery and Articles	Gold & Silver Jewellery and Imitation Jewellery	Imitation Jewellery & Trade	
Unit Clusters							
Mega	-	-	-	-	-	-	-
Large	-	-	-	-	-	-	-
Medium	4	-	-	-	-	-	3
Small	4	-	1	-	-	-	6
Micro	12	1	2	-	-	1	23
High Potential	5	-	-	-	1	-	15
Moderate Potential	3	-	1	-	1	-	4
Total	28	1	4	-	2	1	51
Worker Clusters							
Mega	1	-	-	-	1	-	NA
Large	5	-	-	-	-	-	8
Medium	3	-	2	-	1	-	4
Small	7	-	-	2	1	-	8
Micro	6	-	1	-	-	-	20
High Potential	4	-	-	-	1	-	10
Total	26	-	3	2	4	-	50

Source: NCAER Gems & Jewellery Survey, 2019.

The following findings emerge from the distribution of clusters by size in the West region:

- The West region has a high share of G&SJ and trade clusters in both the unit and worker categories.
- Imitation jewellery manufacturing is undertaken in standalone clusters as well as in combination with G&SJ items. Units manufacturing articles of precious metals and stones are also found in clusters that manufacture G&SJ.
- Interestingly, there is one “small” unit cluster in the West, which has both G&SJ manufacturing units and also those involved in trade. Apart from that, one (out of 42) of the unit clusters specialising in just trade is of a mega size. There are two mega trade worker clusters out of a total of 34.

Table 2.7.6: Distribution of clusters by size across segments - West region

Cluster Size	32111	32120	32111 & 32119	32111 & 32120	32111 & Trade	Trade
	Gold & Silver Jewellery	Imitation Jewellery	Gold & Silver Jewellery & Articles	Gold & Silver Jewellery & Imitation Jewellery	Gold & Silver Jewellery & Trade	Trade
Unit Clusters						
Mega	1	-	-	-	-	1
Large	-	1	-	-	-	-
Medium	-	-	-	-	-	-
Small	-	-	-	-	1	-
Micro	10	1	-	-	-	13
High Potential	3	-	1	-	-	9
Moderate Potential	7	-	-	1	-	19
Total	21	2	1	1	1	42
Worker Clusters						
Mega	1	-	-	-	-	2
Large	1	1	-	-	-	-
Medium	-	-	-	-	-	4
Small	4	1	-	-	-	3
Micro	7	-	-	-	-	9
High Potential	7	-	-	1	-	16
Total	20	2	0	1	0	34

Source: NCAER Gems & Jewellery Survey, 2019.

This chapter presents the distribution of 9.89 lakh units and 42.89 lakh workers associated with the G&J sector in India. Be it 390 unit clusters or 341 worker-based ones, they are not small number and have the potential to affect many people's lives as well as the economy of the country as a whole. This sector has immense potential for further growth, which is evident from the numerous clusters that fall under the "potential" categories.

Policy decisions with regard to the setting up of common facility centres, training institutes, and trading centres are all dependent upon the presence of clusters and their segments. The size of the clusters will determine the economies of scale of for investment undertaken. Finally, the decision to cater to unit holders or workers can be taken based on the details highlighted in this study.

III

MANPOWER MAPPING OF THE GEMS AND JEWELLERY SECTOR

This section maps the manpower by the size of employment, qualifications, training, and experiences, and other characteristics in different segments of the Gems and Jewellery (G&J) sector. The findings are based on a primary survey conducted by NCAER in 2019. The sample size is thin, but suitable for providing reliable estimates at the levels of the regions and segments only. The segments are those of diamonds, other gems and semi-precious stones, hand-made jewellery, machine-made jewellery, and retailers, which exhaustively cover all types of enterprises involved in the G&J sector. It is usual for many units to be engaged in a multiplicity of segments, and therefore, a specific segment is tagged to the enterprise based on the higher value of its products or its major involvement in the segment. The regions have been identified as the North, East, West, South, Gujarat, and Rajasthan. The regions have distinct characteristics, as the segments within them, the types of enterprises, employment offered by them, functions, and processes have marked differences with one another, and have been identified on the basis of the Economic Census, 2013, and Enterprise Surveys of NSSO, 2015-16. They also exhibit geographical distinctions in terms of the people's lifestyles and their preferences.

This section specifically focuses on the region- and segment-wise manpower and their composition with respect to the type of employment, rural- urban differentials, female participation, the organised- unorganised nature of enterprises, and general and technical qualifications of the manpower. It also highlights the function-/job-role wise availability of manpower and its distribution with respect to the type of training received, and their experiences and skills as assessed by the enterprises. Thus, this chapter presents a comprehensive manpower mapping exercise, analysed in terms of the regions and segments of the G&J sector.

3.1 Composition of Enterprises and Workers by Rural-Urban and Organised-Unorganised Differentials

The G&J sector has 9.89 lakh enterprises, out of which more than a quarter or 26.37 per cent are in rural areas. Own-account enterprises that do not employ any hired workers comprise 49.60 per cent of the total enterprises, whereas the organised enterprises, having ten or more than ten workers, account for a meagre 3.80 per cent of the total. Table 3.1 presents the region- and segment-wise distribution of enterprises in the sector.

Table 3.1: Region- and Segment-wise Distribution of Enterprises

Region	Segment					Total
	Diamond	Other Gems and Semi-Precious Stones	Handmade Jewellery	Machine Made Jewellery	Retailer	
North	-	-	47,743	3,559	1,20,647	1,71,949
East	-	-	1,55,949	683	69,604	2,26,237
West	-	-	60,879	3,556	98,416	1,62,851
South	-	-	1,25,762	5,855	1,40,068	2,71,684
Gujarat	18,036	-	10,989	168	45,716	74,908
Rajasthan	-	7,378	34,809	2,028	37,528	81,743
Total	18,036	7,378	4,36,130	15,849	5,11,979	9,89,372

Source: NCAER Gems & Jewellery Survey, 2019.

The region-wise break-up of the enterprises reveals that the South region accounts for the highest proportion, of 27.46 per cent of the enterprises, followed by the East region, with a 22.87 per cent share, while Gujarat has the least number of enterprises, a meagre 7.57 per cent, and Rajasthan, 8.26 per cent. An analysis of the rural-urban differentials indicates that in the East region, more than half the enterprises (52.51 per cent) are located in the rural areas in contrast to the other regions, where the rural shares are in the range of only 12.08 per

cent (in the West region) to 22.58 per cent (in the North region). The East region also has the largest proportion of own-account enterprises, at 68.70 per cent of the total. Gujarat, on the other hand, has the maximum number of enterprises in the organised sector, with 17.88 per cent of its enterprises having ten or more than ten workers. Table 3.2 presents the region- and segment-wise composition of employees with the respective shares of employees in rural areas and in the organised and unorganised sectors.

Table 3.2 Region- and Segment-wise Composition of Enterprises – Rural-Urban and Organised-Unorganised Differentials

Segment/ Region	Number of Enterprise	% Total Enterprises	% Total Enterprises Segment/ Region wise			
			Rural	OAE	<10 Employment	>=10 Employment
Segment						
Diamonds	18,036	1.82	6.33	0.33	26.38	73.28
Other Gems and semi precious stones	7,378	0.75	-	-	63.41	36.59
Hand-made jewellery	4,36,130	44.08	30.13	56.28	43.20	0.52
Machine-made jewellery	15,849	1.60	4.31	12.44	59.37	30.19
Retailer	5,11,979	51.75	24.94	41.71	55.43	2.86
Total	9,89,372	100.00	26.37	46.60	49.60	3.80
Region						
North	1,71,949	17.38	22.58	58.34	39.35	2.31
East	2,26,237	22.87	52.51	68.70	29.43	1.87
West	1,62,851	16.46	12.08	24.80	74.71	0.49
South	2,71,684	27.46	19.94	44.67	52.11	3.22
Gujarat	74,908	7.57	17.49	52.59	29.53	17.88
Rajasthan	81,743	8.26	19.97	5.08	88.10	6.82
Total	9,89,372	100.00	26.37	46.60	49.60	3.80

Source: NCAER Gems & Jewellery Survey, 2019.

The segment-wise analysis shows that the retailer (51.75 per cent) and hand-made jewellery (44.08 per cent) segments dominate the sector. The other three segments, of diamonds (1.82 per cent), other gems and semi-precious stones (0.78 per cent), and machine-made jewellery (1.60 per cent), account for shares of less than 5 per cent in the total number of enterprises. The hand-made jewellery segment is mostly occupied

by own-account enterprises and the diamonds segment, by large organised enterprises. The hand-made jewellery and retailer segments have a rural orientation while the other three segments are primarily urban. Tables 3.3 and 3.4 present the region- and segment-wise distribution of employees, and the segment- and region-wise composition of employees: rural-urban and unorganised-organised differentials, respectively.

Table 3.3: Region- and Segment-wise Distribution of Employees

Region	Segments					
	Diamond	Other Gems and Semi-precious stones	Hands Made Jewellery	Machine made Jewellery	Retailer	Total
North	-	-	1,25,866	93,646	3,72,430	5,91,942
East	-	-	5,21,463	11,419	2,59,385	7,92,266
West	-	-	2,19,474	21,060	3,40,917	5,81,452
South	-	-	2,60,595	32,048	5,72,188	8,64,831
Gujarat	8,19,926	-	18,975	10,977	1,10,076	9,59,954
Rajasthan	-	88,269	2,07,378	1,06,321	96,510	4,98,479
Total	8,19,926	88,269	13,53,752	2,75,471	17,51,507	42,88,925

Source: NCAER Gems & Jewellery Survey, 2019.

The G&J sector employs 42.89 lakh workers, out of which more than one-fifth or 22.38 per cent are employed in the Gujarat region, though Gujarat has the lowest share in the number of enterprises, at just 7.57 per cent. Gujarat is closely followed by the South and East regions, employing 20.16 per cent and 18.47 per cent of the total workers, respectively. The other three regions have almost equal employment figures, ranging from 11.62 to 13.80 per cent, with the lowest being in Rajasthan. It may be pointed out that the South region has the largest number of enterprises in the sector, at 27.46 per cent of the

total. The sector is mostly urban-based, as the rural enterprises employ just 15.41 per cent of its total manpower. The region-wise analysis reveals that the East region is the most rural-based, with an employment figure of 42.60 per cent while Gujarat has the lowest total employment figure of just 3.58 per cent. The average employment per enterprise differs widely between the regions and the segments. As compared to an average employment of 4.02 workers per enterprise in this sector, the Gujarat region has the maximum of 12.82 workers per enterprise followed by Rajasthan, with 6.10 workers per enterprise.

Table 3.4: Segment- and Region-wise Composition of Employees: Rural-Urban and Unorganised-Organised Differentials

Segment/ Region	Number of Employees	% Total Employees	% Total Employees Segment wise			
			Rural	OAE	<10 Employment	>=10 Employment
Segment						
Diamonds	8,19,926	19.1	2.19	0.02	3.51	96.47
Other Gems and Semi Precious Stones	88,269	2.1	-	-	40.32	59.68
Hand-made Jewellery	13,53,752	31.6	26.03	36.28	56.79	6.93
Machine-made Jewellery	2,75,471	6.4	3.25	0.90	18.45	80.66
Retailer	17,51,507	40.8	16.09	18.15	64.65	17.20
Total	42,88,925	100.0	15.41	18.92	47.01	34.06
Region						
North	5,91,942	13.80	9.00	25.49	51.19	23.32
East	7,92,266	18.47	42.60	50.59	36.93	12.48
West	5,81,452	13.56	6.40	9.97	87.15	2.88
South	8,64,831	20.16	18.45	17.21	63.88	18.91
Gujarat	9,59,954	22.38	3.58	5.01	11.43	83.55
Rajasthan	4,98,479	11.62	7.84	1.00	53.10	45.90
Total	42,88,925	100.00	15.41	18.92	47.01	34.06

Source: NCAER Gems & Jewellery Survey, 2019.

The Gujarat and Rajasthan regions have a higher than average number of workers per enterprise as a majority of the enterprises in the two regions are those of diamonds, and other gems and semi-precious stones, respectively, which are labour-intensive. The average number of workers per enterprise in the other four regions ranges from 3.18 in the East to 3.57 in the West. The segment-wise analysis shows a marked difference between the segments, with the diamonds segment employing as many as 45.46 workers per enterprise, followed by the machine-made segment employing 17.38 workers and the other gems and semi-precious stones segment

employing 11.96 workers per enterprise. These three segments have large units while the other two segments, that is, the hand-made jewellery and retailer segments, have just 3.10 and 3.42 workers per enterprise.

3.2 Type of Employment in the Sector

The type of employment in the sector comprises hired workers on the payroll, trainees/apprentices, and unpaid family members/proprietors. The distribution of workers in these three categories differs with respect to the region as well as the segment. The region- and segment-wise distribution of workers by their type of

employment has been presented in Table 3.5. An analysis of these figures shows that payroll employees (65.33 per cent) and unpaid family members/proprietors (34.18 per cent) account for two-thirds and one-third of the workers, respectively, in the sector. The proportion of trainees/apprentices in the sector is negligible, which shows that the sector directly absorbs job-

seekers into the work stream and trains them informally on the job. The distribution of workers in rural areas is in complete contrast to the general trend as unpaid family members/proprietors constitute 63.14 per cent of the workers, with the payroll employees accounting for just 36.26 per cent of the total workers in this segment of the sector.

Table 3.5: Region- and Segment-wise Distribution of Workers by Their Type (Payroll, Trainees/Apprentices and Unpaid Family Members)

Region/ Segment	Total Workers	On Payroll Employees (%)	Trainees/ Apprentices (%)	Unpaid Family Members (%)
Region				
North	5,91,942	57.1	0.02	42.87
East	7,92,266	33.4	1.29	65.33
West	5,81,452	58.9	0.84	40.21
South	8,64,831	64.5	0.10	35.37
Gujarat	9,59,954	90.2	0.50	9.35
Rajasthan	4,98,479	86.9	0.03	13.08
Segment				
Diamond	8,19,926	96.94	0.58	2.48
Other Gems and Semi Precious Stones	88,269	96.91	-	3.09
Hand-made Jewellery	13,53,752	44.78	0.82	54.40
Machine-made Jewellery	2,75,471	91.51	0.30	8.20
Retailer	17,51,507	60.70	0.25	39.05
Total	42,88,925	65.33	0.49	34.18
Rural	6,61,028	36.26	0.60	63.14

Source: NCAER Gems & Jewellery Survey, 2019.

The region-wise analysis reveals that Gujarat has the largest number of formal employees on the payroll, at 90.2 per cent. It has just 9.35 per cent of unpaid family members/proprietors, which is the least amongst all the five regions. It is followed by Rajasthan, with a payroll employment of 86.9 per cent and the share of unpaid family members at 13.08 per cent. The East region has the lowest share of payroll employees, at 33.4 per cent and the highest share of unpaid family members, at 65.33 per cent. It also has the highest share of trainees/apprentices amongst all the regions, though still a small fraction of 1.29 per cent. The

other three regions, that is, the South, West and North, have similar characteristics, with payroll employees in the range of 64.5 to 57.1 per cent, and unpaid family members and proprietors, in the range of 35.37 to 42.87 per cent. The North and Rajasthan regions have a negligible number of trainees/apprentices. The segment-wise analysis shows that the diamonds, and other gems and semi-precious stones have a 97 per cent share of formal employees but a very small share of unpaid family members, at less than 3.09 per cent. The two segments are closely followed by the machine-made segment, which employs

91.51 per cent of payroll employees and 8.20 per cent of unpaid family members. The hand-made jewellery segment, in contrast to the diamonds, and gems and semi-precious stone segments, comprises 44.78 per cent of payroll employees and as high as 54.40 per cent of unpaid family members. The retailer segment has 60.70 per cent workers as payroll employees and 39.05 per cent as unpaid family members.

Female participation as a percentage to the total number of employees has been presented in Table 3.6. It is observed that in this sector, only about one-tenth of the employees, or 10.57 per cent, are female. The West region leads in female participation, with 27.62 per cent, followed by the South, with 20.87 per cent. The other four regions have a female participation in the range of 3.64 per cent (Gujarat) to 7.02 per cent (North).

Table 3.6: Female Participation by Region and Segment

Region/Segment	% Female to Total Employees Region and Segment Wise					
	Diamond	Other Gems and Semi Precious Stones	Hand made Jewellery	Machine made Jewellery	Retailer	Total
North	-	-	0.38	0.07	12.36	7.02
East	-	-	1.00	4.94	7.07	4.46
West	-	-	20.33	27.62	32.59	27.62
South	-	-	7.97	1.17	25.75	20.87
Gujarat	3.06	-	-	20.99	9.11	3.64
Rajasthan	-	5.28	1.78	8.05	3.00	4.16
Total	3.06	5.28	6.79	6.18	19.81	10.57
Rural	-	-	2.96	-	16.42	9.93

Source: NCAER Gems & Jewellery Survey, 2019.

As far as the segment-wise analysis is concerned, female participation is the highest in the retailer segment, at 19.81 per cent, and the minimum in the diamonds segment, at 3.06 per cent. The other three segments have female employment in the range of 5.28 to 6.79 per cent. In the retailer segment, the highest level of female participation is in the West (32.59 per cent) and the minimum is in Rajasthan (3.00 per cent). Similarly, in the machine-made jewellery segment, the maximum participation is in the West, at 27.62 per cent and the minimum is in the North, at only 0.07 per cent. In the hand-made jewellery segment, the maximum participation is again in the West, at 20.33 per cent and the minimum, in the North, at just 0.38 per cent. The rural segment has a similar level of female participation, at 9.93 per cent, as the proportion of retailers within the rural segment is 16.42

per cent. The diamonds, gems and other semi-precious stones, and machine-made jewellery segments have negligible female participation while the hand-made jewellery segment has only 2.96 per cent of female participation.

3.3 Segment- and Region-wise Qualifications of the Employees

The qualification-wise distribution of payroll employees in the G&J sector may be seen in Table 3.7. It shows that most of the employees either have no formal education or have only school level education. Employees with no formal education and school level education constitute 30.22 per cent and 43.88 per cent of the total employment in the sector. Technical graduates and diploma-holders and non-technical graduates and diploma holders account

for 9.30 per cent and 13.96 per cent of the total, respectively. Post-graduates constitute 2.60 per cent of the employees and sector-specific certificate holders have a negligible share of 0.46 per cent. Enterprises in rural areas have a surprisingly low number of employees with no formal education, at just 11.78 per cent, but they

have more employees with school level education, at 69.20 per cent, and have a negligible number of technical graduates and diploma-holders and post-graduates. Non-technical graduates and diploma-holders constitute 18.38 per cent of the employees in the rural areas.

Table 3.7: Region- and Segment-wise Distribution of Payroll Employees by Education (in percentages)

Region/ Segment	No Formal Education	School Level	Graduate Diploma Technical	Graduate Diploma Non Technical	PG Tech	PG Non Technical	Certificate G&J
North	20.41	49.13	0.49	22.56	0.19	7.23	0.19
East	3.62	51.46	5.81	38.06	0.47	0.58	1.58
West	1.24	52.94	21.09	21.80	1.08	1.84	0.38
South	15.17	51.05	10.92	18.84	2.88	1.13	0.07
Gujarat	64.71	31.27	2.68	1.16	0.18	0.00	0.09
Rajasthan	27.53	43.92	20.37	5.61	1.26	1.32	1.29
Segment							
Diamonds	68.62	28.83	2.32	0.15	0.08	-	-
Other Gems and Semi Precious Stones	43.05	44.33	6.00	5.66	0.77	0.19	-
Hand-made Jewellery	17.92	55.55	16.42	8.59	0.62	0.91	0.49
Machine-made Jewellery	20.36	42.03	17.17	11.49	2.04	6.92	1.70
Retailer	9.84	48.87	8.96	28.60	1.74	1.99	0.53
Total	30.22	43.88	9.34	13.96	1.02	1.58	0.46
Rural	11.78	69.20	0.66	17.72	0.25	0.38	0.28

Source: NCAER Gems & Jewellery Survey, 2019.

The region-based analysis shows that Gujarat has the maximum number of employees with no formal education, at 64.71 per cent and the West region has a negligible number of such employees, at just 1.24 per cent. Technical graduates and diploma-holders constitute more than one-fifth of the employees in the Rajasthan

and West regions, while the North has the least, a negligibly small fraction of 0.49 per cent of the total employees. Non-technical graduates and diploma-holders constitute 38.06 per cent of the total employees in the East region, followed by the North, West, and South, in the range of 18.84 per cent to 22.56 per cent. Post-graduate technical

employees account for the maximum share in the South while non-technical employees have the maximum share in the North amongst all the five regions. The proportion of certificate-holders is the maximum in the East, which accounts for a share of 1.58 per cent of its total number of employees. Other regions have negligible participation of certificate-holders.

A segment-wise analysis reveals that in the diamonds segment, which is synonymous with Gujarat, 68.62 per cent of the employees have no formal education and 28.83 per cent have school level education, while in the machine-made jewellery segment, 19.21 per cent of the employees are technical graduates and post-graduates. The other gems and semi-precious stones segment has similar characteristics as that of the diamonds segment, with 87.38 per cent of its employees either not being formally educated or having only school level education. Most of the certificate-holders, though comprising a very small share of 1.70 per cent, are engaged in the machine-made jewellery segment. Other segments have a negligible participation of certificate-holders.

3.4 Competencies of the Manpower segment- and Region-wise Training Received and Expertise Gained by the Employees

NCAER, through its primary survey in the sector, collected information on the competencies of manpower as judged in terms of the training received, which was categorised as 'formal', 'informal', 'no training', and 'expertise gained'. Segment-wise, the training was classified as

basic (entailing less than 2 years of experience), proficient (2-5 years of experience), and expert (more than 5 years of experience) in specific functions and job rolls. In this context, this section does a segment-wise and specific function/job roll-wise mapping of manpower in the sector, and analyses the segment-wise competencies of manpower. The analysis focuses on the distribution of employees by functions and job roles, and their competencies as revealed in terms of the training received and expertise gained. All the activities in a segment have been divided into the functions assigned with distinct tasks and functions in various job roles having different positions and responsibilities for carrying out the tasks. Most of the analysis here has been done at the function level.

3.4.1 The Diamonds Segment

The analysis for this segment is based on the Gujarat region as the other regions have a negligible number of enterprises dealing with diamonds. Table 3.8 presents the distribution of manpower engaged by functions. In the segment, on an average, the function of faceting and polishing accounts for the maximum engagement of manpower, of 44.31 per cent, distantly followed by diamond planning, rough assorting, rough cutting and stock control, with each constituting 7-9 per cent of the total manpower. At the other end, the segment has the least engagement of manpower in the boiling, and bruiting and coning functions. Non-technical and managerial functions, viz., stock control, marketing, support and general management, account for almost one-fifth of the engagement in the segment.

Table 3.8: Distribution of Employees Engaged by Functions – The Diamonds Segment

Function	% Engagement	Function	% Engagement	Function	% Engagement
Rough assorting	7.83	Diamond planning	9.15	Stock control	7.34
Rough cutting	7.58	Bruiting and coning	1.06	Blocking	4.84
Faceting and polishing	44.31	Final assortment	5.01	Boiling	0.06
Support	5.29	Marketing	5.17	Management	2.43

Source: NCAER Gems & Jewellery Survey, 2019.

Table 3.9 presents the function-wise distribution of manpower by the training received and expertise gained. The proportion of formally trained workers is negligible in the sector. Even the informal training is negligible, limited to 1.27 per cent of the manpower, while the rest of the manpower is untrained. The job roles with

more than 10 per cent of informally trained manpower include girdle polishers at 15.07 per cent, under faceting and polishing, strategy manager/business head, at 13.99 per cent, and procurement manager, at 49.51 per cent, under the management function. In rural areas, most of the manpower is untrained.

Table 3.9: Function-wise Distribution of Employees by Competency Parameters: Training and Expertise – The Diamonds Segment (in percentages)

Function	Training Received			Experience		
	Formal	Informal	No Training	Basic	Proficient	Expert
Rough assorting	-	4.02	95.98	0.60	4.31	95.09
Diamond planning	-	2.55	97.45	0.07	1.86	98.07
Stock control	-	5.90	94.10	-	1.13	98.87
Rough cutting	-	0.66	99.34	0.21	5.36	94.43
Bruiting and coning	-	0.91	99.09	10.00	27.35	62.65
Blocking	-	-	100.00	-	1.64	98.36
Faceting and polishing	-	0.32	99.68	2.37	30.45	67.18
Boiling	-	16.19	83.81	-	-	100.00
Final assortment	-	-	100.00	0.50	1.06	98.44
Marketing	-	-	100.00	0.48	1.19	98.33
Support	-	0.05	99.95	-	1.23	98.77
Management	-	2.89	97.11	-	0.79	99.21
Total	-	1.27	98.73	1.27	15.04	83.69
Rural	-	0.28	99.72	-	38.64	61.36

Source: NCAER Gems & Jewellery Survey, 2019.

As far as experience is concerned, almost 84 per cent of the manpower includes experts with experience of more than five years, and the rest 15 per cent have experience of 2-5 years. The proportion of manpower with basic experience of

less than two years is negligible. There are only a few job roles wherein the employees are not experts, or have less than five years of experience. These specific job roles have been presented in Table 3.10.

Table 3.10: Functions/Job Roles with Less Than 90% Expert Manpower—The Diamonds Segment

Function	Job Roles - % Expert Manpower
Stock control	Weigher 81.89%
Rough cutting	Die fixer 65.89%
Bruiting and coning	Die fixer 45.85%, manual bruiter 63.5% and auto bruiter 81.34%
Faceting and polishing	Die fixer 72.13%, girdle polisher 36.67%, polisher bottom 64.89% and polisher top 65.12%

Source: NCAER Gems & Jewellery Survey, 2019.

The job roles where more than 10 per cent of the manpower has basic experience, that is, less than 2 years, are only die fixers and manual brouters under the bruitering and coning function, and girdle polishers under the faceting and polishing function. In rural areas, manpower with experience of more than 5 years constitute 61.36 per cent of the total manpower whereas the rest have experience of 2-5 years.

Based on the above discussions, contradictions have been noticed in the diamonds segment regarding the size of the manpower, between the two competencies, that is, trained and expert. The level of formal/informal training is negligible while most of the experience of the manpower is seen at the expert level. This raises the question as to whether manpower in the diamonds segment does not require even informal training for its operations and no learning on the job, which creates ambiguity about the expertise and proficiency of the manpower in tackling jobs in the diamonds segment. There is a strong possibility that the enterprises could not differentiate between ‘informal training’ and ‘no training’, and here ‘no training’ implies informal training as the proportion of manpower with a basic experience of less than 2 years is negligible. It has also been observed that manpower in urban areas have more experience than that in the rural areas.

3.4.2 The Other Gems and Semi-precious Stones Segment

The analysis for this segment is based on the Rajasthan region as there is a negligible number of enterprises dealing in the gems and semi-precious stones segment in other regions. Table 3.11 presents the distribution of manpower engaged by functions. In this segment, on an average, faceting and polishing demands the maximum engagement of manpower in the jobs associated with it. It is to the tune of 29.56 per cent followed by pre-shaping, with a 20.70 per cent engagement. The assorting, rough cutting, threading and wholesaling, grading and dispatching functions have an almost equal engagement in the range of 6-8 per cent while raw material procurement, production planning, and drilling, each have an engagement in the range of 4-5 per cent and that of support staff is a mere 2.46 per cent. In the pre-shaping function, there is one supervisor for every 14 pre-shapers, final shapers, and calibrators, while in the faceting and polishing function, there is one supervisor for every 46 facet makers, polishers and engravers. As far as the function of the R&D manager is concerned, the number of people engaged in this function is negligible, at just 0.17 per cent of the total manpower.

Table 3.11: Distribution of Employees Engaged by Functions – The Other Gems and Semi-precious Stones Segment

Function	% Engagement	Function	% Engagement	Function	% Engagement
Raw material procurement	4.70	Production planning	4.96	Faceting and polishing	29.56
Rough cutting	7.33	Pre shaping	20.75	Assorting	6.93
Drilling	4.61	Threading	3.78	Grading and dispatching	6.17
Wholesaling	6.54	Marketing	1.85		

Source: NCAER Gems & Jewellery Survey, 2019.

As regards the competencies of manpower, Table 3.12 presents the function-wise distribution of manpower by the training received and expertise gained. Formally trained manpower constitutes just 5.29 per cent of the total engagement whereas the rest of the manpower in the sector is informally trained. The job roles in which a majority of the manpower have formal training, apart from the support staff, are procurement/import managers, at 55.56 per cent of the total, and sales executives, at 34.88 per cent under the

wholesaling function, operation heads, at 43.83 per cent under the management function, sales/export managers, at 31.31 per cent under the marketing function and inventory managers, at 23.91 per cent under the production planning function. The lead technical functions do not have formally trained employees while among the support staff, the functions of security, accounts, and human resources and administration account for more than 64 per cent of the formally trained manpower.

Table 3.12: Function-wise Distribution of Employees by Competency Parameters: Training and Expertise – The Other Gems and Semi-precious Stones Segment (in percentages)

Function	Training Received			Experiences		
	Formal	Informal	No Training	Basic	Proficient	Expert
Raw material procurement	-	100.00	-	-	-	100.00
Production planning	1.31	98.69	-	-	-	100.00
Assorting	-	100.00	-	-	2.33	97.67
Rough cutting	-	100.00	-	-	9.04	90.96
Pre shaping	-	100.00	-	-	1.86	98.14
Faceting and polishing	-	99.40	0.60	-	2.31	97.69
Drilling	-	100.00	-	-	-	100.00
Threading	-	100.00	-	-	-	100.00
Grading and Dispatching	-	98.00	2.00	-	-	100.00
Wholesaling	33.30	65.25	1.45	-	2.36	97.64
Marketing	18.14	81.86	-	-	3.37	96.63
Support	70.02	29.98	-	-	5.43	94.57
Management	23.23	76.77	-	-	50.00	50.00

Source: NCAER Gems & Jewellery Survey, 2019.

As far as expertise is concerned, most of the manpower comprises experts with more than 5 years of experience whereas those having 2-5 years of experience account for a mere 2.23 per cent of the manpower involved in the segment. The proportion of manpower with basic experience is are negligible. As such, there are only a few job

roles for which the employees are not experts or have less than 5 years of experience. The specific job roles for which the employees are not experts have been delineated in Table 3.13. It may be mentioned here that manpower engaged in two such job roles, that is, of R&D managers and business heads, are formally trained.

Table 3.13: Functions/ Job Roles with Less Than 90% Expert Manpower – The Other Gems and Semi-precious Stones Segment

Function	Job Roles - % Expert Manpower
Management	R&D manager 50.00% and business head 50.00%

Source: NCAER Gems & Jewellery Survey, 2019.

Based on the above discussions, it may be concluded that manpower in the other gems and semi-precious stones segment represents a mix of informally trained and expert workers. The manpower involved in the segment also gets informally trained through hereditary learning, self-learning, or learning at the job.

3.4.3 The Hand-made Jewellery Segment

The hand-made jewellery segment is distributed among all the regions and Table 3.14 presents the distribution of manpower engaged in this segment by functions and the regions.

In this segment, on an average, the maximum engagement of manpower is for the function of goldsmiths (basic), at 32.75 per cent, followed by that for designing, at 21.53 per cent, and metal allaying, at 11.81 per cent. The level of engagement in this segment for goldsmiths (advanced) is just 5.75 per cent and that for setting is 7.26 per cent. The proportion of manpower involved in inventory management, and the marketing and support functions is 13.83 per cent. As regards the goldsmiths (basic) function, on an average, one supervisor for the frame and components manages 12 goldsmiths.

Table 3.14: Distribution of Employees Engaged by Functions– The Hand-made Jewellery Segment (in percentages)

Function	North	East	West	South	Gujarat	Rajasthan	Total
Inventory management	1.10	6.80	13.97	4.23	17.57	1.82	6.59
Metal allaying	19.74	10.67	10.39	11.34	12.85	11.62	11.81
Designing	16.26	24.93	21.20	5.83	32.13	34.56	21.53
Goldsmith (basic)	41.77	31.32	10.98	50.40	8.76	39.61	32.75
Cleaning and polishing	0.53	0.10	1.06	1.51	2.59	0.69	0.65
Setting	1.94	6.67	11.11	9.31	1.23	6.59	7.26
Gold smith (advanced)	1.81	6.56	6.81	8.63	0.32	1.44	5.75
Quality check and dispatching	4.76	0.91	8.52	0.20	8.97	1.14	2.61
Marketing	4.26	3.40	5.61	6.02	5.78	1.05	4.06
Support	5.40	3.27	5.78	0.32	6.19	0.81	3.18
Management	2.42	5.36	4.55	2.20	3.62	0.66	3.82
Total	100.0						

Source: NCAER Gems & Jewellery Survey, 2019.

The region-wise analysis shows an almost similar pattern of function-/job role-wise manpower engagement, though with a marked difference in some functions. The South region involves relatively little manpower in designing, of 5.83 per cent, while it engages more than 50 per cent of manpower in the goldsmith (basic) function. The Gujarat region is unique, with an engagement of just 8.76 per cent in the goldsmith (basic) function, which is compensated with a

manpower engagement of 32.13 per cent in the designing function. Rajasthan has an engagement of more than 74 per cent in the designing and goldsmith (basic) functions. The South, West, and East regions have considerable engagement of the goldsmith (advanced) function, at 6-9 per cent while Gujarat has the least, and the North and Rajasthan regions have an engagement of less than 2 per cent of their manpower. In the Gujarat region, almost 18 per cent of the manpower is

engaged in the inventory management while in the North and Rajasthan regions, less than 2 per cent of the manpower is engaged in this function. The South region has the lowest level of support staff, at 0.32 per cent, while Gujarat has the maximum, at 6.19 per cent. In the designing function, the odds of designer (CAD) against a designer hand sketch are overall 1:11, while the odds are the maximum in the East and Rajasthan regions, and the minimum in the South and Gujarat regions. Regarding the job roles, it has been found that on an average, in the hand-made jewellery segment, there is one CAD designer as against 11.21 designers for the hand sketch, basic, and advanced functions taken together. This ratio is large (1:18-20) in the case of the East and Rajasthan regions, and small in case of the West

(1:3.28) and Gujarat (1:1.63) regions. The South region has a negligible share of CAD designers.

As regards the competencies of manpower, Table 3.15 presents the function-wise distribution of manpower by the training received and expertise gained. In this segment, the manpower receives almost no formal training for any function/job role. Informal trained manpower constitutes 88.68 per cent of the total manpower while those with no training comprise 9.49 per cent of the total manpower. The rural areas of the segment have more formally trained manpower, at 3.56 per cent and informally trained manpower, at 91.64 per cent, in comparison to the urban areas. The former also have a lower proportion of untrained manpower.

Table 3.15: Function-wise Distribution of Employees by Competency Parameters: Training and Expertise – The Hand-made Jewellery Segment (in percentages)

Function	Training Received			Experience		
	Formal	Informal	No Training	Basic	Proficient	Expert
Inventory management	0.91	72.73	26.37	25.16	10.89	63.95
Metal allaying	2.28	89.45	8.27	7.45	8.48	84.08
Designing	2.25	92.25	5.50	8.73	10.57	80.70
Goldsmith (basic)	1.52	92.94	5.53	3.55	10.34	86.10
Cleaning and polishing	0.45	93.81	5.74	16.80	10.18	73.01
Setting	1.44	85.03	13.52	15.55	11.84	72.61
Goldsmith (advanced)	2.78	96.69	0.52	16.24	13.69	70.06
Quality check and dispatching	2.09	81.32	16.59	20.43	8.45	71.12
Marketing	2.09	73.53	24.39	3.86	8.31	87.83
Support	2.54	78.52	18.94	26.10	5.82	68.08
Management	2.71	59.31	37.99	3.30	13.00	83.70
Total	1.83	88.68	9.49	8.92	10.31	80.77
Rural	3.56	91.64	4.80	1.74	12.81	85.45

Source: NCAER Gems & Jewellery Survey, 2019.

In the case of job roles, wherein significantly more than 10 per cent of the manpower have been found to be without training, include the inventory management functions, sorter and *jadau* setters engaged in the setting function, taggers, labellers, and quality check inspectors in the quality control and dispatching functions, while the other jobs pertain to the marketing, support, and management functions.

Table 3.16 presents the region-wise distribution of manpower by the training

received. An analysis of this distribution reveals that all the regions have similar patterns barring the Gujarat region, wherein only 32.10 per cent of the manpower is trained either formally or informally while in the other regions, more than 80.94 per cent of the manpower is trained. The Gujarat region has almost 68 per cent of untrained manpower and the corresponding figure in the West region is 19 per cent. The Rajasthan region has the maximum proportion of formally trained manpower, though at 3.33 per cent, it is small as a proportion of its total manpower.

Table 3.16: Region-wise Distribution of Employees by Training Received –The Hand-made Jewellery Segment (in percentages)

Training	North	East	West	South	Gujarat	Rajasthan	Total
Formally trained	0.32	2.48	0.90	0.77	0.17	3.33	1.83
Informal training	94.72	89.60	80.04	87.50	31.93	95.56	88.68
No training	4.96	7.92	19.06	11.73	67.90	1.11	9.49

Source: NCAER Gems & Jewellery Survey, 2019.

As far as the extent of experience among the manpower is concerned, Table 3.15 shows that almost 81 per cent of the manpower comprises experts with experience of more than 5 years, whereas 10 per cent of the manpower is proficient, with 2-5 years' of experience and only 9 per cent have a basic experiences of less than 2 years. As

such, there are only a few job roles for which the employees are not experts or have less than 5 years of experience. These specific job roles have been presented in Table 3.17. The rural segment has more expertise than its counterpart in the urban areas.

Table 3.17: Functions/ Job Roles with less than 90% Expert Manpower – The Hand-made Jewellery Segment

Function	Job Roles- % Expert Manpower
Inventory management	Storekeeper 57.31%, locker manager 83.50%, raw material procurement manager 52.85%
Metal allaying	Melter and refiner 84.86%, assayer and hall marker 62.75%
Designing	Designer hand sketch basic 81.77%, designer hand sketch advanced 83.87%, designer CAD 72.27%, master maker (hand) 74.69%, merchandise in-charge 80.54%
Goldsmith (basic)	Goldsmith component and filter 84.94%, goldsmith frame and filer 88.26%, supervisor frame and components 83.99%
Cleaning and polishing	Cleaner and polisher 71.63%
Setting	Sorter 52.60%, setter 86.89%, <i>jadau</i> setter 49.13%
Goldsmith (advanced)	Carving/embossing/repoussing 67.82%, enamelling 78.79%, <i>kundan</i> 73.41%
Quality Control and dispatching	Tagger and labeller 57.03%
Marketing	Order processor 86.84%
Support	Accounts 61.84%, safety officer 87.89%
Management	Production manager 84.17%, promoter 83.44%

Source: NCAER Gems & Jewellery Survey, 2019.

The region-wise analysis of expertise has been presented in Table 3.18, which shows that the Gujarat, Rajasthan, and North regions have more than 94 per cent of expert manpower while the West region has the lowest proportion of

expert manpower, at just 27.70 per cent of the total manpower in the region. The West region has a manpower of almost 65 per cent with only basic experience only while the corresponding figure for the other regions is less than 2.39 per cent.

Table 3.18: Region-wise Distribution of Employees by Expertise – The Hand-made Jewellery Segment (in percentages)

Expertise	North	East	West	South	Gujarat	Rajasthan	Total
Basic <2 Years	0.12	2.39	64.56	1.46	0.16	0.04	8.92
Proficient: 2-5 Years	2.20	14.09	7.74	9.26	1.37	5.75	10.31
Expert: >=5 Years	97.68	83.52	27.70	89.29	98.47	94.22	80.77

Source: NCAER Gems & Jewellery Survey, 2019.

Based on the above discussions, it may be concluded that manpower in the hand-made jewellery segment comprises a mix of informally trained and expert workers, and that manpower in the rural segment has more expertise than that in the urban segment.

3.4.4 The Machine-made Jewellery Segment

The machine-made jewellery segment, though less concentrated in the East region, is distributed among all the regions, and Table 3.19 presents the distribution of manpower engaged in

this segment by functions and the regions. In this segment, on an average, the functions demanding a comparatively higher engagement of manpower include wax model making (at 25.98 per cent) followed by 'others' (at 15.55 per cent) and casting (at 12.35 per cent). The 'others' function relates to the use of small machine-based tools such as bangle-cutting, chain-making, CNC, use of a dye-cutting machine, frame-making, layering, operating a rolling machine, soldering, and lockers, which are normally not used for manufacturing large machine-made jewellery.

Table 3.19: Region-wise Distribution of Employees Engaged by Functions – The Machine-made Jewellery Segment (in percentages)

Function	North	East	West	South	Gujarat	Rajasthan	Total
Designing and product development	2.13	2.18	1.01	-	6.25	2.71	2.46
Master making	-	0.97	1.01	-	0.83	0.60	0.39
Procuring and assorting	0.18	-	-	-	1.53	0.60	0.43
Wax model making	28.20	8.73	0.50	-	27.22	30.41	25.98
Wax setting	-	-	-	-	0.56	2.16	1.06
Casting	13.22	5.09	0.50	-	12.08	14.65	12.35
Filling and assembling	2.82	1.70	0.50	-	4.72	1.91	2.20
Polishing	6.35	2.42	1.01	-	10.56	4.71	5.13

(Contd.)

Table 3.19: Region-wise Distribution of Employees Engaged by Functions – The Machine- made Jewellery Segment (in percentages) (Contd.)

Function	North	East	West	South	Gujarat	Rajasthan	Total
Metal setting	6.36	3.64	1.01	-	7.92	8.73	6.91
Plating	0.35	0.73	-	-	0.97	1.18	0.75
Refining	9.88	3.64	-	-	8.75	11.21	9.32
Quality control	4.23	1.70	-	-	3.89	4.71	3.96
Marketing	3.53	3.15	-	-	4.31	3.32	3.10
Support	5.62	9.53	8.31	2.54	7.50	9.41	7.51
Management	0.92	2.88	12.83	8.21	1.94	1.98	2.48
Others—small machine functions	16.21	53.17	73.33	89.25	0.00	0.98	15.55
Total	100.00						

Source: NCAER Gems & Jewellery Survey, 2019.

The region-wise differences in the engagement of manpower in the machine-made jewellery segment are apparent. The East region involves an engagement of just 8.73 per cent of manpower whereas in the West and South regions, a negligible proportion of manpower is engaged in job roles associated with the wax model making function, with the corresponding figure in the other regions being more than 22 per cent. The 'others function entails the engagement of a huge proportion of manpower (at more than 53 per cent) in the South, East and West regions, while the Gujarat and Rajasthan regions have a correspondingly negligible engagement. The management function accounts for 12.83 per cent of the engagement in the West region while the Gujarat, Rajasthan, and North regions have a correspondingly lower engagement of less than 2 per cent. Similarly, the casting function involves an engagement of more than 12 per cent of manpower in the North, Gujarat, and Rajasthan regions, while the West and South regions have negligible engagement of manpower in this function. It seems that the West and South regions are characterised by small machine-based manufacturing while the Gujarat and

Rajasthan regions exhibit large machine-based manufacturing functions.

As regards the competencies of manpower, Table 3.20 presents the function-wise distribution of manpower by the training received and expertise gained. In this segment, on an average, more than 30 per cent of the manpower has formal degrees, diplomas or sector-specific training certification, while 63 per cent are informally trained, and the rest 6 per cent are untrained. The job roles which have more than 50 per cent of formally trained manpower are those of CAD designers, merchandise in-charge of the designing and product development function, CAM in master-making, bagger and flutterer, diamond asserter, inventory manager in the procuring and assorting function, wax tree maker in the wax model making function, wax setter (basic), casting machine operator under the casting function, plater under the plating function, sales manager under the marketing function, and support and operation heads under the management function. The rural segment has a negligible proportion of formally trained manpower and more than 90 per cent of informally trained manpower.

Table 3.20: Function-wise Distribution of Employees by Competency Parameters: Training and Expertise – The Machine-made Jewellery Segment (in percentages)

Function	Training Received			Experience Gained		
	Formal	Informal	No Training	Basic	Proficient	Expert
Designing and product development	47.96	37.74	14.30	-	3.74	96.26
Master making	56.63	30.19	13.18	-	8.04	91.96
Procuring and assorting	56.39	22.98	20.63	-	3.60	96.40
Wax model making	29.27	65.39	5.33	0.12	1.88	98.00
Wax setting	40.85	55.70	3.46	-	3.15	96.85
Casting	51.51	42.69	5.79	-	2.46	97.54
Filling and assembling	14.71	72.36	12.93	1.87	8.44	89.69
Polishing	30.05	54.80	15.15	1.96	2.42	95.62
Metal setting	13.17	78.89	7.94	0.22	1.68	98.09
Plating	44.63	46.27	9.09	-	2.49	97.51
Refining	41.89	52.82	5.30	-	1.83	98.17
Quality control	47.60	46.86	5.54	-	0.00	100.00
Marketing	41.33	50.61	8.06	-	1.00	99.00
Support	48.04	45.60	6.36	-	2.79	97.21
Management	40.60	53.87	5.52	6.42	5.65	87.93
Others – small machine functions	-	96.66	3.34	2.63	4.66	92.71
Total	30.83	62.74	6.43	0.73	2.70	96.57
Rural	-	92.15	7.85	7.79	1.60	90.60

Source: NCAER Gems & Jewellery Survey, 2019.

Table 3.21 presents the region-wise distribution of manpower by training received. Amongst the regions, Rajasthan is far ahead of the rest, with 63 per cent of its manpower being formally trained. In contrast to this, all the other

four regions have less than 3 per cent of formally trained manpower. In fact, the Gujarat region has 97.50 per cent of untrained manpower while the other regions have untrained manpower of less than 6 per cent.

Table 3.21: Region-wise Distribution of Employees by Training Received – The Machine-made Jewellery Segment (in percentages)

Training	North	East	West	South	Gujarat	Rajasthan	Total
Formally trained	2.34	3.01	1.28	-	-	63.16	30.83
Informally trained	97.42	91.59	94.57	97.47	2.50	36.05	62.74
No training	0.24	5.39	4.15	2.53	97.50	0.79	6.43

Source: NCAER Gems & Jewellery Survey, 2019.

As far as experience is concerned, Table 3.20 shows that almost all manpower, irrespective of the functions and job roles, comprise experts with more than 5 years of experience. As such, there are

only a few job roles for which the employees are not experts or have less than 5 years of experience. These specific job roles have been delineated in Table 3.22.

Table 3.22: Functions/Job Roles with Less Than 90% Expert Manpower – The Machine-made Jewellery Segment

Function	Job Roles- % Expert Manpower
Master making	CAM 88.14%
Procuring and assorting	Diamond assorter 89.58%
Filing and assembling	Filer and assembler 89.88%, laser machine operator 88.03%
Management	Production manager 62.89%
Others – small machine functions	Chain making machine 80.24%, CNC76.03%, wire drawing and making sheet 86.64%,

Source: NCAER Gems & Jewellery Survey, 2019.

A region-wise analysis of expertise has been presented in Table 3.23, which shows that the North and Rajasthan regions share the top position amongst the regions, with an expert manpower of more than 96 per cent, who have five years of experience, with the top being better than the overall average. In contrast, the

Gujarat region is at the bottom, with almost 30 per cent of its manpower having less than five years of experience. The rural segment has more than 90 per cent of expert manpower, and also a considerable proportion of 7.79 per cent of manpower having a basic experience of less than 2 years.

Table 3.23: Region-wise Distribution of Employees by Expertise – The Machine-made Jewellery Segment (in percentages)

Expertise	North	East	West	South	Gujarat	Rajasthan	Total
Basic <2 Years	0.04	5.39	5.48	2.63	3.32	0.14	0.73
Proficient: 2-5 Years	0.48	-	6.10	8.71	27.01	0.43	2.70
Expert: >=5 Years	99.48	94.61	88.42	88.66	69.67	99.43	96.57

Source: NCAER Gems & Jewellery Survey, 2019.

Based on the above discussions, it may be concluded that manpower in the hand-made segment is largely trained, with those having diplomas, degrees or certification in sector-specific training constituting almost one-third of the trained manpower. The manpower in this segment also includes those who are experts in their activities. The rural segment exhibits the same proportion of expertise but with no formal training.

3.4.5 The Retailer Segment

The retailer segment is the largest segment based on the number of enterprises and workers engaged in it, and it is distributed among all the regions. Table 3.24 presents the distribution of manpower engaged in the retailer segment by functions and the regions. In this segment, on an average, the functions demanding a comparatively higher engagement of manpower include the

sales function (at more than 50 per cent) distantly followed by the marketing, management, and inventory management functions, with each of them exhibiting an engagement in the range of 10-14 per cent. The job role-wise analysis reveals that within the sales function, sales jewellery

advance accounts for almost half of the employees engaged in sales. Goldsmith repairs accounts for an overall sizeable engagement of 6.73 per cent. Similarly, housekeeping, as part of the marketing function, has an engagement of 5.99 per cent.

Table 3.24: Region-wise Distribution of Employees Engaged by Functions –The Retailer Segment (in percentages)

Function	North	East	West	South	Gujarat	Rajasthan	Total
Inventory management	4.58	15.66	8.07	7.85	29.57	10.45	10.89
Sales	61.08	34.26	54.33	54.30	50.69	50.66	50.43
Production repairing/remaking	1.64	16.80	7.49	2.79	0.63	23.18	7.38
Store management	2.38	4.62	4.64	8.18	5.77	7.09	5.70
Marketing	22.63	6.19	17.46	15.20	6.04	4.84	13.50
Management	7.70	22.46	8.00	11.69	7.29	3.78	12.11
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: NCAER Gems & Jewellery Survey, 2019.

The region-wise analysis shows that the East region has comparatively less manpower engaged in the sales function, at just 34.26 per cent, while the other regions have a corresponding figure of more than 50 per cent engaged in the sales function but more manpower engaged in the production, repair and remaking functions, at 16.80 per cent, with the Rajasthan region having 23.18 per cent of manpower engaged in these functions, in comparison to the other four regions where less than 7.50 per cent of the manpower is associated with this function. The Gujarat region has almost 30 per cent of its manpower engaged in inventory management while the other regions have a corresponding figure of less than 16 per cent. There is wide variation in the proportion of housekeeping personnel across the regions. While the North region has 18.79 per cent of housekeepers, the corresponding figures in the Gujarat and Rajasthan regions are only 0.77 per cent and 0.72 per cent, respectively. It seems that Gujarat and Rajasthan do not have the concept of floor managers in the sales function, as they just employ one floor manager for more than 100

sales staff, while the West and South regions have one floor manager each for 8 and 11 sales staff, respectively.

As regards the competencies of manpower, Table 3.25 presents the function-wise distribution of manpower by the training received and expertise gained. In this segment, on an average, 72 per cent of the manpower are informally trained, while around 8 per cent are formally trained with degrees, diplomas or certification in sector-specific training, and the rest 20 per cent have no training at all. The job roles which account for more than 20 per cent of untrained manpower are labellers and inventory managers under the inventory management function, jewellery RSA-basic and jewellery sales advance staff under the sales function, support and housekeeping staff under the marketing function, and promoters under the management function. The rural segment has more trained manpower than the urban areas with the untrained manpower constituting just 13.97 per cent of the total manpower.

Table 3.25: Function-wise Distribution of Employees by Competency Parameters: Training and Expertise – The Retailer Segment (in percentages)

Function	Training Received			Experience Gained		
	Formal	Informal	No Training	Basic	Proficient	Expert
Inventory management	4.43	70.11	25.46	4.52	11.99	83.49
Sales	11.10	67.01	21.89	5.69	9.26	85.05
Production repairing/remaking	3.38	93.74	2.88	2.23	10.89	86.88
Store management	9.31	80.52	10.17	3.78	8.55	87.67
Marketing	4.79	71.11	24.10	5.72	13.35	80.93
Management	3.20	79.53	17.27	5.47	12.15	82.37
Total	7.89	72.16	19.95	5.18	10.54	84.28
Rural	8.60	77.42	13.97	3.71	11.68	84.62

Source: NCAER Gems & Jewellery Survey, 2019.

Table 3.26 presents the region-wise distribution of manpower by the training received. Amongst the regions, the South, followed by the Rajasthan region, has more than 12 per cent of

formally trained manpower while in the Gujarat region, most of the manpower, or specifically 65 per cent, are untrained.

Table 3.26: Region-wise Distribution of Employees by the Training Received –The Retailer Segment (in percentages)

Training	North	East	West	South	Gujarat	Rajasthan	Total
Formally trained	4.03	5.62	3.88	12.67	7.50	12.27	7.89
Informally trained	71.01	81.04	74.33	77.11	27.52	62.01	72.16
No Training	24.96	13.34	21.79	10.22	64.98	25.71	19.95

Source: NCAER Gems and Jewellery Survey, 2019.

As far as the level of experience is concerned, Table 3.25 shows that more than 84 per cent of the manpower engaged in this segment constitutes experts with more than 5 years of experience, while 11 per cent are proficient, and a small fraction of 5 per cent have less than 2 years of experience. As such, there are only a few job

roles for which the employees are not experts or have less than 5 years of experience. These specific job roles have been presented in Table 3.27. The manpower composition of the rural segment is similar to that of the urban segment, with 85 per cent of the manpower being formally trained.

Table 3.27: Functions/Job Roles with Less Than 90% Expert Manpower – The Retailer Segment

Function	Job Roles - % Expert manpower
Inventory management	Labeller 84.21%, inventory manager 81.72%
Sales	Cashier 89.68%, jewellery RSA basic 84.45%, jewellery sales advance 79.19%, floor manager 72.86%
Production, repairing, remaking	Assessor 53.89%
Store management	Store manager 86.87%
Marketing	Marketing executive 81.48%, support 84.16%, security 87.52%, housekeeping 76.29%,
Management	Senior manager 86.22%, promoter 86.23%, supervisor 66.76%, packager 85.88%

Source: NCAER Gems & Jewellery Survey, 2019.

The region-wise analysis of expertise in the retailer segment has been presented in Table 3.28, which shows that in the Gujarat region, almost all the manpower (98.58 per cent) comprises experts with 5 years of experiences, closely followed by Rajasthan, at 97.06 per cent. Experts constitute

more than 97 per cent of the manpower in these two regions. The North and East regions have roughly 86 per cent expert of expert employees followed by the West and South regions, with each having 79 per cent of expert employees.

Table 3.28: Region-wise Distribution of Employees by Expertise – The Retailer Segment (in percentages)

Expertise	North	East	West	South	Gujarat	Rajasthan	Total
Basic <2 Years	2.33	2.87	11.03	6.66	0.15	0.16	5.18
Proficient: 2-5 Years	11.23	10.92	9.18	13.93	1.27	2.78	10.54
Expert: >=5 Years	86.43	86.22	79.79	79.41	98.58	97.06	84.28

Source: NCAER Gems & Jewellery Survey, 2019.

Based on the above discussions, it may be concluded that a major proportion of the manpower in the retailer segment is informally trained, while one-fifth of its manpower is untrained.

3.5 Skill and Technology Mapping

This section deals with the skills pertaining to the function and job roles of manpower in the G&J sector, and the region-wise and segment-wise assessment of the existing technology used by enterprises in the sector. We were not able to identify the working details of the skills required for certain functions/job roles and the specifications of technology used by the industry for its efficient operations, modernisation, innovation, and competitiveness, against which the existing manpower available within the sector and the existing technology used by the industry could be evaluated. NCAER has, therefore, collected data on the skill categories of manpower from the enterprises themselves, and evaluated it for the last one year, in accordance with the function/job role and the technology used in the concerned processes by the enterprises over the course of the last one year. There are five skill categories on a scale of 5 to 1, with 5 being the 'most capable' and 1 the 'least capable', on which the enterprises categorised their manpower. Skill ratings of 4 and 5 have been collectively

considered and classified as 'skilled worker'. Similarly, as regards technology, three types of technologies have been considered based on the owners' versions, viz., basic/ primitive technology, average/middle level technology, and higher/ advance level technology wherein the enterprises placed the processes involved. While skill applies to the functions/job roles, technology applies to the processes involved in the segment.

3.5.1 Evaluation and Mapping of Skills

Following is a segment-wise analysis of skill evaluation over of the last one year by enterprises in the sector. Simultaneously, the job roles and functions comprising similar activities entailing the better/worse use of skills also have been identified segment- and region-wise.

3.5.1.1 The Diamonds Segment

The analysis of the diamonds segment is based primarily on the Gujarat region as there is a negligible number of enterprises dealing in the gems and semi-precious stones segment in the other regions. The functions entailed in this segment include rough assorting, diamond planning, stock control, rough cutting, bruited and coning, blocking, faceting and polishing, final assortment, marketing, support, and management. Following are the findings based on an analysis of skill evaluation by the enterprises themselves:

- i) All the manpower involved in the functions/job roles in the segment are most capable, except for those engaged in top polishing under the faceting and polishing functions, wherein 95 per cent of the manpower is most capable, and the manpower involved in accounts under the support function. A similar scenario has been observed in the rural areas,

where all the manpower in the applicable functions/job roles found most capable. Table 3.29 presents the skill rate-wise proportion of manpower engaged in the diamonds segment, with the figures for the total and rural sector given separately, and Table 3.30 presents the function-wise proportion of the most capable manpower in the segment.

Table 3.29: Distribution of Manpower by Capabilities – The Diamonds Segment (in percentages)

Sector	Skill Rate 1	Skill Rate 2	Skill Rate 3	Skill Rate 4	Skill Rate 5
Total	0.12	0.06	-	-	99.82
Rural	0.72	1.76	-	-	97.52

Source: NCAER Gems & Jewellery Survey, 2019.

Table 3.30: Function-wise Distribution of Skilled Manpower (Skill Rate 5) – The Diamonds Segment (in percentages)

Function	Skill Rate 5	Function	Skill Rate 5
Rough assorting	100.00	Bruiting and coning	100.00
Diamond planning	100.00	Blocking	100.00
Stock control	100.00	Faceting and polishing	99.61
Rough cutting	100.00	Boiling	100.00
Final assortment	100.00	Marketing	100.00
Support	99.86	Management	100.00

Source: NCAER Gems & Jewellery Survey, 2019.

- ii) The diamonds segment has 98.73 per cent of untrained manpower, 83.69 per cent of expert manpower with more than five years of experience, as cited in the previous section, and 99.82 per cent of the most capable manpower. It seems that there is a direct relation between the experience gained and the skills acquired, but training plays no part in the development of skills, or perhaps, as mentioned elsewhere, the segment could not differentiate between the categories of 'no training' and 'informal training' acquired through hereditary learning, self-learning, and learning on the job.

3.5.1.2 The Other Gems and Semi-precious Stones Segment

The analysis of this segment is based on the Rajasthan region (urban) as there is a negligible

number of enterprises dealing in the gems and semi-precious stones segment in the other regions. In this segment, there are six technical functions, viz., assorting, rough cutting, pre-shaping, faceting and polishing, drilling, and threading, and another six functions relating to management and support systems, viz., raw material procurement, production planning, wholesale, marketing, support, and management. Following are the findings based on the analysis of skill evaluation by the enterprises themselves:

- i) Overall, 94.97 per cent of the manpower involved in the functions/job roles in other gems and semi-precious stones segment are most capable, the major part of the rest (4.70 per cent) are on scale 4 out of 5. Table 3.31 presents the skill rate-wise proportion of manpower in this segment.

Table 3.31: Distribution of Manpower by Capabilities – The Other Gems and Semi-precious Stones Segment (in percentages)

Sector	Skill Rate 5	Skill Rate 4	Skill Rate 3	Skill Rate 2	Skill Rate 1
Total	94.97	4.70	0.33	-	-

Source: NCAER Gems & Jewellery Survey, 2019.

- ii) The manpower is most capable for all the job roles related to the planning, management and support functions. The job roles wherein the existing manpower is not 100 percent most capable are presented in Table 3.32.

Table 3.32: Job Roles with Less Than 100% Most Capable Manpower – The Other Gems and Semi-precious Stones Segment

Function	Job Role	%	Job Role	%
Rough cutting	Rough cutter	88.50		
Pre shaping	Pre-shaper and calibrator	89.20	Final shaper and calibrator	96.78
Faceting and polishing	Facet maker polisher normal/girdle	89.16	Engraver supervisor FP	92.78
		89.40	and QC	87.79

Source: NCAER Gems & Jewellery Survey, 2019.

- iii) In this segment, almost all the employees are formally/informally trained, they are most experienced, as noted in the previous section and are also most capable for all the functions and job roles.
- based on an analysis of the skill evaluation by the enterprises themselves:

- i) Overall, 65.57 per cent of the manpower involved in the functions/job roles in the hand-made jewellery segment are most capable, 25.10 per cent are placed on a scale of 4 out of 5, and 7.39 per cent are placed on a scale of 3 out of 5, while the figures for the rest are negligible. The proportion of 'most capable' manpower is comparatively lower in the rural segment, wherein just half the manpower is most capable. Table 3.33 presents the skill rate-wise proportion of manpower in the hand-made jewellery segment.

3.5.1.3 The Hand-made Jewellery Segment

In this segment, there are six technical functions, viz., metal alloying, designing, goldsmith (basic), cleaning and polishing, setting, and goldsmith (advanced), and another six functions relating to planning, management, and support systems, viz., inventory management, quality check, dispatching, marketing, support, and management. Following are the findings

Table 3.33: Distribution of Manpower by Capabilities – The Hand-made Jewellery Segment (in percentages)

Sector	Skill Rate 5	Skill Rate 4	Skill Rate 3	Skill Rate 2	Skill Rate 1
Total	65.57	25.10	7.39	1.60	0.35
Rural	50.91	32.55	14.18	2.21	0.15

Source: NCAER Gems & Jewellery Survey, 2019.

- ii) The job roles which have less than 90 per cent of skilled manpower, that is, wherein the existing manpower is either the most capable or placed on a scale of 4 out of 5, collectively called as 'skilled', are listed in Table 3.34.

Table 3.34: Job Roles with Less Than 90% Skilled Manpower—The Hand-made Jewellery Segment

Function	Job Role	%	Function	Job Role	%
Metal alloying	Assayer and marker	80.17	Goldsmith advanced	Carving/embossing/ reposing	87.63
	Designer hand sketch basic	89.81		Enamelling	85.68
Designing	Designer hand sketch advanced	83.47		Cleaning and polishing	Kundan
	Master maker hand	88.22	QC and dispatching	Cleaner and polisher	87.93
Setting	Sorter	85.65	Marketing	Sales and marketing head	89.64
	Setter	78.24	Support	Tagger and labeller	51.57
	Jadau setter	79.84		Safety officer	84.91

Source: NCAER Gems & Jewellery Survey, 2019.

iii) The region-wise analysis of skill capability based on a scale 4 and 5 out of 5 taken together reveals that the North and Rajasthan regions have the most capable manpower, followed by the South and Gujarat regions, with the West region falling at the other end of the list. The

rural segment exhibits a similar distribution but the East region has significantly less skilled manpower in comparison to the urban segment. Table 3.35 presents the region-wise distribution of skilled manpower in the hand-made jewellery segment.

Table 3.35: Region-wise Distribution of Skilled Manpower (Skill Rate 4+5) – The Hand-made Jewellery Segment (in percentages)

Skill	North	East	West	South	Gujarat	Rajasthan	Total
Total							
Scale 5	91.42	82.29	29.38	58.03	96.21	97.97	65.57
Scale 4+5	99.42	88.24	83.58	92.79	92.42	99.40	90.67
Rural							
Scale 5	97.64	43.73	55.08	49.42	89.14	93.98	50.91
Scale 4+5	99.79	81.63	84.13	93.77	95.39	100.00	83.46

Source: NCAER Gems & Jewellery Survey, 2019.

iv) The job roles which have less than 90 per cent of skilled manpower, that is, where the existing manpower are either the most

capable or are placed on a scale of 4 out of 5, collectively called as 'skilled', are listed in Table 3.36.

Table 3.36: Region-wise Job Roles with More Than 90% Skilled Manpower (Skill Rate 4+5) – The Hand-made Jewellery Segment

Function	North	East	West	South	Gujarat	Rajasthan
Inventory management	Locker & raw material procurement manager	All	RM procurement manager	Storekeeper and locker manager	All	All
Metal alloying	Designer	Assayer and hall marker	-	All	-	All

(Contd.)

Table 3.36: Region-wise Job Roles with More Than 90% Skilled Manpower (Skill Rate 4+5) – The Hand-made Jewellery Segment (Contd.)

Function	North	East	West	South	Gujarat	Rajasthan
Designing	Designer hand sketch basic/ advanced, CAD and master maker hand	Designer CAD and PD manager	Merchandise in charge and PD manager	Designer hand sketch basic/ advanced, master maker hand, merchandise-in-charge	All	Designer hand sketch basic/ advanced, CAD, master maker hand, merchandise-in-charge
Gold smith basic	All	All	Goldsmith component and filter	Component and filter and supervisor FC	All	All
Cleaning and polishing (CP)	All	Supervisor CP	Supervisor CP	All	All	All
Setting	All	<i>Jadai</i> setter and supervisor	Supervisor	Sorter, setter and supervisor	Setter	All
Gold smith advanced	QC inspector	-	Carving, embossing repoussing	Carving, embossing reposing and enamelling	Carving, embossing repoussing	All
Quality check and dispatching	QC inspector	-	QC inspector	Tagger and labeller	QC inspector	All
Marketing	All	Order processor	Sales & marketing head	All	All	All
Support	All	Accounts, HR and administration	Accounts	Security, accounts and safety officer	-	Security, accounts and HR and administration
Management	All	Production manager	Production manager	All	All	All

Source: NCAER Gems & Jewellery Survey, 2019.

3.5.1.4 The Machine-made Jewellery Segment

In this segment, there are twelve technical functions, viz., designing and product development, master making, procuring and assorting, wax model making, wax setting, casting, filing and assembling, polishing, metal setting, plating, refining, and quality control. Following are the findings based on an analysis of skill evaluation by the enterprises themselves:

- i) Overall, 87.83 per cent of the manpower involved in the functions/job roles in the segment are most capable, 8.43 per cent are placed on a scale of 4 out of 5, 3.2 per cent are placed on a scale of 3 out of 5, and the proportion of manpower placed on a scale 1-2 out of 5 is negligible. In the rural segment, almost 10 per cent of the manpower has the least skill rating, that is, a skill rating of 1 out of 5. Table 3.37 presents the skill rate-wise proportion of manpower in the machine-made jewellery segment.

Table 3.37: Distribution of Manpower by Capabilities— The Machine-made Jewellery Segment (in percentages)

Sector	Skill Rate 5	Skill Rate 4	Skill Rate 3	Skill Rate 2	Skill Rate 1
Total	87.83	8.43	3.27	0.20	0.26
Rural	88.87	0.76	0.56	-	9.82

Source: NCAER Gems & Jewellery Survey, 2019.

- ii) The job roles where less than 90 per cent of the existing manpower is the most capable or is placed on a scale of 4 out of 5, collectively called 'skilled', are listed in Table 3.38.

Table 3.38: Job Roles with Less Than 90% Skilled Manpower (Skill Rate 4+5) – The Machine-made Jewellery Segment

Function	Job Role	%	Function	Job Role	%
Wax model making	Wax piece maker	87.20	Filing and assembling	Filer and assembler	87.44
Small Machine Technical	Bangle cutting machine	86.67	Small machine technical	Dye cutting machine	87.23
	Wire drawing and making sheet	89.66			

Source: NCAER Gems & Jewellery Survey, 2019.

- iii) The region-wise analysis of skill capability based on a scale of 4 and 5 out of 5 taken together reveals that the Gujarat region, followed by the North and Rajasthan regions, has more than 97 per cent of skilled manpower in that order, while the West, South and East regions have skilled manpower in the range of 86-93 per cent. The rural segment exhibits a similar distribution except that in the North, Gujarat, and Rajasthan regions, the enterprises with skilled manpower in these regions are negligible. Table 3.39 presents the region-wise distribution of skilled manpower in the machine made jewellery segment.

Table 3.39: Region-Wise Distribution of Skilled Manpower – The Machine-made Jewellery Segment (in percentages)

Skill	North	East	West	South	Gujarat	Rajasthan	Total
Total							
Scale 5	98.00	91.32	78.67	86.44	100.00	83.16	87.83
Scale 4+5	99.44	93.13	85.52	93.02	100.00	97.02	96.26
Sector							
Scale 5	-	90.20	82.18	100.00	-	-	88.87
Scale 4+5	-	90.20	85.49	100.00	-	-	89.62

Source: NCAER Gems & Jewellery Survey, 2019.

- iv) The job roles which have less than 90 per cent of skilled manpower, that is, where the existing manpower are either the most capable or placed on a scale of 4 out of 5, collectively called as 'skilled', are listed in Table 3.40. The other jobs have more than 90 per cent of skilled manpower.

Table 3.40: Region-Wise Job Roles with More Than 90% Skilled Manpower (Skill Rate 4+5) – The Machine-made Jewellery Segment

Function	North	East	West	South	Gujarat	Rajasthan
Designing and Product Development	Designer hand sketch basic/advance, CAD designers	All	Designer hand sketch basic, CAD designers	-	All	Designer hand sketch basic/advance, CAD designers
Master making	-	All	Master making hand	-	All	All
Procuring & assorting	Inventory manager	-	-	-	All	Bagger and flueter, inventory manager
Wax model making	Wax tree maker, wax piece maker, rubber mould maker	Wax tree maker, wax piece maker	Wax piece maker	-	All	Wax tree maker, rubber mould maker, sup waxing/ QC
Wax setting	-	-	-	-	Wax setter advance	All
Casting	All	All	Casting machine operator	-	All	All
Filing & assembling	Filer and assembler, laser machine operator	All	Filer and assembler	-	All	Laser machine operator, sup filing and QC
Polishing	Sup polishing and QC	All	Sup polishing and QC	-	Sup polishing and QC	All
Metal setting	Machine setting, sup setting and QC	All	Sup setting and QC	-	Machine setting, sup setting and QC	Machine setting, sup setting and QC
Plating	-	All	-	-	All	All
Refining	-	All	-	-	All	All
Quality control	Final QC	All	-	-	All	All
Marketing	Order processor, tagger and labeller	All	-	-	All	All
Support	All	All	Security, account, HR and administration, housekeeping	Security, account, housekeeping	All	All

(Contd.)

Table 3.40: Region-Wise Job Roles with More Than 90% Skilled Manpower (Skill Rate 4+5) – The Machine-made Jewellery Segment (Contd.)

Function	North	East	West	South	Gujarat	Rajasthan
Management	Production manager, operation head	All	All	All	All	All
Others/ small machine functions	CNC, hammering, soldering, connector <i>purwai</i> , lockers	Dye cutting machine	Wire drawing and making sheet	Chain making machine, CNC, gold cleaning machine, hole keeping machine, wire drawing and making sheet, casting	-	- Except Dye cutting machine

Source: NCAER Gems and Jewellery Survey, 2019.

Note: “-” denote that none of the job roles available in the region for specific functions.

3.5.1.5 The Retailer Segment

In this segment, there are six functions, viz., inventory management, sales, production repairing/remaking, store management, marketing, and management. Following are the findings based on an analysis of skill evaluation by the enterprises themselves:

i) Overall, 65 per cent of the manpower involved

in the functions/job roles in the segment are most capable, 28 per cent are placed on a scale of 4 out of 5, a meagre 6 per cent are placed on a scale of 3 out of 5, and the rest are negligible. The rural segment exhibits a similar distribution. Table 3.41 presents the skill rate-wise proportion of manpower in the retailer segment.

Table 3.41: Distribution of Manpower by Capabilities –The Retailer Segment (in percentages)

Sector	Skill Rate 5	Skill Rate 4	Skill Rate 3	Skill Rate 2	Skill Rate 1
Total	65.24	27.67	6.08	0.62	0.39
Rural	60.80	31.48	5.93	0.82	0.96

Source: NCAER Gems and Jewellery Survey, 2019.

ii) In most of the job roles, more than 93 per cent of the manpower is either most capable or has a skill rating of 4 out of 5, collectively

called as ‘skilled’. The job roles where less than 90 per cent of the existing manpower are skilled, are listed in Table 3.42.

Table 3.42: Job Roles with Less Than 90% Skilled Manpower –The Retailer Segment

Function	Job Role	%	Function	Job Role	%
Inventory management	Inventory management	83.71	Sales	Floor manager	85.74
Marketing	Support	85.41			

Source: NCAER Gems and Jewellery Survey, 2019.

iii) The region-wise analysis of skilled manpower reveals that the Rajasthan region has capable manpower followed by the North, Gujarat, South, and East regions, in that order, with the West region falling at the other end of the

list (Table 3.43). The rural segment exhibits a similar distribution except that the proportion of skilled manpower is considerably lower in the West and Gujarat regions as compared to the other regions.

Table 3.43: Region-wise Distribution of Skilled Manpower – The Retailer Segment (in percentages)

Skill	North	East	West	South	Gujarat	Rajasthan	Total
Rural							
Skill Rate 5	82.91	66.73	45.82	62.13	84.57	69.77	65.24
Skill Rate 5+4	97.20	92.05	86.21	93.54	96.22	99.27	92.91
Sector							
Skill Rate 5	91.66	58.91	42.27	59.46	80.79	54.62	60.80
Skill Rate 5+4	96.41	91.66	76.97	96.00	87.79	99.36	92.29

Source: NCAER Gems and Jewellery Survey, 2019.

iv) The job roles where more than 90 per cent of the existing manpower are skilled, region-

wise, are listed in Table 3.44.

Table 3.44: Region-Wise Job Roles with More Than 90% Skilled Manpower – The Retailer Segment

Function	North	East	West	South	Gujarat	Rajasthan
Inventory management	All	All	-	All	Labeller	All
Sales	All	Cashier, jewellery sales advance, floor manager	Jewellery RSA basic	All	All	All
Production, repairing/ remaking	All	Assessor	All	All	All	All
Store management	All	All	Merchandise-in-charge	Store manager	All	All
Marketing	All	All	Housekeeping	Marketing, security, house keeping	All	All
Management	All	All	Promoter, supervisor	Senior manager, supervisor, packager	All	All

Source: NCAER Gems and Jewellery Survey, 2019.

3.6 Technology Assessment and Mapping

The following sections contain an analysis of the existing technology used by the enterprises in the G&J sector, and the technology used in the processes specific to the segments have been

identified segment- and region-wise. Technology mapping is limited to four segments, including diamonds, gems and other precious stones, hand-made jewellery, and machine-made jewellery, as it was felt that the retailer segment does not entail the use of technology.

3.6.1 The Diamonds Segment

The analysis of this segment is based on the Gujarat region, as there is a negligible number of units involved in this segment in all the other regions. There are 22 processes in this segment, viz., rough assorting, rough marking, window opening, plotting inclusions, spectrum analysis, cleaving, blade sawing, laser sawing, bruited and coning, auto blocking, manual blocking, polishing and faceting, symmetry analysis, boiling, sawing supervision, bruited and coning supervision, polishing and faceting supervision, assortment supervision, boiling supervision,

diamond processing supervision, and stocking. Following are the findings based on an analysis of the technology used in the diamonds segment:

- i) The enterprises involved in the diamonds segment use basic/primitive technology. Advanced/higher technology has not reached this segment and the number of enterprises in this sector using average/middle level technology is negligible. In rural areas, only a few enterprises, that is, 4.81 per cent, use average technology. Table 3.45 presents the distribution of enterprises by the level of technology used by them.

Table 3.45: Distribution of Enterprises by the Level of Technology Used—The Diamonds Segment (in percentages)

Total			Rural		
Basic	Average	Higher	Basic	Average	Higher
99.56	0.44	-	95.18	4.81	-

Source: NCAER Gems and Jewellery Survey, 2019.

- ii) The process-wise analysis reveals that only a fraction of the units use average/middle level technology in the processes, such as rough assorting, rough marking, window opening, plotting inclusions, diamond

planning, spectrum analysis, bruited and coning, polishing and faceting supervision, and stocking. Details of the process-wise technology used in the segment are given in Table 3.46.

Table 3.46: Process-wise Distribution of Existing Technology – The Diamonds Segment (in percentages)

Process	Technology Used		
	Basic	Average	Higher
Rough Assorting	99.77	0.23	-
Rough Marking	98.74	1.26	-
Window opening	93.44	6.56	-
Plotting inclusions	91.78	8.22	-
Diamond planning	99.75	0.25	-
Spectrum analysis	91.78	8.22	-
Cleaving	100.00	-	-
Blade sawing	100.00	-	-
Laser sawing	100.00	-	-
Bruited and coning	91.78	8.22	-
Auto blocking	100.00	-	-
Manual blocking	100.00	-	-
Polishing and faceting	100.00	-	-
Symmetry analysis	100.00	-	-
Boiling	100.00	-	-

(Contd.)

Table 3.46: Process-wise Distribution of Existing Technology – The Diamonds Segment (in percentages) (Contd.)

Process	Technology Used		
	Basic	Average	Higher
Sawing supervision	100.00	-	-
Bruiting and coning supervision	100.00	-	-
Polishing and faceting supervision	99.41	0.59	-
Assortment supervision	100.00	-	-
Boiling supervision	100.00	-	-
Diamond processing supervision	100.00	-	-
Stocking	99.79	0.21	-
Total Average	99.56	0.44	-

Source: NCAER Gems and Jewellery Survey, 2019.

3.6.2 The Gems and Other Semi-precious Stones Segment

The analysis of this segment is based primarily on the Rajasthan region as there is a negligible number of units involved in this segment in all the other regions. There are 15 processes in this segment, viz., assorting, slicing, grading, cutting, grinding, pre-shaping, calibrating, faceting and polishing, shading/assorting, hand carving, drilling, threading, wax casting, supervision, and packaging. Following are the findings based on

an analysis of the technology used in the gems and semi-precious stones segment:

- i) The enterprises engaged in the segment of gems and other semi-precious stones use basic/primitive technology. Advanced/higher technology has not reached this segment and the number of enterprises using average/middle level technology in this segment are negligible. Details of the process-wise technology used in this segment are presented in Table 3.47.

Table 3.47: Process-wise Distribution of Existing Technology – The Gems and Other Semi-precious Stones Segment (in percentages)

Process	Basic	Average	Higher
Assorting	100.00	-	-
Slicing	100.00	-	-
Grading	100.00	-	-
Cutting	100.00	-	-
Grinding	99.13	0.87	-
Pre Shaping	99.13	0.87	-
Calibrating	99.13	0.87	-
Faceting and Polishing	100.00	-	-
Shading/Assorting	100.00	-	-
Hand Carving	99.13	0.87	-
Drilling	100.00	-	-
Threading	100.00	-	-
Wax casting	100.00	-	-
Supervision	100.00	-	-
Packaging	100.00	-	-
Total Average	99.77	0.23	-

Source: NCAER Gems and Jewellery Survey, 2019.

- ii) The processes using average/middle level technology by a fraction of the units in the gems and other semi-precious stones segment are grinding, pre-shaping, calibrating, and hand carving.

3.6.3 The Hand-made Jewellery Segment

The hand-made jewellery segment uses small processes and is distributed across all the regions. There are ten processes involved in this segment, viz., designing, melting, making of bar into strips/wire/sheets, drawing of designs on sheets and cutting into parts, assembling of different parts and soldering, pre-polishing with a fine layer of silver, stone setting, quality check, polishing, cleaning, shining, and packaging.

Following are the findings based on an analysis of the technology used in the segment:

- i) The processes in the gems and other semi-precious stones segment are mostly based on the use of basic technology; with 58.64 per cent of the enterprises using basic technology and 38.30 per cent using average technology. Only a small fraction, that is, 3 per cent, of the enterprises use higher/advanced technology. The rural segment exhibits a similar distribution of technological processes. Table 3.48 presents the distribution of enterprises in the hand-made jewellery segment by the level of technology used by them.

Table 3.48: Distribution of Enterprises by the Level of Technology Used – The Hand-made Jewellery Segment (in percentages)

Total			Rural		
Basic	Average	Higher	Basic	Average	Higher
58.64	38.30	3.06	57.51	41.00	1.49

Source: NCAER Gems and Jewellery Survey, 2019.

The process-wise technology used in the hand-made jewellery segment has been shown in Table 3.49. The processes wherein higher/advanced technology is being used by more

than 4 per cent of the enterprises are designing, drawing of designs on sheet, cutting into parts, and quality checks

Table 3.49: Process-wise Distribution of the Existing Technology – The Hand-made Jewellery Segment (in percentages)

Process	Basic	Average	Higher
Designing	43.02	52.85	4.13
Melting	56.82	41.55	1.63
Making of bar into strips/wire/sheets etc.	56.84	39.49	3.66
Drawing of design on sheet and cutting into parts	53.90	41.83	4.28
Assembling of different parts and soldering	75.91	22.18	1.92
Pre polishing with a fine layer of silver	66.48	30.86	2.66
Stone cutting	66.88	31.91	1.21
Quality check	66.25	25.22	8.53
Polishing, cleaning and shining	69.51	27.75	2.75
Packaging	48.58	49.81	1.60
Total Average	58.64	38.30	3.06

Source: NCAER Gems and Jewellery Survey, 2019.

ii) The region-wise analysis of the technology used in the hand-made jewellery segment, taking the average and advanced technology together, called as 'superior technology', has been shown in Table 3.50. On this aspect, the regions differ widely in the level of higher technology used in this segment. The East and West regions are the most technology-savvy, with each having more than 60 per cent of the enterprises using higher technology. Rajasthan is the most backward region, with

just 3.46 per cent of the enterprises in this region using higher technology. The rural segment is far behind the urban segment in the use of higher technology in almost all the regions except the East region, where the rural enterprises have a similar proportion of almost 60 per cent of the enterprises using higher technology. The rural segment in the West region also has a considerable proportion of 38.78 per cent of the enterprises using higher technology.

Table 3.50: Region-wise Distribution of Enterprises by Superior Technology Used –The Hand-made Jewellery Segment (in percentages)

Sector	North	East	West	South	Gujarat	Rajasthan	Total
Total	16.03	61.81	60.98	17.58	34.44	3.46	41.36
Rural	1.85	59.94	38.78	6.41	10.01	1.06	42.49

Source: NCAER Gems and Jewellery Survey, 2019.

3.6.4 The Machine-made Jewellery Segment

The machine-made jewellery segment is supposed to be the most technology-savvy segment. There are many processes in this segment, which have been shown in Table 3.51. Following are the findings based on an analysis of the technology used in the machine-made jewellery segment:

i) The processes in this segment mostly use average/middle level technology. Almost 42 per cent of the enterprises in this segment use

average technology while basic and higher technology are used by 30 and 28 per cent of the enterprises, respectively. The rural segment is more technology-savvy than the urban segment. Almost two-third of the rural enterprises use average technology and one-fourth, use higher technology. Only 9 per cent of the rural enterprises use basic technology. Table 3.51 presents the distribution of enterprises by the level of technology used by them.

Table 3.51: Distribution of Enterprises by the Level of Technology Used–The Machine-made Jewellery Segment (in percentages)

Total			Rural		
Basic	Average	Higher	Basic	Average	Higher
30.14	41.56	28.31	9.00	65.82	25.08

Source: NCAER Gems and Jewellery Survey, 2019.

ii) The process-wise technology used in the machine made jewellery segment has been shown in Table 3.52. The processes wherein advanced technology is used by more than 35 per cent of the enterprises are CAD designing, wax setting. *purwai*, laser welding, dust collection, electroplating, and quality control.

The processes where basic technology is used by less than 20 per cent of the enterprises in the machine-made jewellery segment are *meenakari/kundan*, alloying, wire drawing, assembling, laser welding, and quality control, among others.

Table 3.52: Process-wise Distribution of the Existing Technology – The Machine-made Jewellery Segment (in percentages)

Process	Basic	Average	Higher
Designing hand	45.19	34.41	20.40
Designing CAD	33.25	31.05	35.70
CAM	20.11	61.99	17.90
Wax	26.82	38.18	35.00
Casting	31.13	46.67	22.20
Filling	31.67	44.93	23.40
Wax setting	35.55	29.45	35.00
Enamelling	46.12	28.08	25.80
Meenakari/kundan	12.48	70.02	17.50
Filigree	30.23	36.47	33.30
Polishing	50.09	28.71	21.20
Plating	31.53	44.77	23.70
Puwai	6.97	43.03	50.00
Engraving	22.37	55.73	21.90
Alloying	17.17	60.33	22.50
Wire drawing	18.90	49.00	32.10
Moulding	23.39	54.21	22.40
Soldering	43.73	27.07	29.20
Assembling	18.83	51.17	30.00
Refinery	27.28	39.42	33.30
Laser welding	12.23	45.27	42.50
Electroplating	17.55	41.55	40.90
Robert plating	20.28	48.02	31.70
Polishing, cleaning and shining	22.46	54.94	22.60
Dust collection	33.51	31.89	34.60
Quality control	12.50	41.90	45.60
Packaging	41.85	30.25	27.90
Others-small machine processes	36.16	32.04	31.80

Source: NCAER Gems and Jewellery Survey, 2019.

iii) The region-wise analysis of the technology used, taking the average and advanced technology together (called as 'superior technology') has been shown in Table 3.53. On this aspect, the regions differ widely in the level of higher technology used in this segment. The Gujarat, North, and East regions are the most technology-savvy, with more than 98 per cent of the enterprises in each of these regions using superior technology while in the South region, just 7 per cent of the enterprises use superior technology.

In the rural areas, most of the processes are not applicable but wherever applicable, the enterprises use better technology in this segment. The North, Gujarat, and Rajasthan regions have a negligible number of rural enterprises and in the rural segment of the South region, the processes are not amenable to the use of advanced technology. The region-wise distribution of enterprises by the average and advanced levels of technology used in the machine-made jewellery segment is presented in Table 3.53.

Table 3.53: Region-wise Distribution of Enterprises by Superior Technology Used – The Machine-made Jewellery Segment (in percentages)

Sector	North	East	West	South	Gujarat	Rajasthan	Total
Total	98.30	99.03	74.80	6.79	100.00	69.93	75.60
Rural	-	100.00	84.42	-	-	-	90.91

Source: NCAER Gems and Jewellery Survey, 2019.

iv) The region-wise distinct processes entailing the use of superior technology in the machine-made jewellery segment are discussed in detail below.

- The North region has more than 90 per cent of enterprises using superior technology in all the processes except for plating (71.69 per cent) and alloying (50.00 per cent). It uses advanced technology for more than 90 per cent of its units in all the processes except plating (71.69 per cent) and *puwai* (13.09 per cent).
- The East region has more than 90 per cent of its units using superior technology in all the processes except for enamelling (37.73 per cent). It uses advanced technology in all its enterprises for CAM electroplating, robert plating, and quality control.
- The West region has many processes wherein less than 90 per cent of the units use superior technology, such as hand designing (52.90 per cent), CAD

designing (56.47 per cent), casting (85.18 per cent), filling (73.79 per cent), *meenakari/kundan* (84.91 per cent), polishing (28.30 per cent), plating (48.47 per cent), moulding (85.23 per cent), soldering (20.71 per cent), refining (33.93 per cent), laser welding (79.64 per cent), polishing, cleaning, and shining (82.59 per cent), dust collection (5.76 per cent), and packaging (34.97 per cent).

- In the South region, none of the processes has more than 90 per cent of the enterprises using superior technology. Some of the processes wherein less than 10 per cent of the units use superior technology are casting (2.91 per cent), filling (5.88 per cent), and polishing, cleaning, and shining (6.61 per cent). In the Gujarat region, all the enterprises use advanced technology for all the processes that are applicable to the region.
- In the Rajasthan region, more than 57 per cent of the units use superior technology for all the processes, and more than 90 per cent of the enterprises use superior

technology for a few processes such as *meenakari/kundanwork* (91.83 per cent). It uses advanced technology for the applicable processes in its 13-16 per cent of its units except for the processes of enamelling (18.99 per cent), *meenakari/kundanwork* (30.61 per cent), filigree (23.44 per cent), *puwai* (44.11 per cent), engraving (23.44 per cent), laser welding, electroplating, and robert plating (18.99 per cent each), and quality control and packaging (23.44 per cent each).

3.6.5 Overall Scenario Pertaining to Technology in the G&J Sector

The use of superior technology (that is, existing average and advanced technology) used by the enterprises in the overall sector, with all the segments combined, has been analysed here to assess the overall technological advancement of the regions in the G&J sector. Table 3.54 presents the region-wise distribution of enterprises using superior technology in the sector.

Table 3.54: Region-wise Distribution of Enterprises by Superior Technology Used: The Overall Sector (in percentages)

Sector	North	East	West	South	Gujarat	Rajasthan	Total
Total	24.65	62.05	62.46	17.03	17.91	6.83	39.46
Rural	1.85	60.23	41.09	6.38	7.75	1.06	42.74
Urban	31.03	63.73	64.31	19.23	18.23	7.68	38.56

Source: NCAER Gems and Jewellery Survey, 2019.

Following are the findings based on an analysis of data contained in Table 3.54:

- i) In the G&J Sector, overall, 39.46 per cent of the enterprises use superior technology in some of the processes in some of the segments. A region-wise comparison reveals that the East and West regions are far ahead of the other regions in this regard, with about 62 per cent of their enterprises using superior technology. They are followed by the North region, with 25 per cent of its enterprises, and the South and Gujarat regions, with 17-18 per cent of their enterprises using superior technology, while the Rajasthan region is at the other end of the list, with just 7 per cent of its enterprises using superior technology.
- ii) The rural sector is slightly more technology-savvy than the urban sector for the overall

segments, with 43 per cent of its enterprises using superior technology in comparison to a corresponding figure of just 38.56 per cent for the urban sector. A region-wise analysis of the differences between the rural and urban sectors reveals that in all the regions, the proportion of rural enterprises using superior technology is considerably less than that in the urban sector, with the difference being higher in the North, South, and Gujarat regions. It may be noted that in the rural sector, the gems and other semi-precious stones segment has a negligible number of enterprises in the rural sector. Similarly, the rural diamonds segment has enterprises only in Gujarat, whereas the machine-made rural segment has a negligible number of enterprises in the North, Gujarat, and Rajasthan regions.

IV

SKILL AND TECHNOLOGY GAPS IN THE GEMS AND JEWELLERY SECTOR

The previous chapter presented the results of the manpower mapping exercise for the workforce engaged in the Gems and Jewellery (G&J) sector by focusing on the workers' qualifications, the training received by them, experiences gained by them, evaluation of their skills in terms of the functions and jobs being performed by them and the technology used by the enterprises, process-wise along the regions, and segments. This chapter carries forward the manpower analysis of the previous chapter through quantification of the skill and technology gaps in the G&J sector along the respective segments and regions. It may be clarified again as already done in the previous chapter that we could not identify the details of the skills required for specific functions/job roles involved and the specifications of technology used by the industry for ensuring its efficient operations, modernisation, innovation, and competitiveness, against which the existing manpower available within the sector and existing technology used by the industry could be evaluated. Therefore, the observed competencies and the required competencies, as also the observed level of technology and the required level of technology have been identified based on the evaluation of the existing scenario (observed) and requirement (required) laid down by the enterprises and the challenges faced by them.

The G&J sector needs skilled manpower and superior technology to diversify its activities in order to meet the increasing demand, stay export-competitive, and to increase its share in the Gross Value Added of the economy. A primary survey conducted by the NCAER collected information from the enterprises on a few relevant indicators relating to the existing skills and technologies,

and the needs of the sector. The skill and technology requirements and gaps in these have been discussed separately in two sections of the chapter.

The skill and technology gaps are related to each other. The basic premise is that the sector needs upgradation of existing technology which, in turn, necessitates recruitment of skilled manpower to handle the advanced technology that needs to be deployed for growth and diversification of the sector. However, the survey results are based on the perceptions of the enterprises regarding the sort of competencies they feel they have vis-à-vis the competencies needed for performing different functions and job roles, and the level of technology they are using vis-à-vis the level of technology actually required for undertaking different processes in the sector. When the surveyors asked these enterprises whether they were willing to upgrade the technologies being used by them, they said 'no' as they lacked the finance and skilled manpower needed for using advanced technologies, and also because they were not aware of the specific advanced technologies that could be deployed by them. On the use of skilled manpower, it was found that in some of the segments, like diamonds, skilled workers had been working since generations, and these workers were performing their activities/functions and job roles efficiently. But were these enterprises able to effectively handle technology upgradation? The survey had probably not taken into account the skill requirements resulting from the technology upgradation, as the questions were not designed to solicit the relevant information in this regard, which may have led to gaps between the available

skills and the advanced technology which required a workforce with more advanced skill sets.

4.1 Gaps between the Observed Competencies and the Required Competencies of the Workforce in the G&J Sector

The enterprises surveyed during the primary survey themselves evaluated the existing skills of their employees, categorised by specific job roles across functions, and estimated the requirement of skilled manpower. NCAER focused on the following indicators for determining and quantifying the gaps in skills:

- i) Rating of existing skills of manpower by the enterprises on a scale of 5 to 1 (with a score of 5 being assigned to the ‘most capable’ and a score of 1 being assigned to the ‘least capable’);
- ii) Number of employees needed to upgrade the skills of existing employees by enterprises;
- iii) Number of additional skilled workers that would be required by enterprises in the G&J sector in the coming two years;

- iv) Assessment of the enterprises to determine whether they find it challenging to fulfil the requirement of additional skilled workers, and if they do, the reasons codified as follows: ‘not available in the local market’, ‘workers not educated enough to be trained’, and ‘jobs not remunerative enough to attract workers and others’.

Point i) listed above has been used for quantification of the skill gaps determined by observing observed differences between two groups, including one with a skills rating of 1-3 (denoting basic skills), and the other with a skills rating of 4-5 (denoting superior skills). The level of skills required by the G&J sector is ‘superior’ skills. Point ii) in the above list reflects the skill gaps prevalent at present, implying that enterprises need to fill these gaps by upgrading their skills, and point iii) suggests that certain enterprises need to fill their skill gaps through hiring of skilled manpower for ensuring their growth. Based on these indicators, an attempt has been made here to quantify the skill gaps in the G&J sector, segment-wise as per the measurement criteria specified in Table 4.1.

Table 4.1: Measuring Skill Gaps in the G&J Sector

Skill Gaps	Measurement Criteria
Observed Skill Gap	Employees need to move from basic skills (with a skills rating of 1-3) to superior skills (with a skills rating of 4-5)
Present Skill Gap	Employees need to upgrade their skills
Additional Skill Gap	Additional skilled employees would be required in the next two years

Source: NCAER Gems and Jewellery Study, 2019.

The various challenges faced by the enterprises in fulfilling the requirements of creating additional skilled manpower determine the interventions that need to be made by the government and policy planners for ameliorating these challenges and facilitating access to skilled manpower in the sector. The following sections contain a segment-wise analysis of skill gaps in the G&J sector.

4.1.1 Diamonds

The analysis for this segment is based on only the Gujarat region as in the other regions the number of enterprises engaged in the diamond segment is negligible. The observed skill gaps, present skill gaps, and additional skill gaps, along with the challenges faced by the enterprises in the diamond segment, have been presented in Table 4.2 for each of the functions.

Table 4.2: Function-wise Skill Gaps Total and Rural—Faced by the Diamonds Segment

Function	% to Total Existing Employees					
	Total			Rural		
	Observed Skill Gap	Present Skill Gap	Additional Skill Gap	Observed Skill Gap	Present Skill Gap	Additional Skill Gap
Rough assorting	-	-	-	-	-	-
Diamond planning	-	-	-	-	-	-
Stock control	-	-	-	-	-	-
Rough cutting	-	-	-	-	-	-
Bruting and coning	-	-	-	-	-	-
Blocking	-	-	-	-	-	-
Faceting and polishing	0.37	-	-	2.99	-	-
Boiling	-	-	-	-	-	-
Final assortment	-	-	-	-	-	-
Marketing	-	-	-	-	-	-
Support	0.14	-	-	-	-	-
Management	-	-	-	-	-	-
Total	0.17	-	-	2.48	-	-

Source: NCAER Gems & Jewellery Survey, 2019.

Note: “-“ denotes skill gap as being ‘nil’ or ‘not applicable’.

The following findings pertaining to the diamonds segment emerge from the analysis of data contained in Table 4.2:

- i) All the enterprises in the segment have employees with superior skills (or skills equivalent to the ‘most capable’ rating given in the last chapter) for all the functions entailed in the diamonds segment except for a fraction of units engaged in the faceting and polishing and support functions. Thus, the segment does not have any observed skill gap.
- ii) The enterprises in the diamond segment neither feel the need to upgrade the skills of their employees nor require any additional skilled workers in the coming two years for their units, and therefore, the gap between the present and additional skills for this segment is nil.

- iii) Since the enterprises they do not need any additional skilled workers, they do not find it a challenge to fulfil the requirement of employing additional workers.

The perceptions of enterprises about their requirements of skilled manpower for the present activities and the functions they envisage over the next two years for expanding their activities indicate that there is almost no skill gap in this segment. However, there may still be a demand for skills in the segment in the future, given the ever-changing demands of consumers for technologically advanced products and the resultant need for employing skilled workers to handle and market these products. We have tried to assess the requirements for technology upgradation of the enterprises in the segment (Table 4.2). It has been found that more than 95 per cent of the enterprises in the segment

were using basic/primitive technology, thereby requiring technology upgradation in each of the processes. However, an overwhelming majority among these enterprises (more than 95 per cent) were still not willing to upgrade technology due to lack of finances for doing so, and also to some extent, due to the lack of skilled manpower and awareness about technology.

There is thus ostensibly a need to create awareness about the right technology in the segment, to specify the nature of the technology required for achieving technological advancement, and to finance enterprises for technology upgradation, which may, in turn, create the need for upgrading the skills of the existing manpower

and for hiring additional skilled workers, which the enterprises in the segment currently do not feel the need to do.

4.1.2 Other Gems and Semi-precious Stones

As in case of the diamonds segment, the analysis for this segment too is based on only one region, viz., Rajasthan, as the number of enterprises engaged in the gems and semi-precious stone segments in the other regions is negligible. Details of the observed skill gaps, present skill gaps, and additional skill gaps, along with the challenges faced by the enterprises in the gems and semi-precious stone segment have been presented in Table 4.3 for each of the functions.

Table 4.3: Function-wise Skill Gaps and Challenges Faced by the Other Gems and Semi-precious Stones Segment

Function	% to Total Existing Employees			% Enterprises Facing Challenges of Finding Additional Skilled Workers and Reasons Thereof		
	Observed Skill Gap	Present Skill Gap	Additional Skill Gap	% to Total Number of Existing Enterprises	Workers Not Educated Enough to be Trained	Jobs Not Remunerative Enough to Attract Workers
Raw material procurement	-	0.00	1.73	65.31	-	100.00
Production planning	-	1.86	2.14	76.55	-	100.00
Assorting	-	-	2.71	100.00	2.09	97.91
Rough cutting	-	1.11	3.00	100.00	12.63	87.37
Pre-shaping	-	9.72	21.28	97.14	1.46	98.54
Faceting and polishing	1.10	7.91	10.46	96.03	0.40	99.60
Drilling	-	0.00	3.51	91.33	6.67	93.33
Threading	-	4.27	-	100.00	-	100.00
Grading and dispatching	-	2.24	2.24	100.00	7.62	92.38
Wholesaling	-	-	12.56	100.00	9.97	90.03
Marketing	-	-	-	100.00	12.67	87.33
Support	-	-	-	80.63	-	100.00
Management	-	-	-	57.01	-	100.00
Total	0.33	4.77	9.36	92.20	3.72	96.28

Source: NCAER Gems & Jewellery Survey, 2019.

Notes: 1) “-” means nil.

2) Since no enterprise mentioned ‘workers not being available in the local market’ or any other reason as a challenge for fulfilling the requirement of additional skilled workers, the columns for such reasons have not been shown in the Table.

The following findings emerge from analysis of the data contained in Table 4.3:

- i) All the enterprises in the segment have employees with a superior level of skills, and no skill gap was observed for any of functions and job roles, except for an almost negligible proportion of 1 per cent of the workers engaged in faceting and polishing, which is done by facet makers, polishers, and engravers.
- ii) The enterprises in this segment feel the need for upgrading the skills of about 5 per cent of their employees, primarily engaged in two functions, viz., pre-shaping (undertaken by pre- and final shapers and calibrators), and faceting and polishing (involving facet makers, polishers, engravers, and supervisors overseeing quality control in faceting and polishing), by about 10 per cent and 8 per cent, respectively. It is envisaged that there is a skill gap in 5 per cent of the employees.
- iii) The segment requires an estimated 9 per cent additional skilled workers in the next two years, primarily for three functions, viz., pre-shaping (undertaken by pre- and final shapers and calibrators), faceting and polishing (undertaken by facet makers, polishers, and engravers), and wholesaling (undertaken by inventory managers).

The analysis of perceptions of enterprises about their requirements for skilled manpower for the present activities and functions being performed by them as also for the expansion they expect to undertake in the next two years, indicates that the segment has a skill gap of a little over 14 per cent (including the present and additional skill gap). However, given the technological advances observed worldwide in

this segment and the resultant need for skills to handle this technology, the gap seems to have been under-estimated. We have tried to assess the need for technology upgradation of the enterprises in the segment (Section 4.1.2, Table 4.3). It has been found that almost all the enterprises in the segment are using only basic/primitive technology, which outlines the need for technology upgradation in each of the processes. However, the enterprises were neither willing to upgrade technology nor to invest in the purchase of new technology. A significant proportion of the enterprises, viz. 18.36 per cent, also faced lack of skilled manpower whereas another 36.55 per cent lacked finance and of awareness about the right technology.

Further, once awareness about the right technology has been created, and the specific technologies needed for process upgradation have been identified, and the issues of skill development and financial constraints in achieving technology upgradation have been overcome, the segment would need an estimated 54.91 per cent skilled manpower, which would be fulfilled through upgradation of the skills of existing manpower or the hiring of additional skilled workers. Here we have assumed technology upgradation in a process results in skill upgradation of the concerned manpower involved in the process and the functions and jobs related to the process, which needs to be modelled and studied.

4.1.3 Hand-made Jewellery

The observed skill gap, present skill gap, and additional skill gap, along with the challenges faced by the enterprises engaged in the hand-made jewellery segment have been presented for each of the functions in Table 4.4, and region-wise and sector-wise in Table 4.5.

Table 4.4: Function-wise Skill Gaps and Challenges Faced by the Hand-made Jewellery Segment

Function	% to Total Existing Employees			% Enterprises Facing Challenges of Finding in Additional Skilled Workers and Reasons Thereof			
	Observed Skill Gap	Present Skill Gap	Additional Skill Gap	% to Total No. of Existing Enterprises	Workers Not Available in the Local Market	Workers Not Educated Enough to be Trained	Jobs Not Remunerative Enough to Attract Workers
Inventory management	5.95	9.27	2.64	8.31	1.32	73.96	22.96
Metal alloying	9.64	17.08	6.94	22.89	20.87	8.45	70.38
Designing	12.02	17.71	9.36	38.49	38.09	9.09	52.75
Goldsmith (basic)	6.37	24.65	15.51	31.08	16.09	3.07	69.64
Cleaning and polishing	11.53	17.08	10.88	18.30	45.61	7.91	43.38
Setting	17.55	33.40	9.11	27.34	44.12	11.06	44.11
Goldsmith (advanced)	14.03	28.14	13.12	12.45	42.11	42.09	12.42
Quality check and dispatching	13.69	6.93	2.71	14.47	99.21	-	0.79
Marketing	8.36	9.52	3.61	17.46	29.16	59.28	11.56
Support	2.54	2.13	0.75	0.82	-	1.49	98.51
Management	2.20	15.36	1.51	12.57	97.53	0.65	1.08
Total	9.32	19.77	9.92	25.79	29.77	10.08	55.57
Rural	16.54	33.08	9.35	35.42	30.25	7.80	57.89

Source: NCAER Gems & Jewellery Survey, 2019.

Notes: 1) “-” means nil.

2) Since the number of enterprises mentioning any other reason as a challenge for fulfilling the requirement of additional skilled workers was negligible, the columns for such reasons have not been shown in the Table.

The following findings emerge from analysis of the data contained in Table 4.4 & Table 4.5:

- i) About 9.32 per cent of the existing employees in the segment have been observed to possess basic skills, which need to be upgraded to superior skills. The proportions of skill gaps in the major job roles in this segment are as follows: more than 20 per cent for assayers and hall markers; 22.69 per cent for those engaged in metal alloying and jadau setters; 20.77 per cent for those involved in setting and gold smith or kundan work; and 30.52 per cent for those performing the advanced goldsmith function. A larger skill gap was observed in the rural sector, where the existing skills of almost 16 per cent of the employees needed to be upgraded to superior skills.
- ii) The major job roles in this segment wherein the present skills of employees need to be upgraded include more than 20 per cent for designers engaged in advanced hand sketching; 26.7 per cent for metal alloying, goldsmith component and filters; 28.42 for goldsmith framers and filers; 22.45 per cent for basic goldsmiths; 31.96 per cent for sorters; 35.81 per cent for setters; 34.05 per cent for *jadau* setter; 27.91 per cent for those engaged in goldsmith carving/embossing/repoussing; 32.67 per cent for goldsmith enamelling workers; 32.67 per cent for goldsmiths engaged in kundan work; 24.68 per cent for advanced goldsmiths advanced and promoters; and 29.38 per cent involved in the management function. The skill gaps in the rural sector, of approximately one-third of the existing employees, are much higher in the rural as compared to the urban sector.
- iii) It is envisaged that additional skill gaps will be observed over the next two years, with an estimated requirement of additional skilled manpower of 10 per cent of the existing manpower. The major job roles where more than 20 per cent of additional skilled manpower would be required will be those of supervisors, cleaners, and polishers. For these functions, the skill gap in the rural segment would be of almost the same magnitude as in the urban sector.
- iv) Almost 26 per cent of the enterprises in this segment said that they faced challenges in fulfilling the requirement of additional skilled manpower. Among them, 56 per cent of the enterprises cited the reason of the jobs not being remunerative enough to attract skilled workers, 30 per cent said that skilled workers were not available in the market, and 10 per cent claimed that the available workers were not educated enough to be properly trained.
- v) The prominent functions and job roles for which more than 50 per cent of the enterprises asserted that skilled manpower was not available included designers engaged in basic hand sketch designing, supervisors for frames and components used in basic goldsmith work, supervisors for cleaners and polishers engaged in cleaning and polishing, jadau setters and their supervisors, goldsmiths doing enamelling and kundan work, taggers and labellers, quality control inspectors engaged in quality checks and dispatching, production managers, and promoters overseeing the management function.
- vi) One of the challenges cited by enterprises in sourcing skilled manpower for almost all the functions except quality checks, dispatching, and management was that the jobs were not remunerative enough to attract workers. The functions and job roles where this shortage of workers was very acute or cited by more than 90 per cent of the enterprises included raw material procurement managers under inventory management, master makers in hand designing, goldsmiths engaged in framing and filing, sales and marketing heads, and personnel to oversee support functions like accounts, human resources, and administration.

Table 4.5: Region-wise Skill Gaps in the –Hand-made Jewellery Segment (in percentages)

Skill Gaps	North	East	West	South	Gujarat	Rajasthan	Total
Total							
Observed skill gap	0.41	13.12	14.94	6.07	7.30	0.41	9.32
Present skill gap	3.72	23.36	8.77	43.48	-	5.24	19.77
Additional skill gap	0.77	6.31	5.75	26.48	0.07	14.40	9.92
Rural Sector							
Observed skill gap	0.21	21.05	17.15	5.64	4.73	-	16.54
Present skill gap	2.16	36.91	16.36	46.27	-	5.45	33.08
Additional skill gap	0.94	8.25	8.01	18.72	-	13.26	9.35

Source: NCAER Gems & Jewellery Survey, 2019.

- vii) As regards the observed skill gap, the eastern and western regions had considerably higher gaps, in the range of 13-15 per cent, while the northern region and the State of Rajasthan had the least skill gap in terms of their existing manpower. The southern region and Gujarat had observed gaps of 6-7 per cent in terms of employees who needed to be equipped with superior skills. The skill gaps in the rural sector were higher than those in the urban sector in the eastern and western regions but were lower than in the urban sector in the other regions.
- viii) The present skill gap was very high in the southern region, where 43.48 per cent of the existing employees needed to upgrade their skills. The eastern region had a skill gap of 23.36 per cent whereas the other four regions had corresponding gaps of less than 5.24 per cent and the State of Gujarat recorded almost no gap. The rural sector had higher present skill gaps in all the regions except in the north.
- ix) The additional skill gap was higher in the southern region, where it was estimated that there would be a 26.48 per cent demand for

additional skilled manpower in the coming two years, whereas the corresponding demand would be the lowest, at less than 1 per cent, in the State of Gujarat and in the northern region. The rural sector exhibited similar skill gap patterns as the urban sector.

Based on the perceptions of enterprises about their requirements of skilled manpower for undertaking their present activities and functions they envisage for the next two years as part of their expansion plans, it can be inferred that the handmade jewellery segment has a skills gap of 29.70 per cent. However, even that seems formidable, given the technology requirements of the segment and the resultant skill requirements for handling that technology. It may also be seen from Table 4.4 that 35.42 per cent of the existing enterprises, on an average, find it challenging to fulfil the requirements of skilled manpower due to various reasons. We have tried to assess the technology upgradation requirements of the enterprises in the segment (Section 4.1.3, Table 4.4). It is found that 58.64 per cent of the enterprises in the segment have access to only basic/primitive technology, which necessitates technology upgradation in most of the processes.

A small section of the enterprises, at 14.01 per cent, said that they were willing to upgrade technology, whereas among the rest, 25.03 per cent complained of lack of skilled manpower and another 35.75 per cent faced lack of finances and lack of awareness about advanced technology.

In view of technology upgradation, the segment of handmade jewellery needs skill upgradation to the extent of 21.52 per cent in the processes that have constraints of skilled manpower. Further, when the awareness about the right technology is created, process-specific technology is identified, skill development programmes are implemented in the segment, and the financial constraints faced by the enterprises in technology upgradation are overcome, the segment would need skilled manpower of about

52.26 per cent in the form of both upgradation of the skills of existing manpower and hiring of additional skilled workers. Here we have assumed technology upgradation in a process resulting in skill upgradation of the concerned manpower involved in the process and the functions and jobs related to the process which needs to be modeled and studied.

4.1.4 Machine-made Jewellery

The observed skill gap, present skill gap, and additional skill gap, along with the challenges faced by the enterprises engaged in the machine-made jewellery segment have been presented for each of the functions in Table 4.6 and region- and sector-wise, in Table 4.7.

Table 4.6: Function-Wise Skill Gaps and Challenges Faced by the Machine-made Jewellery Segment

Function	% to Total Existing Employees			% Enterprises Facing Challenges of Finding Additional Skilled Workers and Reasons Thereof			
	Observed Skill Gap	Present Skill Gap	Additional Skill Gap	% to Total Number of Existing Enterprises	Workers Not Available in the Local Market	Workers Not Educated Enough to be Trained	Jobs Not Remunerative Enough To Attract Workers
Designing and product development	4.41	2.52	3.57	41.63	11.63	37.21	51.16
Master- making	3.33	4.44	3.33	72.99	5.00	70.00	25.00
Procuring and assorting	2.88	2.16	2.52	60.26	27.78	5.56	66.67
Wax model making	5.10	2.84	1.89	3.92	0.00	18.42	81.58
Wax setting	2.86	3.21	2.50	56.62	3.85	19.23	76.92
Casting	2.92	1.04	0.84	6.26	5.56	83.33	11.11
Filing and assembling	6.37	2.67	2.07	24.87	16.00	32.00	52.00
Polishing	2.52	2.82	2.23	-	0.00	16.67	83.33
Metal setting	2.77	2.35	2.63	13.42	8.00	12.00	80.00
Plating	4.26	2.13	1.60	7.95	7.14	42.86	50.00
Refining	2.08	0.00	0.00	7.95	0.00	0.00	100.00

(Contd.)

Table 4.6: Function-Wise Skill Gaps and Challenges Faced by the Machine-made Jewellery Segment (Contd.)

Function	% to Total Existing Employees			% Enterprises Facing Challenges of Finding Additional Skilled Workers and Reasons Thereof			
	Observed Skill Gap	Present Skill Gap	Additional Skill Gap	% to Total Number of Existing Enterprises	Workers Not Available in the Local Market	Workers Not Educated Enough to be Trained	Jobs Not Remunerative Enough To Attract Workers
Quality control	3.35	2.79	1.68	8.62	14.29	7.14	78.57
Marketing	2.24	2.80	1.40	41.58	9.76	31.71	58.54
Support	1.72	2.18	0.94	19.66	0.00	7.69	92.31
Management	2.73	3.07	1.02	13.88	25.00	8.33	66.67
Others—small machine functions	6.09	4.49	4.65	1.57	13.33	6.67	66.67
Total	3.73	2.60	2.11	9.57	8.24	25.80	65.43
Rural	10.37	5.64	5.94	-	-	-	-

Source: NCAER Gems & Jewellery Survey, 2019.

Notes: 1) As a percentage to the number of enterprises finding it challenging to fulfil the requirement of additional skilled workers. “-” nil or not applicable.

2) The number of enterprises citing ‘Other’ reasons for the challenge of meeting the requirement of additional skilled workers was nil and hence, the columns detailing these reasons have not been shown in the Table.

Table 4.7: Region-wise Skill Gaps in the Machine-made Jewellery Segment (in percentages)

Skill Gaps	North	East	West	South	Gujarat	Rajasthan	Total
Total							
Observed skill gap	0.31	5.41	14.48	6.68	-	3.90	3.73
Present skill gap	-	-	13.93	13.23	-	-	2.60
Additional skill gap	-	-	7.73	13.07	-	-	2.11
Rural Sector							
Observed skill gap	-	9.80	14.51	-	-	-	10.37
Present skill gap	-	-	15.44	72.88	-	-	5.64
Additional skill gap	-	-	3.78	45.75	-	-	5.94

Source: NCAER Gems & Jewellery Survey, 2019.

Note: “-” denotes nil or not applicable.

The following findings emerge from analysis of the data contained in Table 4.6:

- i) In the machine-made jewellery segment, almost all the employees, irrespective of their functions and job roles, have superior skills. Observed skill gap (employees with basic skills who need to upgrade their skills) is reported as 3.73 per cent. The present and additional skill gaps are found to be at 2.6 per cent and 2.11 per cent respectively.
- ii) The rural sector exhibits a higher observed skill gap, as more than 11 per cent of its employees need skill upgradation. At all India level, the major job roles with observed skill gaps include 6.37 per cent of workers operating filling & assembling and 6.09 per cent of workers engaged in other – small machine functions.
- iii) The major functions and job roles with skill gaps of more than 4 per cent include Designing and product development, Wax model making, filling and assembling, plating, and ‘other’ small machine functions.
- iv) The major job roles where more than 3 per cent of additional skilled manpower is required in the machine-made jewellery segment include Designing and product development, master making, and ‘other’–small machine functions.
- v) Only 10 per cent of the enterprises said that they were facing challenges in meeting their requirement for additional skilled manpower, and among these, 65.4 per cent cited jobs not being remunerative enough as a reason for not attracting enough skilled workers, 25.8 per cent saying that workers were not educated enough to be trained, and 8.24 per cent claiming that workers were not available in the market.
- vi) The western region has observed skill gaps of 14.5 per cent followed by southern region at 6.7 per cent and eastern region at 5.4 per cent whereas the northern and Gujarat regions have almost no skill gap.
- vii) In the rural sector, the western and eastern

regions have skill gaps of almost 15 per cent and 10 per cent, respectively.

- viii) The present and additional skill gaps in the southern and western regions are found to be over 13 per cent.

Based on the perceptions of enterprises about their requirements of skilled manpower for their present activities and functions they envisage for the next two years as part of their expansion plans, it can be foreseen that the machine-made jewellery segment has a skills gap of just 2.11 per cent, which increases to 5.94 per cent for the rural sector. It may also be seen from Table 4.6 that 9.57 per cent of the existing enterprises, on an average, find it a challenge to fulfil the requirements of skilled manpower due to various reasons. We have assessed the technology upgradation requirements of the enterprises in this segment (refer to Section 4.2.4 and Table 4.6 in the section). It has been found that 24.4 per cent of the enterprises in the segment have access to only basic technology, thus requiring technology upgradation. A large part of the enterprises, at 31.4 per cent, are willing to upgrade technology. Further, 12.5 per cent of the enterprises in this segment lack awareness about the right technology and about 9 per cent lack skilled man power.

The machine-made jewellery segment thus needs both technology and skill upgradation. And once process-specific technology has been identified, skill development programmes have been implemented in the segment and financial constraints faced by the enterprises for technology upgradation have been overcome, the segment will need 27.4 per cent of additional skilled manpower to handle the technology upgradation.

4.1.5 Retailer Segment

The gaps in observed skills, present skills, and additional skills gap, along with the challenges faced by the enterprises engaged in the retailer segment have been presented for each of the functions in Table 4.8, and region-wise and sector-wise in Table 4.9.

Table 4.8: Function-wise Skill Gaps and Challenges Faced by the –Retailer Segment

Function	% to Total Existing Employees			% of Enterprises Facing Challenges of Finding Additional Skilled Workers and Reasons Thereof			
	Observed Skill Gap	Present Skill Gap	Additional Skill Gap	% to Total No. of Existing Enterprises	Workers Not Available in the Local Market	Workers Not Educated Enough to be Trained	Jobs Not Remunerative Enough to Attract Workers
Inventory management	10.72	13.07	5.93	10.50	15.68	28.85	52.16
Sales	6.87	16.40	8.87	7.90	38.48	37.94	22.54
Production repairing/re-making	8.30	11.40	9.32	24.81	1.67	5.86	92.47
Store management	6.69	6.32	4.60	8.07	22.09	24.92	52.93
Marketing	4.73	2.09	1.23	1.56	21.64	10.11	64.09
Management	6.83	14.94	2.75	4.11	19.92	56.32	23.14
Total	7.09	12.98	6.57	8.13	24.47	29.10	45.31
Rural	7.71	10.31	3.96	8.90	13.75	24.19	61.93

Source: NCAER Gems & Jewellery Survey, 2019.

Notes: 1) As a percentage to the number of enterprises finding it challenging to fulfil the requirement of additional skilled workers. “-” nil or not applicable.

2) The number of enterprises citing ‘Other’ reasons for the challenge of meeting the requirement of additional skilled workers was nil and hence, the columns detailing these reasons have not been shown in the Table.

Table 4.9: Region-wise Skill Gaps in the Retail Segment (in percentages)

Skill Gaps	North	East	West	South	Gujarat	Rajasthan	Total
Total							
Observed skill gap	2.80	7.95	13.79	6.46	3.78	0.73	7.09
Present skill gap	11.27	11.81	18.16	15.97	1.46	2.11	12.98
Additional skill gap	0.97	3.71	11.60	9.47	1.08	6.01	6.57
Rural Sector							
Observed skill gap	3.59	8.34	23.03	4.00	12.21	0.64	7.71
Present skill gap	6.67	13.92	21.35	5.98	0.40	3.50	10.31
Additional skill gap	0.16	4.50	13.92	2.61	-	2.19	3.96

Source: NCAER Gems & Jewellery Survey, 2019.

The following findings emerge from analysis of the data contained in Table 4.8 & Table 4.9:

- i) In the retailer segment, almost 7 per cent of the existing employees have been observed to possess basic skills which need to be upgraded to superior skills. In this context, the major job roles with skill gaps are as follows: more than 10 per cent for inventory managers; 16.29 per cent for floor managers; 14.26 per cent for sales and support personnel; and 14.59 per cent for marketing personnel. A larger skills gap is observed in the rural sector, wherein almost 8 per cent of the employees need skill upgradation.
- ii) The present skill gap as measured in terms of the need for enterprises to upgrade the skills of their existing employees is almost 13 per cent. The major job roles where there is a skills for more than 10 per cent of the employees are as follows: 11.53 per cent for labelers; 16.82 per cent for inventory managers; 10.14 per cent for cashiers; 22.22 per cent for basic jewellery RSAs; 16.48 per cent for advanced jewellery sales personnel; 12.49 per cent for goldsmiths engaged in repair work; and 32.43 per cent for repairing/re-making personnel and promoters. The present skills gap for this segment in the rural sector is slightly less than for the others, at 10 per cent.
- iii) The additional skills gap for the next two years, measured through the additional skilled manpower required for the segment is just 6.51 per cent. The major job role in this segment for which more than 10 per cent of additional skilled manpower is required is that of advanced sales personnel for jewellery, at 12.97 per cent. The additional skill gap in the rural sector is just 4 per cent.
- iv) Only 9 per cent of the enterprises perceive facing any challenges in fulfilling the requirement for additional skilled manpower, and among them, the reasons cited by the challenges are as follows: jobs not being remunerative enough to attract skilled workers, cited by 62 per cent of the enterprises; skilled workers not available in the market, cited by 24 per cent; and workers not being educated enough to be trained, cited by 14 per cent of the enterprises.
- v) The prominent job roles for which more than 40 per cent of the enterprises find that the workers available in the market are not educated enough to be trained are cashiers, advances sales personnel for jewellery, and floor managers. Similarly, the prominent job roles for which more than 40 per cent of the enterprises find that skilled manpower is not available in the local market are inventory managers, basic RSAs for sale of jewellery; and packagers.
- vi) The issue of remuneration is a challenge in meeting the requirement of skilled manpower in all the functions except quality check and management. The functions and job roles where it is very acute (or experienced by more than 90 per cent of the enterprises) are goldsmiths engaged in jewellery repair work, and support personnel under the marketing function. It has been observed that the rural segment faces has more such challenges as compared to other personnel.
- vii) The western region has the largest skills gap of around 14 per cent amongst all the regions, followed by the eastern and southern regions, with each of them having gaps of more than 6 per cent. Rajasthan has the least skill gap. In the rural sector, the western region again has the largest skills gap of 23 per cent amongst all the regions. The rural sector has larger gaps in all the regions except in Rajasthan.
- viii) The present skills gap is the largest in the western region, at 18.16 per cent, followed by the southern, eastern, and northern regions, in that order, with each of them having gaps of more than 10 per cent. Rajasthan and Gujarat have gaps in the range of 1-2 per cent only. In the rural sector, the eastern and western regions and Rajasthan have higher skills gaps in comparison to the urban sector while the northern and southern regions and Gujarat have lower skills gaps.

ix) In accordance with the observed and present skill gaps, the western region also has the largest requirement of additional skilled manpower as a proportion to its existing employees, with an additional skills gap of more than 11 per cent, followed by the southern region and Rajasthan. Gujarat and the northern region have skills gaps of only 1 per cent. The rural sector exhibits a similar region-wise pattern.

Based on the perceptions of enterprises about their requirements of skilled manpower for undertaking their present activities and functions they envisage for the next two years as part of their expansion plans, it can be inferred that the retailer segment has an overall skills gap of 19.55 per cent and a gap of 14.27 per cent in the rural sector. The skills gap is the highest in the western

region, at 29.76 per cent, and the minimum in Gujarat, at 2.54 per cent.

4.1.6 Overall Scenario of Skills Gaps in the Gems and Jewellery Sector

This section presents an analysis of the overall skills gap in the G&J sector, taking into consideration all the segments in the sector. Table 4.10 presents the observed, present, and additional skills gaps for the sector. The total skills gap in the next two years, as a sum of the present and additional skills gaps, as well as the need for upgradation of the skills of existing employees or through hiring of additional skilled manpower, has also been presented in the table. The segment-wise requirement of total skilled manpower in the next two years in the form of the total skills gaps in the sector has been presented in Table 4.10.

Table 4.10: Region-wise Skill Gaps in the G&J Sector (in percentages)

Skill Gaps	North	East	West	South	Gujarat	Rajasthan	Total
Total							
Observed skill gap	1.39	11.42	14.88	6.33	1.19	1.55	6.93
Present skill gap	5.97	19.54	13.67	25.63	0.27	3.05	13.46
Additional skill gap	0.66	5.45	8.73	15.54	0.20	7.71	7.02
Total skill gap	6.63	24.98	22.4	41.17	0.47	10.75	20.48
Rural Sector							
Observed skill gap	1.68	16.55	20.46	4.52	8.21	0.23	12.34
Present skill gap	4.12	28.72	19.18	18.73	0.23	4.76	22.27
Additional skill gap	0.60	6.90	11.32	7.77	-	9.30	6.77
Total skill gap	4.72	35.62	30.50	26.50	0.23	14.06	29.05

Source: NCAER Gems & Jewellery Survey, 2019.

Note: “-” denotes nil.

The following findings emerge from analysis of the data presented in Tables 4.10 and 4.11:

i) In the Sector, based on upgradation of skill required to move the employees with basic

skill to superior skill, almost 7 per cent skill gap has been observed which increases to 12 per cent in the rural sector. As far as the need of enterprises to upgrade the skill of employees

- is concerned, 13 per cent overall gap has been found whereas the same for the rural sector was found to be more than 22 per cent sector. Further, as per the requirement of enterprises for additional skilled employees in the next two years in the sector, an additional skill gap of almost 7 per cent has been noticed. It may be concluded that the sector needs 20 per cent more skilled employees either through skill upgradation of the existing employees or through the induction of additional skilled employees in the sector. This requirement of skilled employees in the rural sector is almost 29 per cent of the existing employees.
- ii) The present skills gap in the sector based on the need of enterprises to upgrade the skills of the existing employees is the highest in the southern region among all the regions followed by the eastern and western regions. The southern region needs skill upgradation of more than one-fourth of its employees. In the rural sector, there is need for overall skill upgradation of more than 22 per cent of the existing employees. The maximum need for skill improvement is in the eastern region at 28.72 per cent, followed by the western and southern regions, at 18-19 per cent each. Gujarat region needs negligibly small skill upgradation.
- iii) A region-wise analysis of the total skills gaps reveals that the southern region needs more than 41 per cent of skilled employees in the next two years, which is the highest among all the regions, followed by the eastern and western regions, which have skills requirements of 25 per cent and 22.4 per cent, respectively. Gujarat, on the other hand, does not need any skill improvement or induction of skilled employees.
- iv) In the rural sector, the eastern region has the highest total skills gap of 35.62 per cent, followed by the western and southern regions, which have skills gaps of 30.50 per cent and 26.50 per cent, respectively. Gujarat has the lowest, almost negligible, skills gap while the north has a skills gap of 4.72 per cent.
- v) The total skills gap in the G&J sector in terms of the requirement of skilled employees in the next two years is the highest in the hand-made jewellery segment, followed by the retailer segment. The 'other gems' segment has a skills gap of about 14 per cent whereas the machine-made segment has a small skills gap of 4.71 per cent. As usual, the diamond segment does not have any skill gap presumably because this segment has not considered technology upgradation and the resultant skills requirements for the future.

Table 4.11: Segment-wise Total Skill Gaps in the G&J Sector (in percentages)

Segment	North	East	West	South	Gujarat	Rajasthan	Total
Diamonds	-	-	-	-	-	-	-
Other gems and semi-precious stones	-	-	-	-	-	14.13	14.13
Hand-made jewellery	4.49	29.67	14.52	69.96	0.07	19.64	29.69
Machine-made jewellery	-	-	21.66	26.30	-	-	4.71
Retail	12.24	15.52	29.76	25.44	2.54	8.12	19.55

Source: NCAER Gems & Jewellery Survey, 2019.

Notes: "-" denote nil/not available; the diamonds segment is confined to Gujarat which has no skills gaps. Similarly, the 'other gems' segment is confined to the Rajasthan region.

vi) The region-wise skills gap in specific segments show that in the hand-made jewellery segment, the southern region has the highest skill gap while in the retailers segment, the western region has the highest skill gap. The machine-made jewellery segment, which is otherwise rich in skilled employees, has a skills gap of more than 26 per cent in the southern region. The northern, and eastern regions, and Gujarat and Rajasthan do not have any skills gap in the machine-made jewellery segment.

The possibility of enhanced skill requirements for the sector as result of technology upgradation in the sector, based on the perceptions of the enterprises, have been discussed in the specific sections related to the concerned segments.

4.2 Analysis of Gaps between Existing Technology and Demand for Advanced Technology in the G&J Sector

The enterprises surveyed during the primary survey themselves evaluated the technology used by them in the processes they are involved in and outlined the requirement for upgradation of the existing technology, their capacities, and willingness to upgrade/purchase the new technology. The NCAER study focused on the following factors that have been used to determine and quantify the technology gaps in the sector:

i) Existing technology used by the enterprises categorised as basic/primitive, average/

middle and higher/advanced;

ii) Whether the enterprises want to upgrade the existing technology from basic to middle/advanced and middle to advanced or to any other specific technology;

iii) Identification of the level of investment, and capacity or willingness to upgrade to/purchase new technology in case of enterprises that want to upgrade the existing technology; and

iv) Identification of major hindrances in upgradation of technology such as lack of finance, lack of skilled manpower to handle the technology, and lack of awareness about the availability of technology, in case of enterprises that do not want to upgrade technology.

Points i) and ii) above have been used for determining/estimating the gap between the existing technology and the superior one based on their own categorization or as desired by the enterprises. Point iii) denotes the capability of the enterprises to take care of the technology from their own funds, and point iv) determines the technology gap and the hindrances constraining enterprises from upgrading their technology, which need to be tackled by policy planners. Based on these, an attempt has been made to quantify the technology gaps in the G&J sector, segment-wise as per the measurement criteria specified in Table 4.12. The analysis based on point iii) above was not possible as reliable estimates of investment based on a primary survey could not be obtained.

Table 4.12: Measuring Technology Gaps in the G&J Sector

Technology Gaps	Measurement Criteria
Observed technology gap Tier-1	Basic technology to average technology.
Observed technology gap Tier-2	Basic and average technology to higher technology.
Present technology gap	Willing to upgrade the existing technology.
Additional technology gap	Willing to upgrade technology to cover the hindrances of lack of finance, lack of skilled manpower, and lack of awareness about the availability of technology.

Source: NCAER Gems and Jewellery Study, 2019.

The tables on the process-wise technology gaps and major hindrances depicted in the segment-specific sections, present the percentages of the enterprises facing hindrances to upgradation of technology, out of those not willing to upgrade technology (100-present gap). The technology gap caused by these hindrances can be obtained by multiplying the 100-present gap with the percentages related to the specific hindrances. The technology gap caused by the combination of three hindrances, viz., lack of finance, lack of skilled manpower, and lack of awareness about the availability of technology, has been termed as an 'additional technology gap'.

The major hindrances faced by the enterprises in upgrading technology are also pointers for the government and policy planners to take

specific measures for tackling these hindrances and facilitating upgradation of technology by enterprises in the G&J sector.

Following is a segment-wise analysis of the technology gaps in the G&J sector.

4.2.1 Diamonds

The analysis in this segment is based on the Gujarat region only as the other regions have a negligible number of enterprises involved in manufacturing of diamonds Table 4.13 presents the observed technology gap as evident from the existing technology being used, the present technology gap, additional technology gap as measured through the constraints in upgrading of technology and the major hindrances faced by the segment in upgrading technology.

Table 4.13: Process-wise Technology Gaps and Major Hindrances to Upgradation of Technology in the – Diamonds Segment

Process	Technology Gaps (%)				Major Hindrances for those who do in Upgrading Technology (%)			
	Observed Gap		Present Gap	Additional Gap	Lack of Finance	Lack of Skilled Man-power	No awareness about technology	No need to upgrade
	Tier-1	Tier-2						
Rough assorting	99.77	100.00	-	99.77	94.83	-	4.94	0.22
Rough marking	98.74	100.00	-	98.74	98.74	-	-	1.26
Window opening	93.44	100.00	-	93.44	93.44	-	-	6.56
Plotting inclusions	91.78	100.00	-	91.78	91.78	-	-	8.22
Diamond planning	99.75	100.00	-	99.77	94.72	-	5.05	0.24
Spectrum analysis	91.78	100.00	-	91.78	91.78	-	-	8.22
Cleaving	100.00	100.00	-	100.00	100.00	-	-	-
Blade sawing	100.00	100.00	-	100.00	100.00	-	-	-
Laser sawing	100.00	100.00	-	100.00	100.00	-	-	-
Bruiting and coning	91.78	100.00	-	91.78	91.78	-	-	8.22
Auto blocking	100.00	100.00	-	100.00	100.00	-	-	-
Manual blocking	100.00	100.00	-	100.00	100.00	-	-	-
Polishing and faceting	100.00	100.00	-	99.99	93.60	0.18	6.21	-

(Contd.)

Table 4.13: Process-wise Technology Gaps and Major Hindrances to Upgradation of Technology in the – Diamonds Segment (Contd.)

Process	Technology Gaps (%)				Major Hindrances for those who do in Upgrading Technology (%)			
	Observed Gap		Present Gap	Additional Gap	Lack of Finance	Lack of Skilled Man-power	No awareness about technology	No need to upgrade
	Tier-1	Tier-2						
Symmetry analysis	100.00	100.00	-	100.00	100.00	-	-	-
Boiling	100.00	100.00	-	100.00	100.00	-	-	-
Sawing supervision	100.00	100.00	-	100.00	100.00	-	-	-
Bruiting and coning supervision	100.00	100.00	-	100.00	100.00	-	-	-
Polishing and faceting supervision	99.41	100.00	-	100.00	95.76	1.64	2.60	-
Assortment supervision	100.00	100.00	-	100.00	84.59	-	15.41	-
Boiling supervision	100.00	100.00	-	100.00	100.00	-	-	-
Diamond processing supervision	100.00	100.00	-	100.00	100.00	-	-	-
Stocking	99.79	100.00	-	100.00	94.89	-	5.11	-
Total	99.56	100.00	-	99.72	95.03	0.35	4.34	0.28
Rural	95.17	100.00	-	99.78	94.83	-	4.94	0.22

Source: NCAER Gems & Jewellery Survey, 2019.

Note: “-” denotes nil or not applicable. The term ‘Others’ as a major hindrance includes the rest of the enterprises not covered under other major hindrances shown in the last four columns.

The following findings emerge from analysis of the data in Table 4.13:

- i) There is a technology gap in the diamonds segment to the extent that all the enterprises in the segment need upgradation from basic to advanced technology in all their processes.
- ii) Some of the processes where average technology is used by more than 5 per cent of the enterprises include window opening, plotting inclusions, spectrum analysis, and bruiting and coning.
- iii) The major hindrance to upgrading technology is the lack of finance for more than 95 per cent of the enterprises while the remaining 5 per cent of the enterprises are not aware of the technology to be upgraded to.
- iv) If financial assistance is provided for upgradation of technology, and the availability of skilled manpower for handling the advanced technology is ensured, almost every enterprise would be willing to upgrade the technology, which implies that there is an additional technology gap of 99.72 per cent.
- v) The rural sector follows the same pattern as the rest of the G&J sector, with the observed technology gap in it covering almost 5 per cent of the total enterprises.

4.2.2 Other Gems and Semi-precious Stones

This segment has been analysed based on trends in only the Rajasthan region as the other regions have a negligible number of enterprises

involved in production of gems and other precious stone segments. Table 4.14 presents the observed technology gap based on the existing technology being used, the present technology gap based on

the need of enterprises in the segment to upgrade technology, and the additional technology gap measured in terms of the constraints and hindrances to upgradation of technology.

Table 4.14: Process-wise Technology Gaps and Major Hindrances in the Other Gems and semi-Precious stones segment

Process	Technology Gaps (%)				Major Hindrances in Upgrading Technology (%)			
	Observed Gap		Present Gap	Additional Gap	Lack of Finance	Lack of Skilled Man-power	Lack of Awareness about Technology	No Need to Upgrade
	Tier-1	Tier-2						
Assorting	100.00	100.00	-	1.8	-	18.6	79.6	-
Slicing	100.00	100.00	-	-	-	12.4	87.6	-
Grading	100.00	100.00	-	-	7.4	18.5	74.1	-
Cutting	100.00	100.00	-	-	3	4	93.0	-
Grinding	99.13	100.00	-	-	12	3.1	85.7	-
Pre-shaping	99.13	100.00	-	-	25.1	5.4	69.4	-
Calibrating	99.13	100.00	-	-	24.5	7.5	68.0	-
Faceting and Polishing	100.00	100.00	-	-	21.6	6.3	72.1	-
Shading/ assorting	100.00	100.00	-	-	21.7	6.7	72.6	-
Hand carving	99.13	100.00	-	-	-	5.8	94.2	-
Drilling	100.00	100.00	-	-	-	9	91.0	-
Threading	100.00	100.00	-	-	3.4	11.4	85.2	-
Was casting	100.00	100.00	-	-	2.2	5.4	92.4	-
Supervision	100.00	100.00	-	-	-	7.6	92.4	-
Packaging	100.00	100.00	-	-	-	11.1	88.9	-
Total	99.77	100.00	-	0.1	7.9	8.7	83.4	-

Source: NCAER Gems & Jewellery Survey, 2019.

Note: “-” denotes nil or not applicable. ‘Others’ as a major hindrance comprises of the rest of the enterprises not covered under other major hindrances shown in the last four columns of the table.

The following findings emerge from analysis of the data in Table 4.14:

- i) The enterprises in this segment use primitive technology in almost all their processes, which leads to a significant technology gap in the segment.
- ii) Most enterprises in the segment are not willing to upgrade technology and invest in the amount needed for upgradation.
- iii) A major hindrance to upgradation of technology is the perception among enterprises that they do not need advanced

technology. The other hindrances include lack of skilled manpower (7.9 per cent), and lack of awareness about the need for advanced technology (8.7 per cent).

4.2.3 Hand-made Jewellery

The hand-made jewellery segment is found in

all the regions. Table 4.15 presents the observed, present and additional technology gaps in this segment, along with the major hindrances faced by the segment in upgrading the technology. The region-wise technology gap has been presented in Table 4.16. On the analysis of data, the followings emerge.

Table 4.15: Process-wise Technology Gaps and Major Hindrances to Upgradation of Technology in the – Hand-made Jewellery Segment

Process	Technology Gaps (%)				Major Hindrances in Upgrading Technology (%)			
	Observed Gap		Present Gap	Additional Gap	Lack of Finance	Lack of Skilled Man-power	Lack of Awareness about Technology	No Need to Upgrade
	Tier-1	Tier-2						
Designing	43.02	95.87	-	73.62	29.90	39.43	4.29	25.69
Melting	56.82	98.37	22.71	35.52	26.26	13.76	5.94	52.86
Making of bar into strips/wire/sheets, etc.	56.84	96.34	18.94	43.85	22.07	23.28	8.74	44.41
Drawing of design on sheet and cutting into parts	53.90	95.72	29.95	49.55	26.25	30.19	14.30	28.64
Assembling of different parts and soldering	75.91	98.08	22.79	45.90	24.27	22.33	12.85	39.26
Pre-polishing with a fine layer of silver	66.48	97.34	8.98	61.27	28.60	24.66	14.05	32.02
Stone cutting	66.88	98.79	18.81	58.12	24.67	25.70	13.36	35.94
Quality check	66.25	91.47	5.96	56.38	17.16	23.43	18.76	40.47
Polishing, cleaning and shining	69.51	97.25	11.41	52.11	22.37	21.77	14.68	41.02
Packaging	48.58	98.40	8.47	48.33	21.46	18.68	12.66	46.89
Total	58.64	96.94	14.01	52.26	24.95	25.03	10.80	38.48
Rural	57.51	98.51	20.33	40.26	35.59	9.84	5.10	47.63

Source: NCAER Gems & Jewellery Survey, 2019.

Note: “-” denotes nil or not applicable. ‘Others’ as a major hindrance comprise the rest of the enterprises not covered under other major hindrances shown in the last four columns of the table.

Table 4.16: Region-wise Technology Gaps in the Hand-made Jewellery Segment (in percentages)

Technology Gaps	North	East	West	South	Gujarat	Rajasthan	Total
Total							
Observed technology gap Tier-1	83.97	38.19	39.02	82.42	65.56	96.54	58.64
Observed technology gap Tier-2	91.22	96.85	96.36	99.63	100.00	98.75	96.94
Present technology gap	7.18	28.27	1.17	25.56	-	0.30	14.01
Additional technology gap	64.59	48.54	91.19	57.74	99.48	16.56	52.26
Total technology gap	71.77	76.81	92.36	83.30	99.48	16.86	66.27
Rural Sector							
Observed technology gap Tier-1	98.15	40.06	61.22	93.59	89.99	98.94	57.51
Observed technology gap Tier-2	100.00	97.85	99.17	99.59	100.00	100.00	98.51
Present technology gap	21.56	27.14	4.88	27.61	-	0.00	20.33
Additional technology gap	26.91	49.24	46.01	48.03	100.00	25.52	40.26
Total technology gap	48.47	76.39	50.88	75.65	100.00	25.52	60.59

Source: NCAER Gems and Jewellery Study, 2019.

The following findings emerge from analysis of the data in Table 4.15:

- i) There is a considerable technology gap in the hand-made jewellery segment, as more than 58 per cent of the enterprises need technology upgradation to move to an average level, and 97 per cent need it to move to a higher level of technology. The technology gap in rural areas is almost 99 per cent.
- ii) The present technology gap in the entire segment is 14 per cent, whereas the technology gap in the rural sector of the segment is more than 20 per cent.
- iii) The units which do not want to upgrade technology cite lack of finance and lack of skilled manpower as the major hindrances to upgradation. More than 38 per cent of

the units perceive no need for technology upgradation while 11 per cent are not aware of the technology to be used. Two processes, viz., melting and drawing of designs on sheets and cutting into parts, have been identified for upgradation of technology by almost 30 per cent of the units followed by the process of assembling of different parts and soldering. In the rural sector of the segment, more than 20 per cent of the enterprises are willing to upgrade technology but 47.63 per cent of the enterprises feel that there is no need for upgradation.

- iv) The additional technology gap is more than 52 per cent, with more than 50 per cent of the enterprises citing processes such as designing, pre polishing with a fine layer of silver, stone cutting, quality check and

polishing, cleaning and shining, the need technology upgradation. In the rural sector of the segment, the additional technology gap is around 40 per cent of the total number of enterprises.

- v) As regards the region-wise technology gap, Rajasthan has the largest technology gap in Tier-1 in terms of moving from basic to average technology while the eastern and western regions have observed technology gaps in Tier-1 of 38-39 per cent of the enterprises. As regards the technology gap of Tier-2, or moving from the basic to the higher level of technology, all the regions have a technology gap of more than 91 per cent, with Gujarat at 100 per cent on one side, and the north at 91 per cent on the other. In the rural segment, all the regions have a Tier-2 technology gap for more than 98 per cent of the enterprises.
- vi) As regards the willingness to bridge the technology gap, it has been observed that Gujarat and Rajasthan region do not desire any upgradation whereas 28.27 per cent of the enterprises in the eastern region and 26 per cent in the southern region desire to upgrade

the technology. The key processes wherein a majority of the units across the regions perceive the need for upgradation is that of drawing of designs on sheet and cutting into parts.

- vii) The region-wise analysis of the additional technology gap reveals that Gujarat, followed by the western region, leads the technology gap as more than 91 per cent of the enterprises perceive the need to address the additional technology gap. The Rajasthan region is at bottom with a technology gap of about 16.6 per cent.

4.2.4 Machine-made Jewellery

The enterprises in this segment in comparison to other segments are more technology-savvy and machine-based as compared to the other segments, Table 4.17 presents the observed technology gap based on the existing technology being used, the present technology gap based on the need of the segment to upgrade technology, the and the additional technology gap as measured in terms of the constraints in upgradation of technology by enterprises in this segment.

Table 4.17: Process-wise Technology Gaps and Major Hindrances to Upgradation of Technology in the – Machine-made Jewellery Segment

Process	Technology Gaps (%)				Major Hindrances in Upgrading Technology (%)			
	Observed Gap		Present Gap	Additional Gap	Lack of Finance	Lack of Skilled Man-power	Lack of Awareness about Technology	No Need to Upgrade
	Tier-1	Tier-2						
Designing hand	52.3	79.6	35.1	31.2	35.8	9.4	7.5	47.2
Designing CAD	40.0	64.3	31.4	45.6	40.4	7.7	11.5	40.4
CAM	21.1	82.1	50.0	17.4	13.3	0.0	6.7	80.0
Wax	26.9	65.0	28.0	22.5	14.3	17.9	7.1	60.7
Casting	34.7	77.8	22.3	41.9	23.1	26.9	19.2	30.8
Filling	33.3	76.6	35.0	23.4	26.7	10.0	6.7	56.7
Setting wax	42.3	65.0	27.2	13.2	8.7	13.0	4.3	73.9
Enamelling	48.7	74.2	50.0	16.0	25.0	0.0	0.0	75.0

(Contd.)

Table 4.17: Process-wise Technology Gaps and Major Hindrances to Upgradation of Technology in the – Machine-made Jewellery Segment (Contd.)

Process	Technology Gaps (%)				Major Hindrances in Upgrading Technology (%)			
	Observed Gap		Present Gap	Additional Gap	Lack of Finance	Lack of Skilled Man-power	Lack of Awareness about Technology	No Need to Upgrade
	Tier-1	Tier-2						
Meenakari/ kundan	18.2	82.5	26.8	41.0	35.7	7.1	7.1	50.0
Filigree	38.0	66.7	38.9	0.0	0.0	0.0	14.3	85.7
Polishing	54.0	78.8	26.6	27.8	24.6	9.2	16.9	49.2
Plating	37.9	76.3	48.7	20.5	28.6	9.5	4.8	57.1
Puwai	12.2	50.0	42.1	22.1	12.5	0.0	0.0	87.5
Engraving	27.8	78.1	42.7	21.2	7.7	7.7	23.1	61.5
Alloying	19.4	77.5	30.8	15.4	22.2	0.0	11.1	66.7
Wire drawing	26.3	67.9	38.1	7.4	14.3	0.0	0.0	85.7
Moulding	21.1	77.6	38.8	16.3	16.7	10.0	13.3	60.0
Soldering	44.8	70.8	27.0	39.0	26.3	10.5	26.3	36.8
Assembling	20.3	70.0	35.4	12.5	16.1	3.2	19.4	61.3
Refinery	30.2	66.7	36.0	18.0	21.1	2.6	10.5	65.8
Laser welding	17.4	57.5	57.9	2.6	0.0	6.7	6.7	86.7
Electroplating	23.1	59.1	59.1	13.6	20.0	10.0	20.0	50.0
Robert plating	22.2	68.3	55.6	0.0	0.0	0.0	0.0	100.0
Polishing cleaning shining	20.4	77.4	30.4	36.0	27.6	6.9	17.2	48.3
Dust collection	33.3	65.4	35.2	12.9	18.8	6.3	6.3	68.8
Quality control	16.0	54.4	26.1	19.2	3.8	7.7	19.2	69.2
Packaging	48.4	72.1	28.4	38.3	28.6	17.9	7.1	46.4
Others – small machine functions	41.5	68.2	51.0	1.7	4.3	0.0	13.0	82.6
Total	24.4	72.0	31.4	27.4	22.4	8.9	12.5	56.2
Rural	9.09	74.92	22.57	8.23	30.8	0.0	2.7	73.0

Source: NCAER Gems & Jewellery Survey, 2019.

Note: “-” denotes nil or not applicable. “Others” as a major hindrance comprises the rest of the enterprises not covered under other major hindrances shown in the last four columns of the table.

The following findings emerge from analysis of the data in Table 4.17:

- i) The technology gap in the machine-made jewellery segment is comparatively less than in other segments. The technology gap in Tier-1, that is, the gap pertaining to average technology is 24.4per cent in the segment while the technology gap in terms of moving from average to a higher level of technology is 72 per cent.
- ii) Despite the technology gap, only 31.4per cent of the enterprises want to upgrade technology. Among the enterprises that do not want to upgrade technology, more than 22.4per cent cite lack of finance as a major hindrance while more than 56.2per cent perceive no need for technology upgradation and 12.5per cent are not aware of the advanced technology which they should upgrade to.
- iii) As far as the process-wise technology gap is concerned, more than 50per cent of the enterprises have identified the need for upgradation of technology in electroplating and plating, followed by CAM, and enamelling. Among the reasons for not upgrading the technology in the enterprise, Lack of skilled manpower has been mostly observed in the units engaged in casting. Some of the processes where the units feel no need for upgradation are casting, meenakari/kundan and polishing.
- iv) The additional technology gap measured through the constraints faced by enterprises in the machine-made jewellery segment is more than 27.4 per cent. However, in the rural sector, the additional technology gap is just around 8per cent of the total number of enterprises.

Table 4.18: Region-wise Technology Gaps in the Machine-made Jewellery Segment (in percentages)

Technology Gaps	North	East	West	South	Gujarat	Rajasthan	Total
Total							
Observed technology gap Tier-1	1.70	0.97	36.00	93.21	-	30.07	24.4
Observed technology gap Tier-2	16.53	78.01	95.50	98.56	-	85.55	70.02
Present technology gap	14.25	23.77	18.70	47.99	100.00	47.87	32.22
Additional technology gap	15.89	7.92	56.02	39.24	-	-	22.62
Total technology gap	30.14	31.69	74.73	87.24	100.00	47.87	54.84
Rural Sector							
Observed technology gap Tier-1	-	-	15.58	100.00	-	-	9.09
Observed technology gap Tier-2	-	68.71	82.96	100.00	-	-	74.92
Present technology gap	-	17.94	23.89	88.96	-	-	22.57
Additional technology gap	-	0.00	19.92	11.04	-	-	8.23
Total technology gap	-	17.94	43.81	100.00	-	-	30.80

Source: NCAER Gems & Jewellery Survey, 2019.

Note: “-” denotes nil/not applicable.

Following are the findings based on an analysis of the data in Table 4.18.

- i) As regards the region-wise technology gap, the southern region has the maximum Tier-1 technology gap of 93.21 per cent in terms of moving from basic to average technology while Gujarat, and the eastern and northern regions have negligible technology gaps. As regards the Tier-2 technology gap of moving from basic to a higher level of technology, the technology gap is higher in the southern, Western and Rajasthan regions.
- ii) As regards the willingness of the units to upgrade technology in their processes, Gujarat wants upgradation in all the processes in this segment. The northern region has the lowest technology gap of just 14.25 per cent of the enterprises whereas the southern region and Rajasthan have a present technology gap of more than 47 per cent.
- iii) The additional technology gap, as delineated in Table 4.18, is based on data about constraints to upgradation faced by the enterprises, implying that these enterprises may be willing to upgrade technology if the hindrances are sorted out through arrangement of finances, skilled manpower, and awareness about the use of superior technology. The technology gap felt by the enterprises is 32.22 per cent, with the highest gap of 56.02 per cent observed in the western region, followed by 39.24 per cent in the southern region.
- iv) The total technology gap in the segment based on the willingness of enterprises to upgrade, is almost 32.22 per cent. The rural sector of this segment has an overall lower technology gap of 22.57 per cent in the processes employed by its enterprises.

4.2.5 Overall Scenario Pertaining to the of Technology Gap in the G&J Sector

Details of the technology gap have been examined overall for all the segments in the G&J sector in this chapter except the retailer segment, which does not use technology in any of its processes. Table 4.19 outlines the observed, present and the additional technology gaps in the enterprises that are facing hindrances in upgradation to a higher level of technology, thereby implying that they would perhaps be willing to upgrade technology if the constraints are addressed through arrangement of finances and skilled manpower, and generation of better awareness about the use of superior technology. Following are the findings based on an analysis of the information in Table 4.19;

- i) The Tier-1 technology gap in terms of upgradation from basic to average technology in the G&J sector is 61 per cent, on an average, while the corresponding figure for the technology gap in Tier-2 is 96 per cent. Rajasthan has the maximum Tier-1 technology gap of 93 per cent among all the regions while the eastern and western regions have technology gaps of 38 per cent. As far as the region-wise Tier-2 technology gap is concerned, all the regions have an observed technology gap of more than 96 per cent except the northern region, which has a gap of 83.40 per cent.
- ii) Despite the overall persistence of a technology gap in the G&J sector, only 13.88 per cent of the enterprises are willing to upgrade technology. Based on this low level of willingness for upgradation, the sector exhibits a present technology gap of 13.88 per cent. The maximum need for upgradation of technology is felt in the eastern region, followed by the southern region. Gujarat and the northern region are almost unwilling to upgrade technology

Table 4.19: Region-wise Technology Gaps in the Overall G&J Sector

Technology Gaps	North	East	West	South	Gujarat	Rajasthan	Total
Total							
Observed technology gap Tier-1	75.35	37.95	37.54	82.97	82.09	93.17	60.54
Observed technology gap Tier-2	83.40	96.73	96.52	99.58	96.48	98.22	96.12
Present technology gap	10.61	28.24	2.79	26.71	-	3.19	13.88
Additional technology gap	50.49	48.28	89.74	56.79	96.11	66.48	61.97
Total technology gap	61.1	76.52	92.53	83.50	96.11	69.68	75.85
Rural Sector							
Observed technology gap Tier-1	98.15	39.77	58.91	93.62	92.25	98.94	57.26
Observed technology gap Tier-2	100.00	97.64	98.34	99.59	100.00	100.00	98.32
Present technology gap	21.56	27.07	5.84	27.84	-	-	20.28
Additional Technology Gap	26.91	48.88	44.69	47.89	99.88	25.52	40.20
Total technology gap	48.47	75.96	50.53	75.73	99.88	25.52	60.48

Source: NCAER Gems & Jewellery Survey, 2019.

- iii) There is an overall additional technology gap of 62 per cent in the sector. Gujarat has the maximum additional technology gap of 96 per cent, followed by the western region, at 89.74 per cent. These regions primarily need finances and skilled manpower that can handle superior technology.
- iv) The overall total technology gap in the sector is more than 75 per cent, which means that over 75 per cent of the enterprises are willing to upgrade technology, provided the constraints of finances, skilled manpower, and awareness about superior technology are sorted out.
- v) In the rural sector, overall, more than 20 per cent of the enterprises are willing to upgrade technology and another 40 per cent are willing provided the constraints in upgradation of technology as faced by them are sorted out. The total technology gap in the rural sector is 60.48 per cent.
- vi) The technology gap in absolute numbers, segment- and region-wise, and even for each of the processes in the specific segment, can be computed by multiplying the- percentage technology gap shown in Table 4.18 and the segment-specific tables occurring in this section with- the number of enterprises shown in Table 4 of the Chapter on Manpower Planning.

4.2.6 Skill Gap versus Technology Gap: Methodological Issues

The estimated skills and technology gaps, segment-wise and as measured in terms of the present and additional gaps have been delineated in Table 4.20. The terms included in this table have references to Table 4.1 in Section 4.1 and Table 4.12 in Section 4.2. The component of the additional technology gap through skilled manpower is simply the percentage of enterprises that face hindrances in upgrading technology due lack of skilled manpower to

handle the advanced technology. Analysts and planners would be inclined to relate the two gaps and analyse whether the results are in line with each other. The analysis of the technology gap and upgradation of existing technology are

meaningful only when the associated skills gap in handling the technology is estimated and the gap is plugged by imparting training to upgrade the skills of existing manpower resources and by hiring additional skilled employees.

Table 4.20: Segment-wise Skill Gap versus Technology Gap in the G&J Sector (in percentages)

Segment	Skill Gaps			Technology Gaps			
	Present	Additional	Total	Present	Additional	Total	Component of Additional Gaps through Skilled Manpower
Diamonds	-	-	-	-	99.72	99.72	0.35
Other gems and Semi Precious stones	4.77	9.36	14.13	-	54.91	54.91	18.36
Hand-made Jewellery	19.77	9.92	29.69	14.01	52.26	66.27	21.52
Machine-made Jewellery	2.6	2.11	4.71	31.4	27.4	57.8	10.9
Retailer	12.98	6.57	19.55	Not Applicable			

Source: NCAER Gems & Jewellery Survey, 2019.

Note: “-” denotes nil.

An analysis of the data contained in Table 4.20 does not reveal any meaningful relation between the skills and technology gaps. The enterprises were separately asked questions on skill evaluation and use of technology and technology upgradation. The present skills gap has been measured through responses to the question on “the number of employees needed to upgrade skills”, which seeks to assess the present activities, functions, and processes implemented by the enterprises, irrespective of the technology used. Similarly, the additional skills gap has been measured through responses to another question on the “number of additional skilled workers required by the enterprises in the coming two years” in order to adapt to changes in the market, product mix, and the anticipated volume of work.

The present technology gap has been measured through responses to the question on “whether the enterprises want to upgrade the existing technology”. The additional technology gap has been measured through responses to

the question on “the hindrances to upgradation of technology being faced by enterprises”. These hindrances may include the lack of skilled manpower besides other hindrances. Thus, the additional technology gap has a component which relates to the availability of skilled manpower as measured and included in the last column of Table 4.20. In this context, a relation may be established between the additional skills gap and the component of additional technology gap through deployment of skilled manpower, but beyond this, no meaningful relation can be established between the two gaps.

The above discussions suggest that policy planners need to focus on the upgradation of skills by imparting training and ensuring the availability of additional skilled employees in the G&J sector. The technology gap also needs to be plugged by offering adequate finances and skilled manpower, and creating awareness about the importance of upgrading to superior technology.

V

SOURCES OF INPUTS AND OUTPUT DESTINATIONS OF THE GEMS AND JEWELLERY SECTOR

NCAER has collected data on the sources of inputs and sale of outputs for the products from the gems and jewellery (G&J) units. This chapter attempts to examine the key inputs and their sources as well as the outputs and their destinations by segments and regions.

5.1 Analytical Results of the NCAER Primary Survey

In the NCAER survey for the gems and jewellery sector, the selected units were asked to report the sources of the various inputs and destinations of the products/outputs mentioned in the list provided in the questionnaire. Further, questions were asked for sources both within and outside the state, and on imports separately to capture the status of availability of various inputs within the state. This will also indicate the major suppliers of these inputs or the preferred sources of the various inputs. Similarly, as regards the sale of their output to multiple destinations, questions were asked separately for the sale within and outside the state, and for exports to capture details of their market. However, the survey does not capture information regarding the quantity and value of these products. This list covers 18 such products under 5 broad categories, and there might be multiple sources of a particular input for some of the units.

Further, information regarding the source of inputs and destination of the output were separately obtained for 'within the state' and 'outside the state'. All this information has been presented in a consolidated table for each of the basic inputs and products.

The product list covers: (1) *Diamond*: rough, semi-processed and processed; (2) *Gemstone*: rough, semi-processed and processed; (3) *Gold*: bricks/biscuits, sheets, wires, plain jewellery, studded diamond jewellery, and studded gemstone jewellery; (4) *Silver*: bricks/biscuits, sheets, wires, sheets, plain jewellery, studded diamond jewellery, and studded gemstone jewellery; and (5) *Platinum*: bricks/ biscuits, sheets, wires, plain jewellery, studded diamond jewellery, and studded gemstone jewellery.

The major sources of inputs were classified into six categories, viz., miners, agencies, wholesalers, retailers, manufacturers, exchange offer, and consumers, in addition to outside state sources and imports. 'Agencies' include bullion dealers and nominated agencies such as Metals and Minerals Trading Corporation of India (MMTC)/State Trading Corporation (STC)/National Mineral Development Corporation (NMDC), wherever applicable. Similarly, the major sales of output have been classified under five broad heads, viz. wholesalers, retailers, consumers, manufacturers, and others; in addition to exports.

5.1.1 *Diamond-Rough, Semi-processed and Processed*

Table 5.1 presents the distribution of G&J units by the source of input and sale of rough, semi-processed, and processed diamonds for Gujarat. The diamond processing industry is mainly based in Gujarat, with the cities of Surat, Ahmedabad, and Bhavnagar as the major diamond centres in the State. Surat is the world's largest diamond manufacturing centre.

The survey results show that about 53.4 per cent of the units procure inputs from ‘wholesalers’, 18.6 per cent from manufacturers, and 1.3 per cent through exchange offers within the State. About 4.6 per cent of the units procure inputs from outside the State. About 27.1 per cent import these inputs. On the other side, about 64

and 63 per cent of these units sell their products to wholesalers and retailers, respectively, 18 per cent and 4.2 per cent sell them to manufacturers and consumers within the State, respectively. About 28 per cent of the units sell their products outside the State and about 55 per cent export these products.

Table 5.1: Distribution of G&J Units by Source of Input—Diamond-Rough, Semi-processed and Processed (%)

Region	Source/ Destination	Within the State							Outside State	Import/ Export
		Miner	Agency	Wholesale	Retail	Manufacturer	Consumer	Exchange		
Gujarat	Input	2.1	0.0	53.4	0.0	18.6	-	1.3	4.6	27.1

Source: NCAER Gems and Jewellery Survey, 2019.

5.1.2 Gemstones Rough, Semi-processed and Processed

Table 5.2 presents the distribution of G&J units by the source of input and sales of output for the gemstone products in the Rajasthan region. However, the table only considers G&J units that engage in the cutting and polishing of gemstone. Jaipur city in Rajasthan is a well-known hub for the cut and polished precious and semi-precious gemstones employing thousands of skilled artisans in the industry.

The survey result reveals that about three-fourths of the gemstone units in Rajasthan procure inputs from wholesalers and/or retailers; 25.2 per cent rely on imports, and 7.3 per cent rely on other States for their supplies. As regards sales, 69.2 per cent and 89.1 per cent of the units sell their products to wholesalers and retailers within the State, respectively. More than half of the units also sell their products outside the State and about 41 per cent export their products.

Table 5.2: Distribution of G&J Units by Source of Input—Gemstone- Rough, Semi-processed and Processed (%)

Region	Source/ Destination	Within the State							Outside State	Import / Export
		Miner	Agency	Wholesale	Retail	Manufacturer	Consumer	Exchange		
Rajasthan	Input	0.3	0.0	73.5	74.7	7.8	-	0.0	30.3	25.2

Source: NCAER Gems and Jewellery Survey, 2019.

5.1.3 Gold-Bricks/Biscuits/Sheets/Wires

Table 5.3 presents the distribution of units by source of input and destination of output for gold bars/coins/biscuits/sheets and wires across six regions.

Overall, the survey found that 68.3 per cent of the surveyed units procure this input directly from the wholesalers, followed by about 28.9 per cent who procure from retailers, and 22 per cent which are exchange offers. About 11 per cent procure inputs from agencies and manufacturers,

respectively. Only 7.9 per cent are getting their inputs from outside the State and just 0.3 per cent imports these inputs. As regards sales, the highest proportion of 37.4 per cent of the units are selling their products to consumers, 35.2 per cent to retailers, and 26.7 per cent each to wholesalers and manufacturers. About 18 per cent of the units sell their products outside the State and just 3.9 per cent of the units export this product.

The region-wise scenario is about the same as that at the all-India level. A majority of the surveyed units in all the regions except the southern region rely on wholesalers to procure this input. In the southern region, a majority of the units (53.4 per cent) rely on retailers, followed by wholesalers (48 per cent), for the procurement of inputs. In the Gujarat region, 38 per cent of

the units procure inputs from other States as well, whereas in the rest of the regions, this figure ranges between 2.2 and 17.2 per cent. With respect to the sales of output, there is considerable variation among the regions selling this output to different customers. In the northern region, the output is mostly sold to wholesalers (47.9 per cent) and consumers (47.2 per cent) whereas in the east and south, retailers and manufacturers purchase most of the output. In the northern and Rajasthan regions, about 37 and 31 per cent of the units also sell this product to customers outside the State. In the Rajasthan and northern regions, about 16 and 12 per cent of the surveyed units also export this product to other countries. In the Gujarat region, only 3 per cent of the units export this product, whereas in the rest of the regions, none of the surveyed units reported that they export this product.

Table 5.3: Distribution of G&J Units by Source of Major Inputs and Destination of Output – Gold Bricks/Biscuits/Sheets/Wire (%)

Region	Source/ Destination	Within the State							Outside State	Import / Export
		Miner	Agency	Wholesale	Retail	Manufacturer	Consumer	Exchange		
North	Input	0.0	8.5	80.9	22.1	13.5	-	31.3	16.9	0.7
	Sales	-	-	47.9	33.8	19.2	47.2	-	36.7	12.1
East	Input	0.0	12.1	78.4	20.1	5.9	-	14.0	1.2	0.0
	Sales	-	-	29.2	34.1	32.5	24.4	-	13.7	0.0
West	Input	0.0	28.9	55.7	12.2	17.7	-	26.3	17.2	0.0
	Sales	-	-	24.5	27.0	21.3	37.4	-	2.2	0.0
South	Input	0.0	6.6	48.1	53.4	19.5	-	20.0	6.6	0.0
	Sales	-	-	10.5	40.6	43.2	19.7	-	16.7	0.0
Gujarat	Input	0.0	6.3	50.8	4.5	6.3	-	21.5	38.1	3.0
	Sales	-	-	18.6	38.6	28.7	39.4	-	10.6	0.0
Rajasthan	Input	0.0	7.3	77.6	29.4	1.4	-	31.1	4.6	0.6
	Sales	-	-	16.7	39.8	17.8	43.7	-	31.2	16.7
Total	Input	0.0	10.9	68.3	28.9	10.8	-	22.0	7.9	0.3
	Sales	-	-	26.7	35.2	26.7	37.4	-	17.9	3.9

Source: NCAER Gems and Jewellery Survey, 2019.

5.1.4 Gold-Plain Jewellery

Table 5.4 presents the region wise distribution of G&J units by the source of input and destination of the output for plain gold jewellery.

Overall, wholesalers are the major sources of inputs for about 80 per cent of the units, followed by manufacturers and exchange offers, which account for 36.1 per cent and 34.4 per cent of the inputs, respectively. About 13 per cent of the units procure their inputs from retailers. About 14 per cent of the units get their inputs from other States and only 0.2 per cent import the inputs. About 81.2 per cent of the units sell their products to consumers, 29.3 per cent to retailers, 16.7 per cent to wholesalers, and just 8.6 per cent to manufacturers. About 4.0 per cent of the units

sell their products outside the State and 0.6 per cent export their products.

Region-wise, the procurement from wholesalers varies between the highest at 96.8 per cent in Gujarat to the lowest at 68.3 per cent in Rajasthan. For manufacturers, it varies between 13.4 and 43.7 per cent across all the regions. Procurement through exchange offers is the highest at 56.4 per cent in the East, followed by 37.9 per cent in the North, 37.8 per cent in the West, and 18.1 per cent in the South. About 11—33 per cent of the units across all the regions procure inputs from other States except in the East where such units account for only 1.8 per cent of the total. About 0.3 per cent of the units in the North and 3.7 per cent in Rajasthan import their inputs.

Table 5.4: Distribution of G&J Units by Source of Major Inputs and Destination of Output – Plain Gold Jewellery (%)

Region	Source/ Destination	Within the State							Outside State	Import / Export
		Miner	Agency	Wholesale	Retail	Manufacturer	Consumer	Exchange		
North	Input	0.0	0.0	82.3	2.4	41.9	-	37.9	20.0	0.3
	Sales	-	-	23.7	21.1	8.8	84.7	-	3.9	0.8
East	Input	0.0	0.2	70.0	17.0	43.7	-	56.4	1.8	0.0
	Sales	-	-	26.4	15.5	11.2	77.6	-	0.4	0.1
West	Input	0.0	0.0	83.9	9.1	29.5	-	37.8	21.2	0.0
	Sales	-	-	7.9	34.2	7.0	86.7	-	1.3	0.0
South	Input	0.0	0.0	77.1	21.8	35.2	-	18.1	10.9	0.0
	Sales	-	-	14.3	41.0	6.9	76.5	-	8.8	0.0
Gujarat	Input	0.0	0.0	96.8	2.7	28.2	-	24.2	10.6	0.0
	Sales	-	-	4.1	6.3	6.6	88.2	-	3.2	0.4
Rajas-than	Input	0.0	0.0	68.3	40.2	13.4	-	15.4	33.0	3.7
	Sales	-	-	3.6	58.7	10.6	85.2	-	4.1	5.8
Total	Input	0.0	0.0	79.6	12.8	36.1	-	34.4	14.0	0.2
	Sales	-	-	16.7	29.3	8.6	81.2	-	4.0	0.6

Source: NCAER Gems and Jewellery Survey, 2019.

In all the regions, consumers account for the major destination for 76.5 per cent to 86.7 per cent of the G&J units in this segment. The sales to retailers vary between 34.2 per cent and 58.7 per cent of the units in the Rajasthan, South, and West regions, and between 6.3 per cent and 21.1 per cent in the North, East, and Gujarat regions. The sales to wholesalers vary between 3.6 per cent and 7.9 per cent in the Rajasthan, Gujarat, and West regions; and 14.3 per cent to 26.4 per cent in the North and East regions. Sales to manufacturers vary between 6.6 per cent in Gujarat to 11.2 per cent in the East. The percentage of sales conducted outside the State range between 0.4 per cent and 8.8 per cent across the regions. About 5.8 per cent of the units in Rajasthan export their products and in the North, East and Gujarat regions, about 0.1 per cent to 0.4 per cent of the units export their products.

5.1.5 Gold-Diamond Studded Jewellery

Table 5.5 presents the region-wise distribution of G&J units by the source of input and destination of output for diamond studded gold jewellery.

Overall, wholesalers form the major source of input for 62.7 per cent of the units, followed by manufacturers, at 48.9 per cent, and exchange offers at 30.2 per cent. About 8.5 per cent of the units procure inputs from retailers. About 31 per cent of the units get inputs from other States and only 0.4 per cent import their inputs. About 91.6 per cent of the units sell their products to consumers, 26 per cent to retailers, and 11.7 per cent to wholesalers. About 10.1 per cent sell their products outside the State and only 2.5 per cent export their products.

Region-wise, procurement from wholesalers varies between being the highest in the South, at 79.5 per cent, to the lowest in Rajasthan, at 37.9 per cent. The inputs from manufacturers vary between 37.7 per cent in the West to 63 per cent in the East, except in Rajasthan where such units account for only 19.7 per cent of the total. About 35 per cent of the units in Rajasthan procure inputs from retailers followed by 19.1 per cent in the South. The North and West regions account for 3.1 per cent and 5 per cent of such units, respectively, whereas in the East and Gujarat, none of the units get this input from retailers. Procurement from outside the State accounts for the highest proportion of 38.5 per cent of the units in the North. In the rest of the five regions, the proportion of such units varies between 23.2 per cent and 34.0 per cent. Only 1.1 per cent of the units in the North import inputs and none of the units does so in the rest of the regions.

In all the regions, consumers form the major sales destination for 72.6 per cent to 96.1 per cent of the G&J units in this segment. About 35 per cent of the units each in Rajasthan and North, and 15.1 per cent to 22.0 per cent of the units sell their products to the retailers. Sales to wholesalers vary from 4.1 per cent to 14.4 per cent across the regions. The sales figures outside the State are the highest in Rajasthan, at 18.0 per cent, followed by the South, at 14.9 per cent, and the North, at 13.4 per cent. In the East and Gujarat, only 1.5 per cent and 1.2 per cent of the units sell outside the State. None of the units from the West sell outside the State. About 37.4 per cent of the units from Rajasthan export their products.

Table 5.5: Distribution of G&J Units by Source of Major Inputs and Destination of the Output—Gold Jewellery—Studded with Diamonds (%)

Region	Source/ Destination	Within the State							Outside State	Import/ Export
		Miner	Agency	Wholesale	Retail	Manufacturer	Consumer	Exchange		
North	Input	0.0	0.0	54.1	3.1	59.7	-	27.4	38.5	1.1
	Sales	-	-	14.4	35.0	1.3	93.9	-	13.4	2.2
East	Input	0.0	0.0	44.8	0.0	63.0	-	21.9	34.0	0.0
	Sales	-	-	5.3	20.1	1.4	80.3	-	1.5	2.9
West	Input	0.0	0.0	68.1	5.0	37.7	-	53.1	23.9	0.0
	Sales	-	-	4.1	20.7	2.2	88.6	-	0.0	0.0
South	Input	0.0	0.0	79.5	19.1	47.7	-	19.3	31.3	0.0
	Sales	-	-	15.5	21.8	6.8	96.1	-	14.9	0.0
Gujarat	Input	0.0	0.0	69.8	0.0	54.3	-	33.8	23.6	0.0
	Sales	-	-	6.1	15.1	1.6	85.5	-	1.2	2.7
Rajasthan	Input	0.0	0.0	37.9	35.0	19.7	-	33.4	23.2	0.0
	Sales	-	-	13.7	34.9	1.4	72.6	-	18.0	37.4
Total	Input	0.0	0.0	62.7	8.5	48.9	-	30.2	30.9	0.4
	Sales	-	-	11.7	26.0	3.3	91.6	-	10.1	2.5

Source: NCAER Gems and Jewellery Survey, 2019.

5.1.6 Gold-Gemstone studded Jewellery

Table-5.6 presents the region-wide distribution of G&J units by the source of input and destination of output for gemstone studded gold jewellery.

Overall, wholesalers are the major source of inputs for about 75 per cent of the units, followed by manufacturers, at 42.5 per cent, and exchange offers, at 43.5 per cent. About 15.1 per cent of the units also procure inputs from retailers. About 13.8 per cent of the units procure inputs from other States and only 0.4 per cent import them. As regards sales destinations, about 86.3 per cent of the units sell to consumers, 26.6 per cent to retailers, 14 per cent to wholesalers, and 8.7 per

cent to manufacturers. About 6 per cent of the units sell outside the State and just 1.1 per cent export their products.

Region-wise, the procurement of inputs from wholesalers varies between being the highest in the East, at 87.5 per cent, to being the lowest in the West, at 61 per cent. The proportion of inputs from manufacturers varies between 31 per cent and 49 per cent across all the regions. Procurement through exchange offers varies between 53.5 per cent and 67.2 per cent in the North, East, and West. In the South, Gujarat, and Rajasthan about 13.7 per cent to 32.6 per cent of the units procure their inputs through exchange offers. About 16 per cent to 30 per cent of the units in the South, Gujarat, and Rajasthan get their inputs from

retailers, and in the North, East, and West, the proportion of such units varies between 3.1 per cent and 12.9 per cent. The proportion of units procuring inputs from outside the State is highest 43.5 per cent in Rajasthan, followed by 28.3 per cent in the North, 24.7 per cent in Gujarat, and 15.6 per cent in the South. In the East and West, the proportions of such units are 1.7 per cent and 2.9 per cent, respectively. Only 0.8 per cent of the units from the North and 5.5 per cent units from Rajasthan import their inputs.

Across all the regions, consumers are the major sales destination for 66.8 per cent to 94.6 per cent of the G&J units in this segment. The proportion of units selling to retailers is the highest at 56.4 per cent in Rajasthan, followed by 29.8 per cent in the South, 25.7 per cent in the West, and 20.3 per cent in the North. In the remaining two regions,

that is, the East and Gujarat, 13.1 per cent and 11.1 per cent of the units, respectively, sell their products to the retailers. Sales to wholesalers is reported to be the highest at 28.5 per cent in the North, whereas in the rest of the regions, it varies between being 5 per cent in Rajasthan to 16.1 per cent in the West. Sales to manufacturers vary between being 1.7 per cent in Rajasthan to 15.5 per cent in the North. The proportion of units selling their output to the States is the highest at 13.4 per cent in the South, and it varies between 0.1 per cent and 13.4 per cent in the rest of the regions, except Gujarat, where none of the units reportedly sell outside the State. The proportion of units exporting their products is the highest at 7.1 per cent in Rajasthan, followed by 1.3 per cent in the North, 0.2 per cent in the East, and 0.9 per cent in Gujarat.

Table 5.6: Distribution of G&J Units by Source of Major Inputs and Destination of Output—Gold Jewellery- Studded with Gemstones (%)

Region	Source/ Destination	Within the State							Outside State	Import / Export
		Miner	Agency	Wholesale	Retail	Manufacturer	Consumer	Exchange		
North	Input	0.0	0.0	76.7	3.1	48.5	-	67.2	28.3	0.8
	Sales	-	-	28.5	20.3	15.5	94.6	-	9.2	1.3
East	Input	0.0	0.0	87.5	10.7	48.3	-	53.5	1.7	0.0
	Sales	-	-	13.4	13.1	14.8	92.2	-	0.1	0.2
West	Input	0.0	0.0	61.0	12.9	40.1	-	63.0	2.9	0.0
	Sales	-	-	16.1	25.7	5.3	66.8	-	2.0	0.0
South	Input	0.0	0.0	71.1	24.7	36.7	-	13.7	15.6	0.0
	Sales	-	-	10.8	29.8	5.0	85.7	-	13.4	0.0
Gujarat	Input	0.0	0.0	80.2	15.9	48.4	-	27.6	24.7	0.0
	Sales	-	-	8.0	11.1	7.1	92.3	-	0.0	0.9
Rajasthan	Input	0.0	0.0	69.8	29.7	30.6	-	32.6	43.5	5.5
	Sales	-	-	5.0	56.4	1.7	91.9	-	3.2	7.1
Total	Input	0.0	0.0	74.7	15.1	42.5	-	43.5	13.8	0.4
	Sales	-	-	14.0	26.6	8.7	86.3	-	6.0	1.1

Source: NCAER Gems and Jewellery Survey, 2019.

5.1.7 Silver-Bricks/Biscuits/Sheets/Wires

Table 5.7 presents the distribution of sources of inputs and destination of sales for silver bricks/biscuits/sheets.

Overall, again wholesalers are the major sources of inputs for about 67 per cent of the units, followed by retailers, at 24 per cent, agencies at 15.5 per cent, and manufacturers at 10.5 per cent. Apart from this, about 23.5 per cent of the units get their inputs through exchange offers. About 7.1 per cent of the units procure inputs from the other States and only 0.2 per cent import their inputs. A majority of the units, at 79.5 per cent, sell their products to consumers directly, 56.9 per cent sell to retailers, 23.9 per cent to wholesalers, and 6.7 per cent to manufacturers. About 13.2 per cent of the units sell outside the State and just 3.4 per cent export their products.

Region-wise, the procurement of inputs from wholesalers is the highest at 82.1 per cent in the North, followed by about 80 per cent in the East, 79 per cent in Rajasthan, and 54 per cent in the West, while in the South and Gujarat, it varies between 36.6 per cent and 54.0 per cent. The proportion of units buying their inputs from retailers is the highest at 46.5 per cent in the South, followed by 28.5 per cent in Rajasthan, and 22.4 per cent in the North. In the East, West, and Gujarat about 10.1 per cent to 17.2 per cent of the units procure their inputs from retailers. The proportion of purchase through exchange offers varies between 15.8 per cent and 32.4 per cent across the regions. The proportion of purchase from agencies is the highest at 46.3

per cent in the West, followed by 31.2 per cent in Gujarat. In the remaining four regions, such units account for 6.2 per cent to 11.9 per cent of the total. Purchase from manufacturers is the highest at 31.8 per cent in the South, and in the rest of the regions it varies between 0.7 per cent and 13.2 per cent. Purchase from outside the State varies between 13.9 per cent and 19.8 per cent in the North, West, and Gujarat. In the East, South, and Rajasthan, the proportion of such units ranges between 0.6 per cent and 7.2 per cent. The imports of inputs have been reported by 0.7 per cent of the units each in the North and Rajasthan only.

Across all regions, consumers form the major sales destination for 56.6 per cent to 95.8 per cent of the G&J units in this segment. Retailers constitute the next major sales destination for 92.7 per cent of the units in the West, 67.1 per cent units in the South, 57.4 per cent units in the North, and 29.5 per cent of the units in Rajasthan. In the East and Gujarat, such units account for 15.6 per cent and 3.3 per cent of the total units, respectively. The proportion of sales to wholesalers is the highest at 32.1 per cent in the South, followed by 28.5 per cent in the North, 19.1 per cent in the West, and 17.9 per cent in Rajasthan. In the East and Gujarat, the proportions of such units are 15.6 per cent and 11.7 per cent, respectively. About 29.9 per cent of the units in the North and 2.1 per cent in the West sell their products outside the State. Only 7.9 per cent of the units in the North export their products whereas none of the units does so in the rest of the regions.

Table 5.7: Distribution of G&J Units by Source of Major Inputs and Destination of Output—Silver Bricks/Biscuits/Sheets/Wires (%)

Region	Source/ Destination	Within the State							Outside State	Import / Export
		Miner	Agency	Wholesale	Retail	Manufacturer	Consumer	Exchange		
North	Input	0.0	11.9	82.1	22.4	11.7	-	15.8	19.8	0.7
	Sales	-	-	28.5	57.4	4.6	79.2	-	29.9	7.9
East	Input	0.0	11.9	79.9	15.2	3.5	-	18.8	0.6	0.0
	Sales	-	-	15.6	15.6	5.1	84.4	-	0.0	0.0
West	Input	0.0	46.3	54.0	17.2	13.2	-	32.4	13.9	0.0
	Sales	-	-	19.1	92.7	1.7	88.4	-	2.1	0.0
South	Input	0.0	7.5	36.6	46.5	31.8	-	24.0	1.3	0.0
	Sales	-	-	32.1	67.1	22.3	56.6	-	0.0	0.0
Gujarat	Input	0.0	31.2	45.2	10.1	2.7	-	25.3	14.2	0.0
	Sales	-	-	11.7	3.3	8.9	95.8	-	0.0	0.0
Rajasthan	Input	0.0	6.2	79.2	28.5	0.7	-	30.2	7.2	0.7
	Sales	-	-	17.9	29.5	4.0	69.4	-	0.0	0.0
Total	Input	0.0	15.5	67.9	24.3	10.5	-	23.5	7.1	0.2
	Sales	-	-	23.9	56.9	6.7	79.5	-	13.2	3.4

Source: NCAER Gems and Jewellery Survey, 2019.

5.1.8 Silver- Plain Jewellery

Table 5.8 presents the distribution of sources of inputs and destinations of sales for plain silver jewellery.

Overall, wholesalers are the major source of inputs for about 77 per cent of the units, followed by exchange offers, at 41.2 per cent, and manufacturers, at 33.7 per cent. About 13.3 per cent of the units procure inputs from retailers. Only 12.4 per cent of the units purchase inputs from outside the State and only 0.2 per cent of the units import inputs. A majority, at 83 per

cent, of the units sell their products to consumers directly, 25.9 per cent sell to retailers, 14.5 per cent sell to wholesalers, and 8.9 per cent sell to manufacturers. About 4.1 per cent of the units sell outside the State and just 0.6 per cent export their products.

Region-wise, the procurement of inputs from wholesalers varies between 67.2 per cent and 92.9 per cent across the regions. About 24.6 per cent to 42 per cent of the units buy inputs from manufacturers across all the regions. The proportion of units buying inputs through exchange offers is the highest at 73.9 per cent in

the East, followed by 21.8 per cent to 45.2 per cent in the rest of the regions. About 8.1 per cent to 19.1 per cent of the units procure inputs from retailers. About 16.1 per cent to 22.0 per cent of the units in the North, West, and Rajasthan procure inputs from outside the State. The proportions of such units range from 3.5 per cent to 10.8 per cent in the East, South, and Gujarat. Only 0.3 per cent of the units in the North and 1.8 per cent of the units Rajasthan import inputs.

In all the regions, consumers constitute the major sales destination for 77.5 per cent to 93 per cent of the G&J units in this segment. Retailers comprise the next major sales destination for

44.9 per cent of the units in Rajasthan, followed by 34.6 per cent in the West, and 30.6 per cent of the units in the South. Such units comprise 15.8 per cent of the total in the East and 8.2 per cent in Gujarat. Sales to wholesalers account for around 23 per cent of the total each in the North and East. In the rest of the regions, such units account for 4.4 per cent to 11.3 per cent of the total. The proportions of sales to manufacturers vary between 2.9 per cent and 12.8 per cent across the regions whereas those of sales taking place outside the state varies between 0.3 per cent and 9.3 per cent. Only 5 per cent of the units in Rajasthan, 1 per cent in the North, and 0.1 per cent in the South export their products.

Table 5.8: Distribution of G&J Units by Source of Major Inputs and Destination of Output—Plain Silver Jewellery (%)

Region	Source/ Destination	Within the State							Outside State	Import / Export
		Miner	Agency	Wholesale	Retail	Manufacturer	Consumer	Exchange		
North	Input	0.0	0.0	83.1	8.1	42.1	-	34.3	16.1	0.3
	Sales	-	-	22.9	22.1	8.1	86.4	-	4.5	1.0
East	Input	0.0	0.5	67.2	14.1	33.2	-	73.9	8.1	0.0
	Sales	-	-	21.9	15.8	12.8	83.0	-	0.3	0.0
West	Input	0.0	0.2	82.3	12.0	30.5	-	36.3	20.8	0.0
	Sales	-	-	11.3	34.6	4.2	82.4	-	1.6	0.0
South	Input	0.0	6.3	71.8	18.2	34.0	-	24.6	3.5	0.0
	Sales	-	-	7.9	30.6	12.7	77.5	-	9.3	0.1
Gujarat	Input	0.0	2.2	92.9	10.1	26.1	-	45.2	10.8	0.0
	Sales	-	-	9.1	8.2	3.0	83.0	-	3.0	0.0
Rajasthan	Input	0.0	0.0	74.6	19.1	24.6	-	21.8	22.0	1.8
	Sales	-	-	4.4	44.9	2.9	93.0	-	4.5	5.0
Total	Input	0.0	1.7	77.0	13.3	33.7	-	41.2	12.4	0.2
	Sales	-	-	14.5	25.9	8.9	83.0	-	4.1	0.6

Source: NCAER Gems and Jewellery Survey, 2019.

5.1.9 Silver-Diamond Studded Jewellery

Table 5.9 presents the distribution of sources of inputs and destinations of sales for silver jewellery studded with diamonds.

Overall, wholesalers account for the major source of inputs for 64.7 per cent of the units, followed by manufacturers, at 46.3 per cent, and exchange offers, at 29.2 per cent. About 6.2 per cent of the units procure inputs from retailers. About 10.9 per cent of the units purchase inputs from outside the State and only 0.4 per cent of the units import inputs. A majority of the units, at 94.2 per cent of the total, sell their products to consumers directly, 23.6 per cent sell to retailers, 5.6 per cent sell to wholesalers, and only 1.6 per cent sell to manufacturers. About 3.8 per cent of the units sell outside the State and just 1.3 per cent export their products.

Region-wise, the procurement of inputs from wholesalers varies between 47.5 per cent and 84.9 per cent. The purchase of inputs from manufacturers varies between 43 per cent and 69.9 per cent in the North, West, and Gujarat. In the East, South, and Rajasthan, the proportion of such units ranges between 25.2 per cent and 41.3 per cent. Purchase through exchange offers accounts for 53.4 per cent in the West whereas in the rest of the regions, such units constitute

over 16.1 per cent to 32.7 per cent of the total. About 1.5 per cent to 6.5 per cent of the units in all the regions procure inputs from retailers except in Rajasthan, where such units account for about 38.7 per cent of the total. About 1.7 per cent to 13.2 per cent of the units across all the States procure inputs from outside the State except in Gujarat, where such units account for about 51 per cent of the total. Only 1.4 per cent of the units in the North import inputs.

Across all the regions, consumers form the major sales destination for 81.5 per cent to 99.4 per cent of the G&J units in this segment. Retailers comprise the next major sales destination for 65.1 per cent of the units in Rajasthan, followed by 32.4 per cent in the North, and 23.4 per cent of the units in the South. The proportions of such units are 9 per cent in the East, 3.1 per cent in the West, and 10.4 per cent in Gujarat. Sales to wholesalers account for 0.7 per cent to 9.5 per cent of the total across the regions. Sales outside the State vary between 1.4 per cent and 9.1 per cent in the North, South, and Rajasthan. In the East, West, and Gujarat, none of the units purchases from sellers outside the state. Only 12 per cent of the units in Rajasthan and 1.4 per cent of the units in the North export their products whereas none of the units from the rest of the regions exports.

Table 5.9: Distribution of G&J Units by Source of Major Inputs and Destination of Output—Silver Jewellery Studded with Diamonds (%)

Region	Source/ Destination	Within the State							Outside State	Import / Export
		Miner	Agency	Wholesale	Retail	Manufacturer	Consumer	Exchange		
North	Input	0.0	0.0	47.5	6.0	69.9	-	16.1	13.2	1.4
	Sales	-	-	9.5	32.4	1.5	93.5	-	9.1	1.4
East	Input	0.0	0.0	77.7	5.2	41.3	-	28.2	1.7	0.0
	Sales	-	-	3.3	9.0	0.6	99.4	-	0.0	0.0
West	Input	0.0	0.0	52.2	1.5	43.0	-	53.4	5.2	0.0
	Sales	-	-	0.7	3.1	0.5	96.8	-	0.0	0.0

(Contd.)

Table 5.9: Distribution of G&J Units by Source of Major Inputs and Destination of Output—Silver Jewellery Studded with Diamonds (%) (Contd.)

Region	Source/ Destination	Within the State							Outside State	Import/ Export
		Miner	Agency	Wholesale	Retail	Manufacturer	Consumer	Exchange		
South	Input	0.0	0.0	83.6	6.5	25.2	-	27.7	9.6	0.0
	Sales	-	-	5.0	23.4	2.7	96.1	-	1.4	0.0
Gujarat	Input	0.0	0.0	84.9	6.1	50.6	-	18.9	50.9	0.0
	Sales	-	-	3.3	10.4	1.1	90.2	-	0.0	0.0
Rajasthan	Input	0.0	0.0	37.4	38.7	32.3	-	32.7	4.4	0.0
	Sales	-	-	8.8	65.1	2.5	81.5	-	7.4	12.0
Total	Input	0.0	0.0	64.7	6.2	46.3	-	29.2	10.9	0.4
	Sales	-	-	5.6	23.6	1.6	94.2	-	3.8	1.3

Source: NCAER Gems and Jewellery Survey, 2019.

5.1.10 Silver-Gemstone Studded Jewellery

Table 5.10 presents the distribution of sources of inputs and destinations of sales for silver jewellery studded with gemstones.

Overall, wholesalers constitute the major source of inputs for about 73.3 per cent of the units, followed by manufacturers, at 39.2 per cent, and exchange offers, at 38.3 per cent. About 24.6 per cent of the units procure inputs from retailers. About 11.5 per cent of the units purchase inputs from outside the State and only 0.5 per cent import inputs. A majority of the units, at 87.8 per cent of the total, sell their products to consumers directly, 21.2 per cent sell to retailers, 13.6 per cent sell to wholesalers, and only 6.4 per cent sell to manufacturers. About 3.3 per cent of the units sell outside the State and just 0.9 per cent export their products.

The proportion of procurement of inputs from wholesalers varies between 60.7 per cent and 89.5 per cent across the regions. The proportion of manufacturers procuring inputs from the manufacturers is the highest at 78.1 per cent in the North, followed by 52.8 per cent in Gujarat. In the East, West, South, and Rajasthan,

the proportion of such units varies between 19.5 per cent and 38.6 per cent. The proportion of units purchasing their inputs through exchange offers is the highest at 67.1 per cent in the North, followed by 53.5 in the West, and 38.5 per cent in the East. In the South, Gujarat, and Rajasthan, the proportion of such units ranges between 15.9 per cent and 27.5 per cent. The highest proportion of units purchasing from retailers is the highest at 49.8 per cent in Rajasthan, followed by 21 per cent to 25 per cent in the North, West, and South. In the East, only 13.8 per cent of the units procure inputs from retailers whereas none of the units does so in Gujarat. The proportions of units procuring inputs from outside the State are about 33.1 per cent in Gujarat, 27.1 per cent in the North, and 18.7 per cent in Rajasthan. In the East, West, and South, about 0.4 per cent to and 9.4 per cent procure inputs from other states. Only 0.8 per cent units from the North and 2.2 per cent units from Rajasthan import inputs.

Across all the regions, consumers constitute the major sales destination for 68.2 per cent to 96.6 per cent of the G&J units in this segment. Retailers account for the next major sales destination for 38.6 per cent of the units

in Rajasthan, followed by 25.6 per cent in the South and 21.9 per cent in the West. In the rest of the three regions, that is, the North, East, and Gujarat, such units account for 11.6 per cent to 14.4 per cent of the total. Sales to manufacturers account for 3 per cent to 13 per cent of the total sales across the regions. The proportions of sales

outside the State vary between 0.6 per cent and 8.5 per cent across all the regions except the East, where none of the units sells outside the State. Only 0.8 per cent of the units in the North and 5.5 per cent units in Rajasthan export their products.

Table 5.10: Distribution of G&J Units by Source of Major Inputs and Destination of the Output-Silver Jewellery-Studded with Gemstones (%)

Region	Source/ Destination	Within the State							Outside State	Import/ Export
		Miner	Agency	Wholesale	Retail	Manufacturer	Consumer	Exchange		
North	Input	0.0	0.0	75.9	22.3	78.1	-	67.1	27.1	0.8
	Sales	-	-	27.4	14.4	10.4	96.6	-	6.0	0.8
East	Input	0.0	0.0	89.5	13.8	35.5	-	38.5	0.4	0.0
	Sales	-	-	15.0	11.6	10.2	93.0	-	0.0	0.0
West	Input	0.0	0.0	60.7	24.7	38.6	-	53.5	9.4	0.0
	Sales	-	-	15.5	21.9	3.7	68.2	-	0.6	0.0
South	Input	0.0	0.0	66.4	21.1	28.3	-	15.9	7.9	0.0
	Sales	-	-	7.7	25.6	3.4	89.4	-	8.5	0.0
Gujarat	Input	0.0	0.0	81.4	0.0	52.8	-	27.5	33.1	0.0
	Sales	-	-	8.8	12.7	13.0	91.8	-	0.9	0.0
Rajasthan	Input	0.0	0.0	68.1	49.8	19.5	-	22.1	18.7	2.2
	Sales	-	-	6.7	38.6	3.0	92.1	-	3.4	5.5
Total	Input	0.0	0.0	73.3	24.6	39.2	-	38.3	11.5	0.5
	Sales	-	-	13.6	21.2	6.4	87.8	-	3.3	0.9

Source: NCAER Gems and Jewellery Survey, 2019.

5.1.11 Platinum- Bricks/ Biscuits/ Sheets/ Wires; Plain Jewellery; Diamond Studded Platinum Jewellery; Gemstone Studded Platinum Jewellery

Table 5.11 presents the distribution of sources of inputs and destinations of sales for platinum and related products. Overall, wholesalers constitute the major source of inputs for about 65.3 per cent of the units, followed by manufacturers at 48.2 per

cent, retailers at 12 per cent, and exchange offers and agencies at 2.9 per cent each. About 40.2 per cent of the units procure inputs from other States and only 0.6 per cent import inputs. Most of the units (85.1 per cent) sell their products to consumers followed by retailers, at 24.5 per cent, wholesalers, at 12.7 per cent, and manufacturers, at 7.4 per cent. About 11.8 per cent of the units procure inputs from outside the State and just 1.6 per cent export their products.

Table 5.11: Distribution of G&J Units by Source of Major Inputs and Destination of Output—Platinum and Related Products (%)

Region	Source/ Destination	Within the State							Outside State	Import / Export
		Miner	Agency	Wholesale	Retail	Manufacturer	Consumer	Exchange		
North	Input	0.0	2.2	46.1	14.0	67.2	-	1.6	51.1	0.2
	Sales	-	-	22.7	36.1	5.4	83.1	-	0.6	2.0
East	Input	0.0	0.0	69.0	3.2	31.0	-	9.3	31.0	0.0
	Sales	-	-	22.5	0.0	22.5	92.8	-	7.2	0.0
West	Input	0.0	11.5	86.2	1.8	12.3	-	12.7	11.7	0.0
	Sales	-	-	11.2	7.5	12.1	88.8	-	0.0	0.0
South	Input	0.0	0.0	74.1	13.8	59.7	-	0.0	47.7	0.0
	Sales	-	-	0.2	22.4	7.1	88.9	-	36.8	0.0
Gujarat	Input	0.0	1.2	74.5	6.1	58.4	-	0.0	56.5	10.0
	Sales	-	-	14.6	14.6	5.9	70.8	-	0.0	0.0
Rajasthan	Input	0.0	0.0	73.2	26.2	2.9	-	0.0	20.3	0.0
	Sales	-	-	0.0	31.7	0.0	61.0	-	21.0	37.6
Total	Input	0.0	2.9	65.6	12.5	48.4	-	2.9	40.4	0.6
	Sales	-	-	12.7	24.5	7.4	85.1	-	11.8	1.6

Source: NCAER Gems and Jewellery Survey, 2019.

The region-wise procurement of inputs from wholesalers varies between 46.1 per cent in the North to 86.2 per cent in the West. The next major source of inputs are the manufacturers, accounting for the highest proportion of 67.2 per cent of the units in the North, followed by 58 per cent to 60 per cent of the units in the South and Gujarat, and 31 per cent in the East.

In the West and the South, the proportions of such units are 12.3 per cent and 2.9 per cent of the total, respectively. Procurement from the retailers is the highest at 26.2 per cent in Rajasthan and 14 per cent each in the North and the South. In the East, West, and Gujarat, such units account for 1.8 per cent to 6.1 per cent of the total. About 1.6 per cent to 12.7 per cent of the units in the North, East, and West procure inputs through exchange offers. In the South, Gujarat, and Rajasthan, none of the units procures inputs through this source. About 31 per cent to 57 per cent of the units in the North, East, South, and Gujarat procure their

inputs from outside the State. In the West and Rajasthan, such units account for 11.7 per cent to 20.3 per cent of the total units. Only 0.2 per cent of the units in the North and 10 per cent of the units in Gujarat import inputs.

In all the regions, consumers account for the major sales destination for 61 per cent to 92.8 per cent of the G&J units in this segment. Retailers constitute the next major sales destination for 14.6 per cent to 36.1 per cent of the units in the North, South, Gujarat, and Rajasthan. In the West, such units form only 7.5 per cent of the total, whereas in the East, none of the units sells to retailers. Sales to wholesalers account for 11.2 per cent to 22.7 per cent of the units in the North, East, West, and Gujarat, and 0.2 per cent in the South, but none in Rajasthan. Sales to manufacturers constitute 5.4 per cent to 22.5 per cent of the total in all the regions except Rajasthan, where none of the units sells to this destination. Sales outside the State have been

reported to be the highest, for 36.8 per cent of the units in the South, followed by 7.2 per cent to 21 per cent in the East and Rajasthan, and 0.6 per cent in the North. None of the units from the West and Gujarat sell outside the State. About 37.6 per cent of the units from Rajasthan export their products, followed by those in the North, at 2.0 per cent. None of the units from the rest of the four regions export their products.

5.2 Concluding Remarks

The findings indicate that there are multiple sources of input procurement and multiple sales destination reported by the G&J units covered under the study-

- Out of five major inputs of G&J sector, the analysis pertaining to Diamond is confined to Gujarat region only and for Gemstones only Rajasthan region for their major share in these two segments in the country. For the rest, the analysis is drawn for six classified regions.
- More than 50.0 per cent of the units procure rough, semi-processed and processed diamonds from wholesalers and about 27.1 per cent of the units depend on imports. More than 60.0 per cent of the units sell their products to wholesalers as well as to retailers and about 55.0 per cent of them are engaged in exports.
- In gemstone segment, more than seventy per cent of the units procure inputs from wholesalers and also retailers and more than 25.0 per cent of the units export their products. For sales, about seventy per cent and ninety per cent of the units depend on wholesalers and retailers respectively. More than forty per cent of the units also export their products.
- Across all six regions, majority of the units procure inputs from wholes sealers for 'gold bricks/biscuits/ sheets/ wires etc'. It is because the procurement from the nominated agencies forms only 12.1 per cent and less across the regions except West (28.9%). It is also found that sales are mostly confined within the respective states. Overall, about 18.0 per cent of the units sell outside their states except North (36.7 %) and Rajasthan (31.2%). Sales directly to consumers form about one-third of the units.
- Majority of the units procure inputs for 'plain gold jewellery' from wholesalers followed by retailers. In East more than fifty per cent of the units procure inputs through exchange offers apart from other sources. In Rajasthan more about one-third of the units also depend on other states for inputs. As regards sales overall, more than 80.0 per cent of the units sell directly to consumers apart from other destinations. Again sales are confined within the respective states with only 4.0 per cent of the units in the overall sell outside the state.
- For 'studded diamond jewellery-gold' most of the units across the regions procure inputs from multiple sources comprising mainly wholesalers and manufacturers followed by consumers and exchange offers. About one-third also depend on other states for inputs. More than ninety per cent of the units sell their products to consumers directly. About 37.4 per cent of the units in Rajasthan export their products and in other regions such units are absent or negligible.
- In most of the regions more than sixty per cent of the units procure inputs for 'studded gemstone jewellery-gold' from wholesalers and more than one-third of the units from manufacturers and through exchange offers being the highest in East (53.5%) and West (63.0%). Again more than eighty five per cent of the units across the regions sell their products directly to consumers except West (66.8%). Highest 43,5 per cent units in Rajasthan depend on other states for inputs, In the rest of the regions such units are much less.
- Across all six regions, majority of the units procure inputs from wholes sealers for 'silver bricks/biscuits/ sheets/ wires etc. It is because the procurement from the nominated agencies forms only 15.5 per cent and less across the regions except West (46.3%) and Gujarat (31.2%). It is also found that sales are

- mostly confined within the respective states. Overall, about 13.0 per cent of the units sell outside their states except North (29.9 %). Sales directly to consumers form about more than three-fourth of the units across all regions except South (56.6%).
- Majority of the units procure inputs for 'plain silver jewellery' from wholesalers followed by manufacturers. In East more than seventy per cent of the units procure inputs through exchange offers apart from other sources. As regards sales, overall, more than 80.0 per cent of the units sell directly to consumers apart from other destinations. Again sales are confined within the respective states with only 4.0 per cent of the units in the overall sell outside the state.
 - For 'studded diamond jewellery-silver' most of the units across the regions procure inputs from multiple sources comprising mainly wholesalers and manufacturers followed by consumers and exchange offers. In almost all regions more than ninety per cent of the units sell their products to consumers directly except (Rajasthan (81.5%). About 12.0 per cent of the units in Rajasthan export their products and in other regions such units are either absent or negligible.
 - In most of the regions more than sixty per cent of the units procure inputs for 'studded gemstone jewellery-silver' from wholesalers and more than one-third of the units from manufacturers and through exchange offers being the highest in East (38.5%) and West (53.56%). Again more than eighty five per cent of the units across the regions sell their products directly to consumers except West (68.2%).
 - The same pattern of procurement of inputs and sale of output for platinum products has emerged. More than sixty per cent of the units across almost all regions procure inputs for platinum products from wholesalers and more than forty per cent each from manufacturers. Overall dependence for inputs forms about forty per cent of the units. Again, almost seventy per cent and more of the units sell their products directly to consumers.
 - It is found none of the units in the diamond and gemstone segment procure inputs from the 'agencies' wherever applicable. The major source of inputs in diamond segment is the wholesalers and also more than one-fourth of the units import inputs. More than sixty per cent of the units sell diamond and products to wholesalers and more than fifty per cent are engaged in exports.
 - More than seventy per cent of the units in gemstone segment procure inputs from wholesalers and retailers and about one-fourth import inputs. For sales about seventy per cent of the units depend on wholesalers and retailers and more than forty per cent export their products.
 - Overall, in gold segment, only ten per cent and less of the units across the regions procure input from 'agencies' except West (28.9%). Majority of the units in all four types of gold products procure inputs from mainly from wholesalers, retailers and manufacturers. Inputs procured through exchange offers also form about one-third of the units. Apart from gold bricks / biscuits, sheets etc. in the rest of the three product types more than 80.0 per cent of the units sell their products directly to consumers. In respect of the gold bricks etc. about one-third of the units each sell to retailers and consumers.
 - Overall, in silver segment, only fifteen per cent of the units across the regions procure input from 'agencies' except West (46.3%). Majority of the units in all four types of silver products procure inputs from mainly from wholesalers, retailers and manufacturers. Inputs procured through exchange offers also form about one-third of the units. More than seventy per cent of the units sell their products directly to consumers in addition to other sources.
 - In platinum segment similar pattern of source of inputs and destination of output is found. However, more than forty per cent of the unit depend on other states also for the inputs they need apart from wholesalers and manufacturers. About 3,0 per cent of the units procure inputs from agencies too.

VI

MAPPING OF ECONOMIC PARAMETERS IN THE GEMS AND JEWELLERY SECTOR

In this chapter, the economic parameters of the gems and jewellery (G&J) sector have been examined using secondary data. Data on unorganised⁶ units has been taken from the Enterprise Survey (73rd Round) of the National Sample Survey Organisation (NSSO) and that

for organised⁷ units has been taken from the ASI unit level data for the corresponding year (2015-16). The data has been analysed by region and type of activity. Table 6.1 lists the National Industrial Classification (NIC)-2008 codes for identifying different segments in the G&J industry.

Table 6.1: NIC-2008 Codes Selected for Identification of the Gems and Jewellery Industry

Category	NIC-2008 Code	Acronyms used	Description
Manufacturing	32111	G&SJ	Manufacture of jewellery (plain or studded) of precious and/or semi precious- base metals and/or stones
	32112	D&GS	Working of diamonds and other precious and semi-precious stones, industrial quality stones, synthetic or reconstructed precious or semi-precious stones
	32114	Coins	Manufacture of coins, including coins for use as legal tender, whether or not of precious metal
	32119	A	Manufacture of other articles of gold, silver and other precious and semi-precious metal and stone
	32120	IJ	Manufacture of imitation jewellery and related articles
Trade	46498	WsPM&J	Wholesale of precious metals and jewellery
	46697	WsPS	Wholesale of precious stones
	47733	RsJ&IJ	Retail sale of jewellery and imitation jewellery
Services	95293	RepS	Repair and alteration of jewellery

Source: www.mospi.gov.in

⁶Unorganised- or informal (sector) are often used interchangeably. Section 2 (l) of the Unorganized Workers Social Security Act, 2008 defines an unorganised sector as a production or service oriented enterprise owned by individuals or self employed workers (one who is not working for an employer and is engaged in an unorganised sector job earning an income below a threshold or owning land below a notified limit) and if workers are employed, then the total number of workers cannot exceed 10. The Survey on unincorporated non-agricultural enterprises of NSS 73rd round covered all unorganised manufacturing units and enterprises engaged in cotton ginning, cleaning and baling which are not covered by the Annual Survey of Industries (ASI) and units engaged in trading, non-captive electricity generation and transmission and other services activities. The ownership categories of enterprises that were under coverage of NSS 73rd round were (a) proprietary and partnership enterprises, Trusts, Non Profit Institutions (NPIs), Self Help Groups (SHG), etc. The ownership categories (a) incorporated enterprises (i.e. those registered under Companies Act, 1956), (b) Government and public sector enterprises and (c) Cooperatives were not considered for inclusion in the survey (MOSPI, GoI).

⁷Organised- or formal as often used interchangeably covers all factories registered under Sections 2m(i) and 2m(ii) of the Factories Act, 1948 i.e. those factories employing 10 or more workers using power; and those employing 20 or more workers without using power (MOSPI, GoI).

This chapter has been divided into two major sections. The first discusses the structure of the Gems and Jewellery sector of India by regions and segment types. The second section deals with the performance of the G&J sector via the examination of the ratios of certain key parameters. This shall be followed by an analysis of the sector's economic performance by segments and regions using a composite index of the ratios. The key economic parameters⁸ chosen are:

Output: The value of products and by-products manufactured by the enterprise together with the charges for industrial servicing rendered to other concerns and other receipts incidental to entrepreneurial activity are considered as total output.

Gross Value Added (GVA): The additional value created by the process of production of an enterprise to the economy. Gross value added is calculated by deducting 'total operating expenses' and 'distributive expenses' from the value of 'total receipts' during the reference period. 'Distributive expenses' includes excise duties, sales tax, non-deductible vat, outward freight and transport charges, commission to selling agents etc.

Total Fixed Assets (TFA): Assets held for the purpose of producing or providing goods or services and not for resale in the normal course of entrepreneurial activities were classified as fixed assets. These cover all goods, new or used, that have a normal economic life of more than one year from the date of purchase.

Emoluments: Compensation of employees is the total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the employee during the accounting period. Self employed persons (like working owners or unpaid family workers) receive mixed income and not compensation of employees. However, the books of accounts of some enterprises show salary payment to one or two working owners. In such cases, these

payments were recorded as compensation to employee. Compensation of employees has two main components, i) wages and salaries payable in cash or in kind and ii) value of social contributions payable by the employer. Wages and salaries also included goods or services provided to employees as remuneration in kind instead of, or in addition to, remuneration in cash.

6.1 Structure of the Gems and Jewellery Industry

Although NSSO provides information on manufacturing, trading and service units, ASI covers only manufacturing units. If we add all the **available figures** from ASI and NSSO, for the year 2015-16, there were 10.12 lakh G&J units engaging 21.20 lakh workers in the country. Given the limitation of the availability of data, there will be a measure of underestimation that cannot be overcome by secondary analysis. However, due to the sensitivity of financial information, one has to use the aid of secondary analysis as not all primary respondents are comfortable divulging such details during the survey.

The discussion on the structure of the G&J sector will involve a description of the units and workers of the organised and unorganised manufacturing segments. The trade and services segments will be examined only from the unorganised angle.

6.1.1 Units in the Gems and Jewellery Sector (2015-16)

- In the year 2015-16 there were 551.84 thousand G&J **total manufacturing** units of which 99.83 percent were unorganised. Majority of the manufacturing units were found in the eastern region followed by the Southern region (Table 6.2).
- There were just 930 organised manufacturing units, around half of which were located in the Western region.

⁸Definitions taken from Key Indicators of NSS 73rd Round, MOSPI, GoI.

Table 6.2: Distribution of Gems and Jewellery Units by Regions (2015-16)

	Manufacturing					Trade	Services
	In thousands			Percentage Distribution		In thousands	
	Organised	Unorganised	Total	Organised	Unorganised	Unorganised	
North	0.07	94.92	94.99	0.07	99.93	72.86	19.10
Rajasthan	0.09	56.94	57.02	0.15	99.85	15.66	1.37
East	0.02	150.11	150.13	0.01	99.99	84.69	22.70
West	0.47	82.10	82.57	0.57	99.43	73.82	7.55
Gujarat	0.20	36.41	36.61	0.55	99.45	30.85	0.29
South	0.09	130.44	130.52	0.07	99.93	109.68	22.19
Total	0.93	550.91	551.84	0.17	99.83	387.56	73.20

Source: NSS Enterprise Survey and ASI, 2015-16.

Note: The number of organised units are “factories in operation” given by ASI.

- The NSSO data shows that there were about 387.56 thousand unorganised trading units as well. Most of the trading units (unorganised) were located in the southern region.
- The 73.2 thousand unorganised repair service units were mostly located in the eastern, southern and northern regions.
- The distribution of G & J units by segments revealed that out of the 551.84 thousand **total manufacturing** units, 366.46 thousand units (66.41 per cent) were engaged in the manufacture of Gold and Silver Jewellery (Table 6.3).
- Out of the available data for **organised manufacturing** units (930 units), Gold and Silver jewellery accounted for 59.14 per cent (550 units).
- Out of the 550.91 thousand **unorganised manufacturing** units, 365.91 thousand (66.4 per cent) were of G&SJ.
- Only 104 coin and legal tender manufacturing units were there in total, all of which were in the unorganised sector.
- Trading units made up for 38.27 per cent of the unorganised sector, most of which were retail units. There were 73.20 thousand unorganised units (7.23 per cent) engaged in the service sector.

Table 6.3: Distribution of Gems and Jewellery Units by Segments (2015-16)

Segments		In numbers ('000s)			Percentage Distribution of Manufacturing Units	
		Organised	Unorganised	Total	Organised	Unorganised
Manufacturing	Gold and Silver Jewellery (G&SJ)	0.55	365.91	366.46	0.15	99.85
	Diamond and Gemstones (D&GS)	0.25	13.95	14.20	1.78	98.22
	Coins and legal tender (Coins)	0.00	0.10	0.10	0.00	100.00
	Articles of Gold and Silver (A)	0.03	49.28	49.31	0.06	99.94
	Imitation jewellery (IJ)	0.10	121.67	121.77	0.08	99.92
	A. Total Manufacturing	0.93	550.91	551.84	0.17	99.83
Trade	WS Precious metals and jewellery (WsPM&J)	NA	18.02	18.02		
	WS Precious stones (WsPS)	NA	1.16	1.16		
	RS Jewellery and imitation jewellery (RsJ&IJ)	NA	368.39	368.39		
	B. Total Trade	NA	387.57	387.57		
Service	C. Repair Services (RePS)	NA	73.20	73.20		
Total	A+B+C	0.93	1011.67	*		

Source: NSS Enterprise Survey and ASI, 2015-16.

Note: * Since data for organised trade and service is not available it would be misleading to present the sum as total: NA- Not available.

6.1.2 Workers engaged in the Gems and Jewellery Sector (2015-16)

- There were 1351.14 thousand workers engaged in **total manufacturing** units and 87.27 per cent were unorganised (Table 6.4).
- In absolute terms the highest number of **manufacturing workers** was found in Gujarat (336.91 thousand) with the **organised** units employing about one fourth of them. The organised units in the West region also accounted for a substantial share (24.23 per cent) of the total manufacturing workers in the region.
- There were 669.86 thousand **unorganised traders** (retail and wholesale) with about 30.5 per cent (204.27 thousand) of them in the Southern region.
- Of the 99.25 thousand workers engaged in unorganised repair **services** the East and South regions each accounted for about 30 per cent of the workers.

Table 6.4: Distribution of workers engaged in the Gems and Jewellery Units by Regions (2015-16)

Regions	Manufacturing					Trade	Services
	In thousands			Percentage Distribution		In thousands	
	Organised	Unorganised	Total	Organised	Unorganised	Unorganised	
North	3.49	187.82	191.31	1.82	98.18	121.50	25.78
Rajasthan	15.20	105.88	121.08	12.55	87.45	19.81	1.37
East	1.28	246.14	247.42	0.52	99.48	112.26	30.01
West	51.75	161.87	213.62	24.23	75.77	170.33	11.92
Gujarat	82.10	254.81	336.91	24.37	75.63	41.69	0.65
South	18.12	222.68	240.81	7.53	92.47	204.27	29.52
Total	171.94	1179.19	1351.14	12.73	87.27	669.86	99.25

Source: NSS Enterprise Survey and ASI, 2015-16

- About 55 percent (741.79 thousand) of the total **manufacturing workers** (1351.14 thousand) were engaged in Gold and Silver jewellery (G&SJ) making (Table 6.5).
- In case of Diamonds and Gemstone related manufacturing work, a substantial proportion (about 30 per cent) of the workers were engaged in organised units.
- Out of all the workers engaged in unorganised trade (wholesale and retail) 91 per cent worked in retail units whereas the rest were involved in wholesale activities.
- Of the total 1948.3 thousand **unorganised workers**, only 5 per cent were engaged in repair services.

Table 6.5: Distribution of workers engaged in the Gems and Jewellery Units by Regions (2015-16)

Segments		In numbers ('000s)			Percentage Distribution of Manufacturing Units	
		Organised	Unorganised	Total	Organised	Unorganised
Manufacturing	Gold and Silver Jewellery (G&SJ)	79.31	662.48	741.79	10.69	89.31
	Diamond and Gemstones (D&GS)	86.74	206.36	293.10	29.59	70.41
	Coins and legal tender (Coins)	0.00	0.10	0.10	0.00	100.00
	Articles of Gold and Silver (A)	2.05	97.05	99.09	2.07	97.93
	Imitation jewellery (IJ)	3.84	213.20	217.04	1.77	98.23
	Total Manufacturing	171.94	1179.19	1351.14	12.73	87.27

(Contd.)

Table 6.5: Distribution of workers engaged in the Gems and Jewellery Units by Regions (2015-16) (Contd.)

Segments		In numbers ('000s)			Percentage Distribution of Manufacturing Units	
		Organised	Unorganised	Total	Organised	Unorganised
Trade	WS Precious metals and jewellery (WsPM&J)	NA	57.03	57.03		
	WS Precious stones (WsPS)	NA	3.43	3.43		
	RS Jewellery and imitation jewellery (RsJ&IJ)	NA	609.40	609.40		
	Total Trade	NA	669.86	669.86		
Service	Repair Services (RePS)	NA	99.25	99.25		
Total	A+B+C	171.94	1948.30	*		

Source: NSS Enterprise Survey and ASI, 2015-16.

Note: * Since data for organised trade and service is not available it would be misleading to present the sum as total; NA- Not Available.

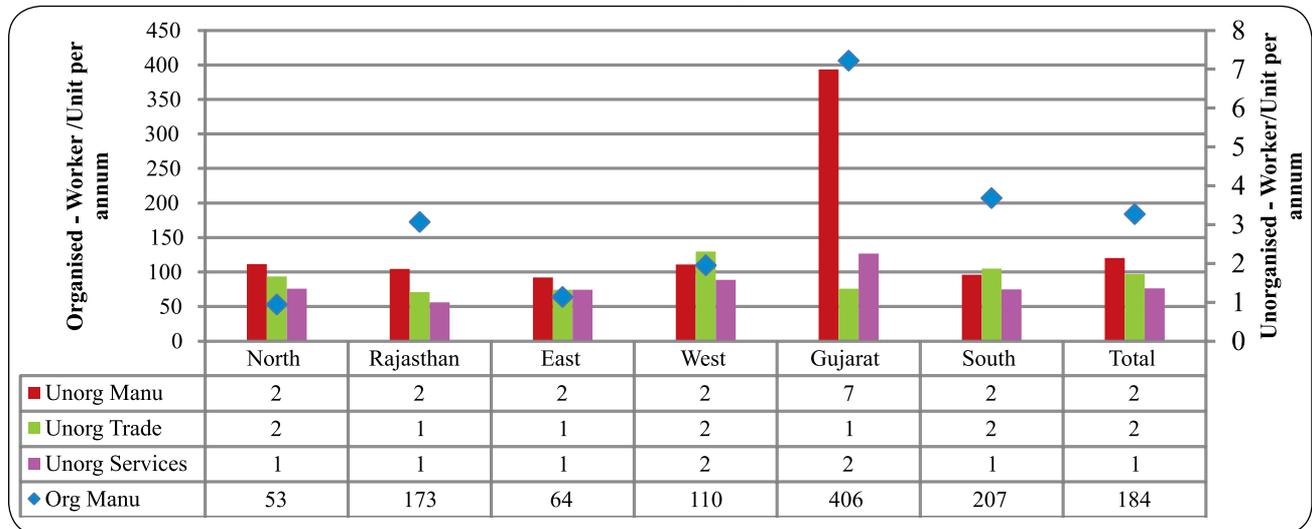
6.2 Performance of the Gems and Jewellery Industry

The overall performance of the G&J sector has been evaluated based on six crucial indicators/ratios, viz., (i) the share of workers in the organised sub-sector of the region/segment (discussed in the previous section), (ii) average size of the enterprises or firm size (number of workers/number of enterprises), (iii) enterprise productivity (total output/number of enterprises), (iv) working environment (emoluments per worker), (v) contribution to the Indian economy (Gross Value Added/number of workers), and (vi) capital intensiveness of the enterprises (total fixed assets/number of enterprises).

6.2.1 Firm size

Firm size is the average number of persons engaged in a unit. The unit of measurement used here is worker per unit.

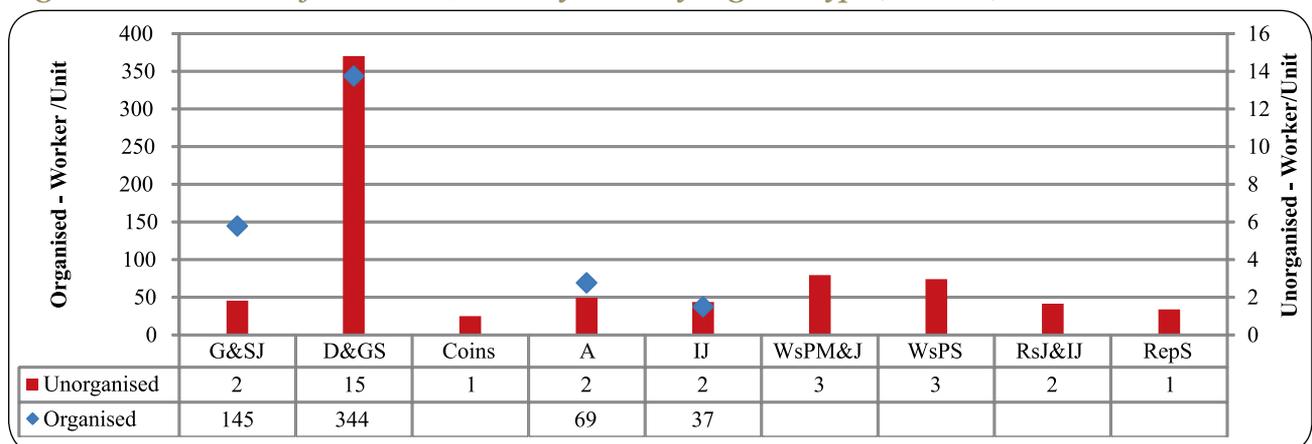
- Organised manufacturing units engaged 184 workers per unit. However their small numbers were not enough to outweigh the large numbers of extremely small sized unorganised units (be they in the manufacturing/trade/service sub-sectors).
- Within organised manufacturing units, Gujarat presented the largest firm size of 406 workers per unit whereas Northern region had a relatively small firm size of 53 workers per unit (Figure 6.1).
- In the unorganised manufacturing sector, Gujarat engaged 7 workers per unit and all the other regions had an extremely small firm size of two workers per unit.
- Trading and service units were also very small sized at an average of 2 and 1 workers per unit respectively.

Figure 6.1: Firm Size of Gems and Jewellery Sector by Regions (2015-16)


Source: NSS Enterprise Survey and ASI, 2015-16.

Note: Unorg- unorganised; Manu- manufacturing; Org- organised.

- Of all manufacturing segments firm size of D&GS was the biggest. Unorganised sector employed 15 workers per unit and organised sector, 344 workers per unit (Figure 6.2).

Figure 6.2: Firm Size of Gems and Jewellery Sector by Segment type (2015-16)


Source: NSS Enterprise Survey and ASI, 2015-16.

Note: G&SJ- Gold and Silver Jewellery (32111); D&GS- Diamonds and Gemstones (32112); Coins (32114); A- Articles made of precious and semi-precious metals and stones (32119); IJ- Imitation Jewellery (32120); WsPM&J- Wholesale of Precious Metals and Jewellery (46498); WsPS- Wholesale of Precious Stones (46697); RsJ&IJ- Retail sale of Jewellery and Imitation Jewellery (47733); RepS- Repair and alteration services of Jewellery (95293).

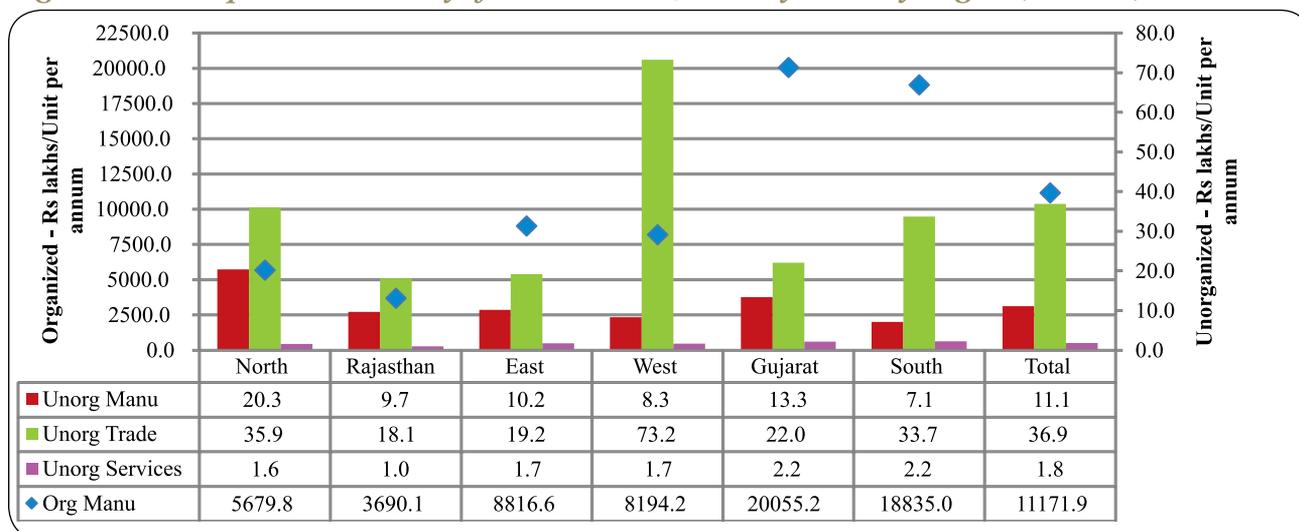
- Organised units manufacturing gold and silver jewellery (G&SJ) had a firm size of 145 workers per unit whereas the figure for unorganised units in the same segment was as low as 2.
- Unorganised trade segment employed 2 to 3 workers per unit. Units dealing with repair services had about one worker working in them.

6.2.2 Enterprise productivity

Enterprise productivity is the ratio of output to the number of units. The unit of measurement used is Rs. Lakhs per unit per annum.

- Although they were few in number, the enterprise productivity of organised manufacturing units was much higher (more than 100 times) in comparison to that of the unorganised units (Figure 6.3).

Figure 6.3: Enterprise Productivity of the Gems and Jewellery Sector by Region (2015-16)

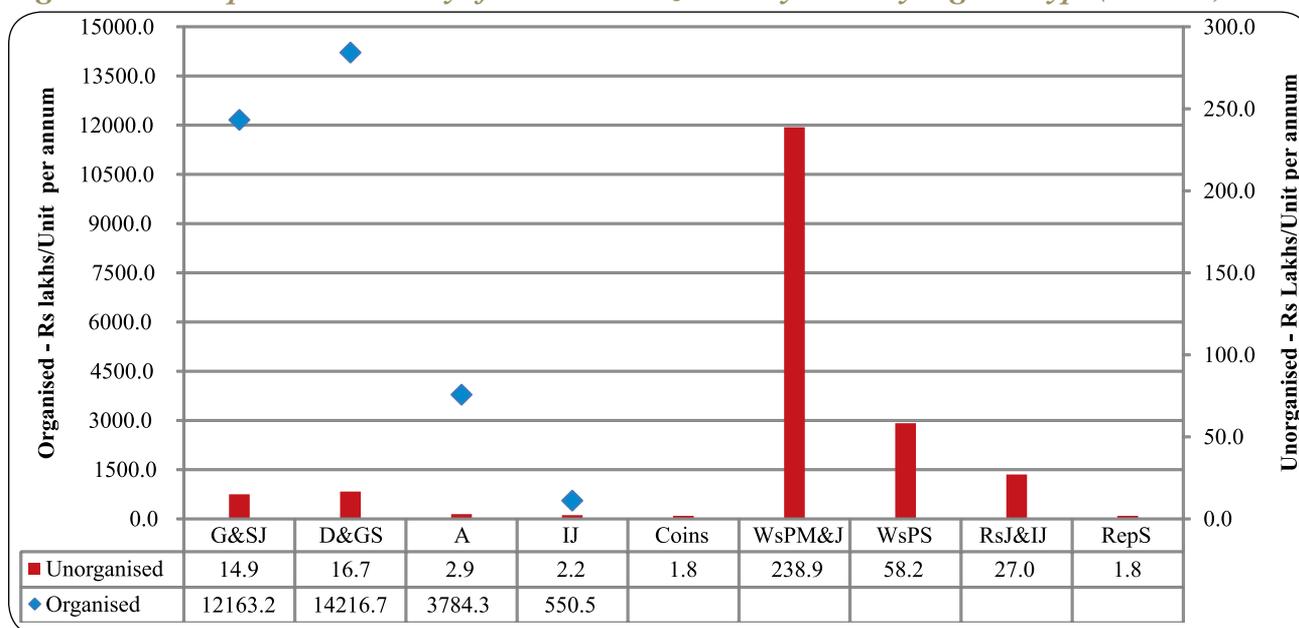


Source: NSS Enterprise Survey and ASI, 2015-16.

Note: Unorg- unorganised; Manu- manufacturing; Org- organised.

- Gujarat had the highest enterprise productivity in organised units.
- In case of unorganised manufacturing the northern region fared the best.
- The West region was the most productive (Rs. 73.2 lakhs per unit per annum) in case of unorganised trading units. South and Gujarat regions exhibited the highest enterprise productivity in case of unorganised repair service.
- Figure 6.4 revealed that in **manufacturing units** by segments, both organised and unorganised units of D&GS were the most productive (Rs. 14216.7 lakhs/unit per annum and Rs. 16.7 lakhs/unit per annum respectively).

Figure 6.4: Enterprise Productivity of the Gems and Jewellery Sector by Segment type (2015-16)



Source: NSS Enterprise Survey and ASI, 2015-16.

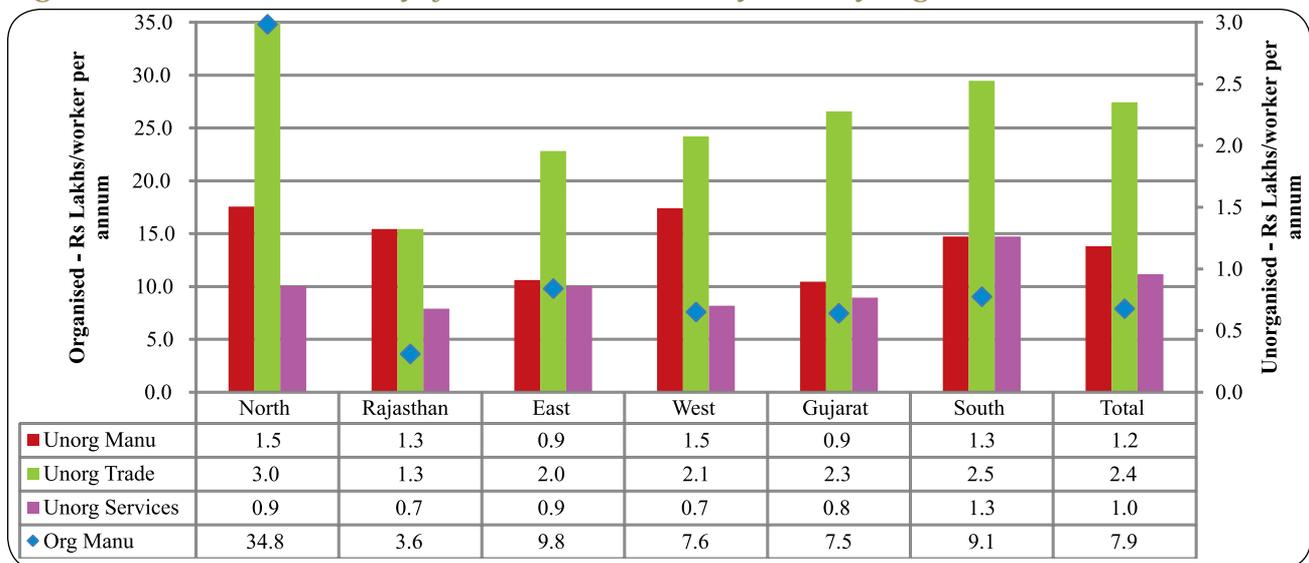
Note: G&SJ- Gold and Silver Jewellery (32111); D&GS- Diamonds and Gemstones (32112); Coins (32114); A- Articles made of precious and semi-precious metals and stones (32119); IJ- Imitation Jewellery (32120); WsPM&J- Wholesale of Precious Metals and Jewellery (46498); WsPS- Wholesale of Precious Stones (46697); RsJ&IJ- Retail sale of Jewellery and Imitation Jewellery (47733); RepS- Repair and alteration services of Jewellery (95293).

- Among unorganised trading units, wholesale units of precious metals and jewellery (WsPM&J) were relatively more productive than units engaged in wholesale of precious stones. Retail units were the least productive.
- Units engaged in unorganised repair services presented very low enterprise productivity.
- Figure 6.5 shows that labour productivity of organised manufacturing was quite high (Rs. 7.9 lakhs per worker per annum) in comparison to that of unorganised (manufacturing) units (Rs. 1.2 lakhs/worker per annum).
- Labour productivity of organised manufacturing workers of the northern region was as high as Rs. 34.8 lakhs /worker per annum. Within unorganised manufacturing the Northern and western regions were the most productive.

6.2.3 Labour productivity

Labour productivity is the ratio of GVA to the number of workers. The unit of measurement here is Rs. Lakhs per worker per annum.

Figure 6.5: Labour Productivity of the Gems and Jewellery Sector by Region (2015-16)

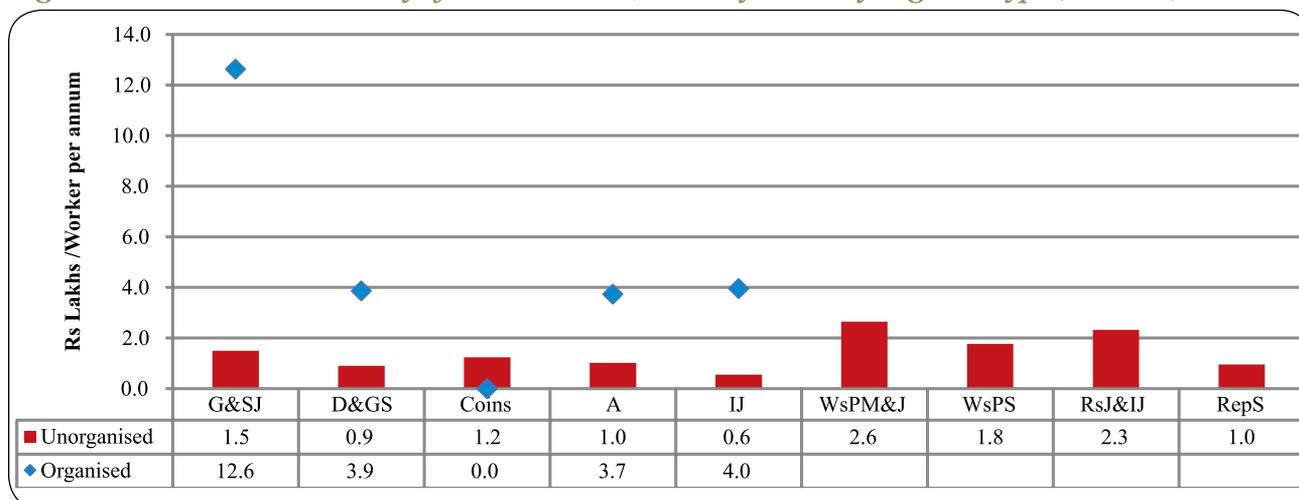


Source: NSS Enterprise Survey and ASI, 2015-16.

Note: Unorg- unorganised; Manu-manufacturing; Org- organised.

- Workers involved in unorganised trading more productive (Rs. 2.4 lakhs/worker per annum) than the ones in service sector (Rs. 1.0 lakh/worker per annum).
- Within **manufacturing**, workers of both organised and unorganised G&SJ units were the most productive (Figure 6.6).
- Labour productivity of unorganised WsPM&J was the highest at Rs. 2.6 lakhs/worker per annum amongst all trading units.
- Workers in norganised repair service were not very productive compared to other types of unorganised trading and manufacturing.

Figure 6.6: Labour Productivity of the Gems and Jewellery Sector by Segment type (2015-16)



Source: NSS Enterprise Survey and ASI, 2015-16.

Note: G&SJ- Gold and Silver Jewellery (32111); D&GS- Diamonds and Gemstones (32112); Coins (32114); A- Articles made of precious and semi-precious metals and stones (32119); IJ- Imitation Jewellery (32120); WsPM&J- Wholesale of Precious Metals and Jewellery (46498); WSPS- Wholesale of Precious Stones (46697); RsJ&IJ- Retail sale of Jewellery and Imitation Jewellery (47733); RepS- Repair and alteration services of Jewellery (95293).

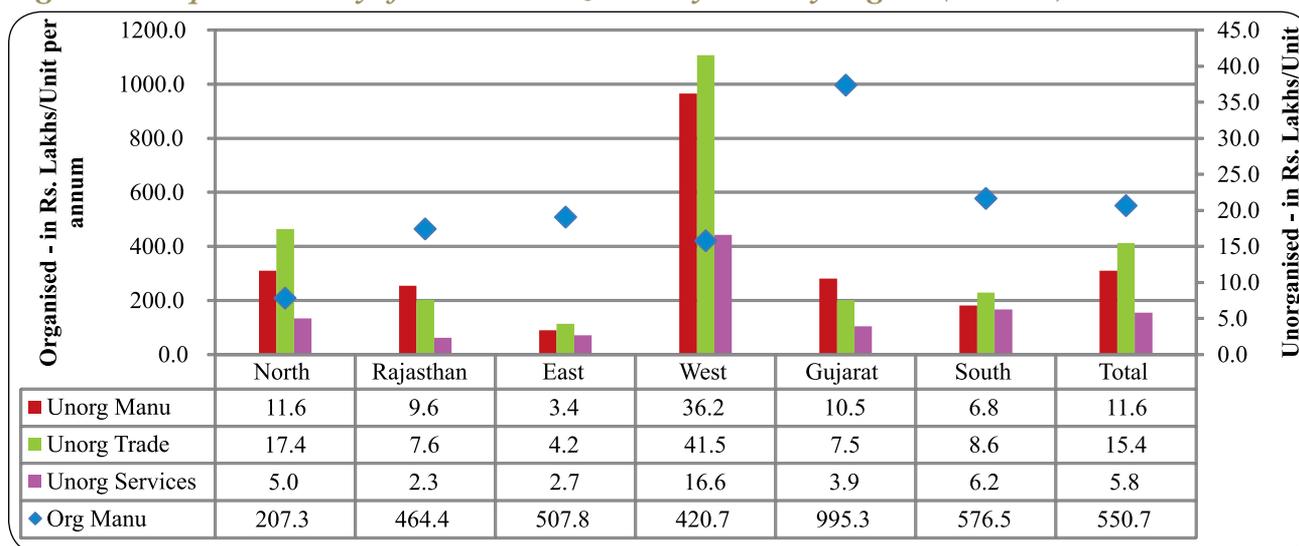
6.2.4 Capital Intensity

Capital intensity is the ratio of total fixed assets to total number of units and measured in terms of Rs. Lakhs per unit per annum.

- As presented in figure 6.7, organised manufacturing units were much more capital intensive (Rs. 550.7 lakhs per unit per annum) compared to the unorganised units (Rs. 11.6 lakhs per unit per annum).

- In organised manufacturing, units of Gujarat region were the most capital intensive (Rs. 995.3 lakhs per unit per annum) whereas in case of unorganised manufacturing the most capital intensive region was the West (Rs. 36.2 lakhs per unit per annum).
- Capital intensity of unorganised trading units (Rs. 15.4 lakhs per unit per annum) was higher than that of unorganised manufacturing (Rs. 11.6 lakhs per unit per annum) and service units (Rs. 5.8 lakhs per unit per annum).

Figure 6.7: Capital Intensity of the Gems and Jewellery Sector by Regions (2015-16)

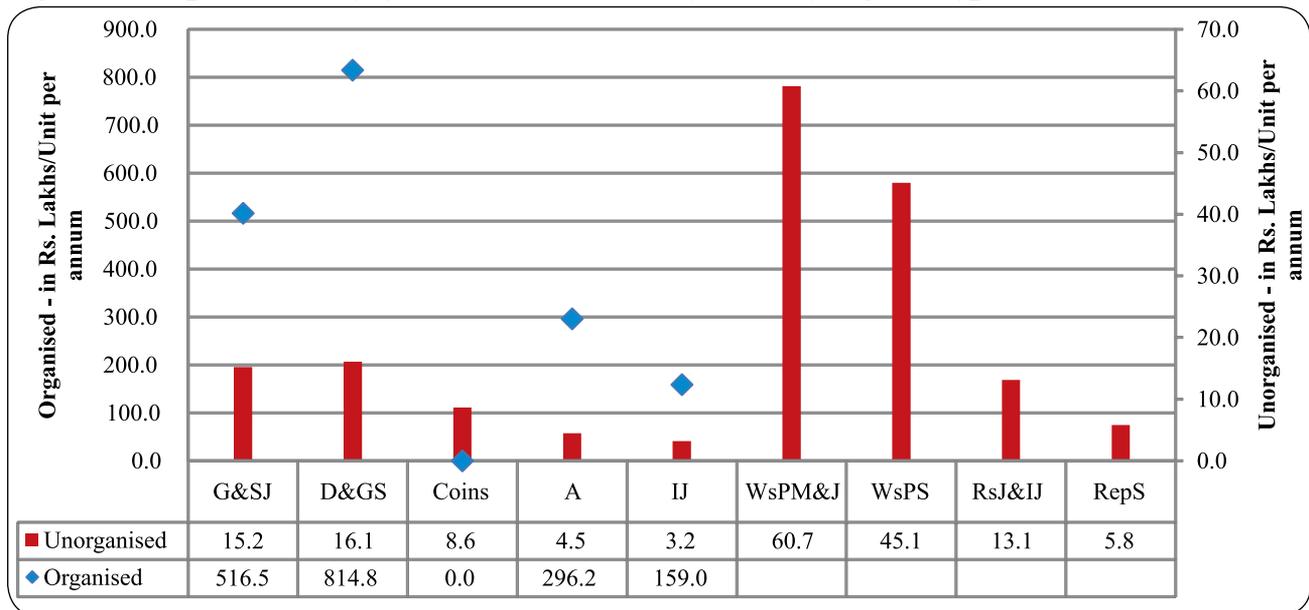


Source: NSS Enterprise Survey and ASI, 2015-16.

Note: Unorg- unorganised; Manu-manufacturing; Org- organised.

- In case of **total manufacturing**, D&GS was the most capital intensive segment in both organised and unorganised sectors (Figure 6.8).
- Wholesale of precious metals and jewellery (WsPM&J) was the most capital intensive **unorganised trading** segment.

Figure 6.8: Capital Intensity of the Gems and Jewellery Sector by Segment type (2015-16)



Source: NSS Enterprise Survey and ASI, 2015-16.

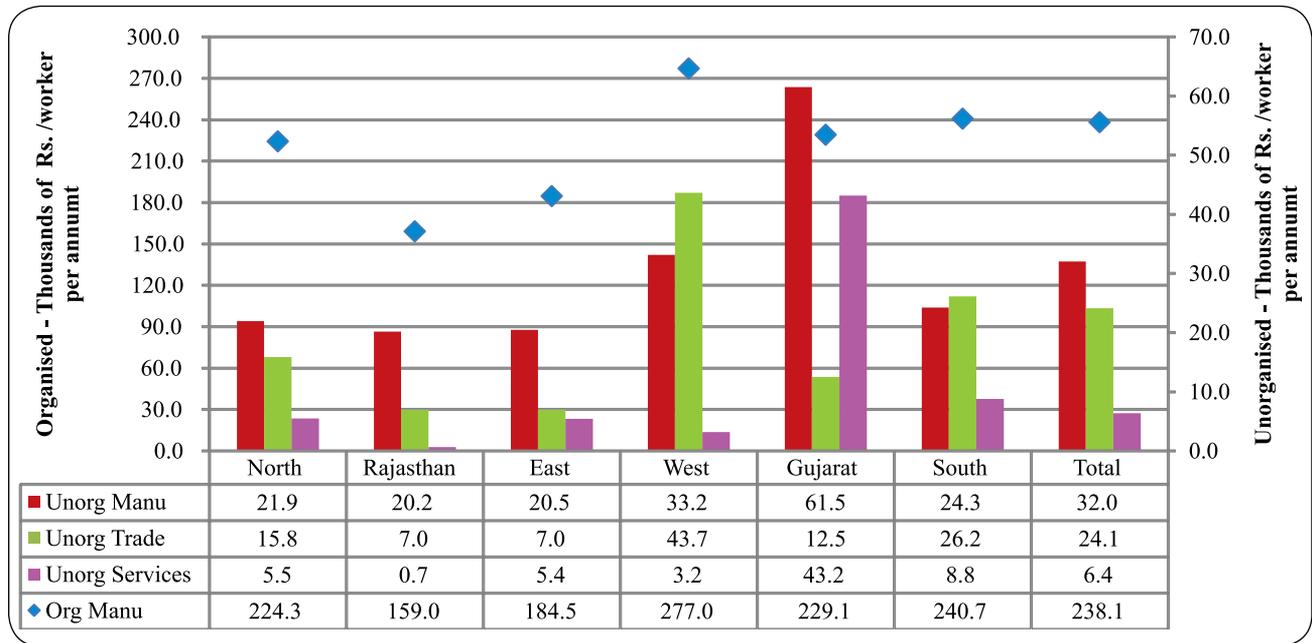
Note: G&SJ- Gold and Silver Jewellery (32111); D&GS- Diamonds and Gemstones (32112); Coins (32114); A- Articles made of precious and semi-precious metals and stones (32119); IJ- Imitation Jewellery (32120); WsPM&J- Wholesale of Precious Metals and Jewellery (46498); WSPS- Wholesale of Precious Stones (46697); RsJ&IJ- Retail sale of Jewellery and Imitation Jewellery (47733); RepS- Repair and alteration services of Jewellery (95293).

6.2.5 Emoluments per worker

Emoluments per worker is the ratio of total remuneration (in cash or in kind, payable by an enterprise to an employee) to the total number of workers in a unit. It is measured in Rs. thousands per worker per annum.

- Emoluments per worker reveal the living standards of the workers as well. Figure 6.9 shows that organised manufacturing pays the workers engaged much higher emoluments (Rs. 238.1 thousand per worker per annum) compared to its unorganised counterpart (Rs. 24.1 thousand per worker per annum).
- Workers in the unorganised trade and service sector were worse off than those engaged in unorganised manufacturing.
- Region wise analysis of the available data revealed that workers engaged in **unorganised trade and organised manufacturing** were paid the highest remuneration in the West compared to other regions.
- In the **unorganised manufacturing** sector, workers in Gujarat received the highest remuneration compared to other regions.
- Workers engaged in the **organised manufacturing** of G&SJ got the highest emoluments (Rs. 259.6 thousand per worker per annum) compared to other organised segments (Figure 6.10).
- In case of **unorganised manufacturing** workers working for D&GS units got the highest remuneration per annum (Rs. 71.7 thousand per worker per annum).
- Workers in unorganised wholesale trade got much higher remunerations than those in the retail trade and service segments.

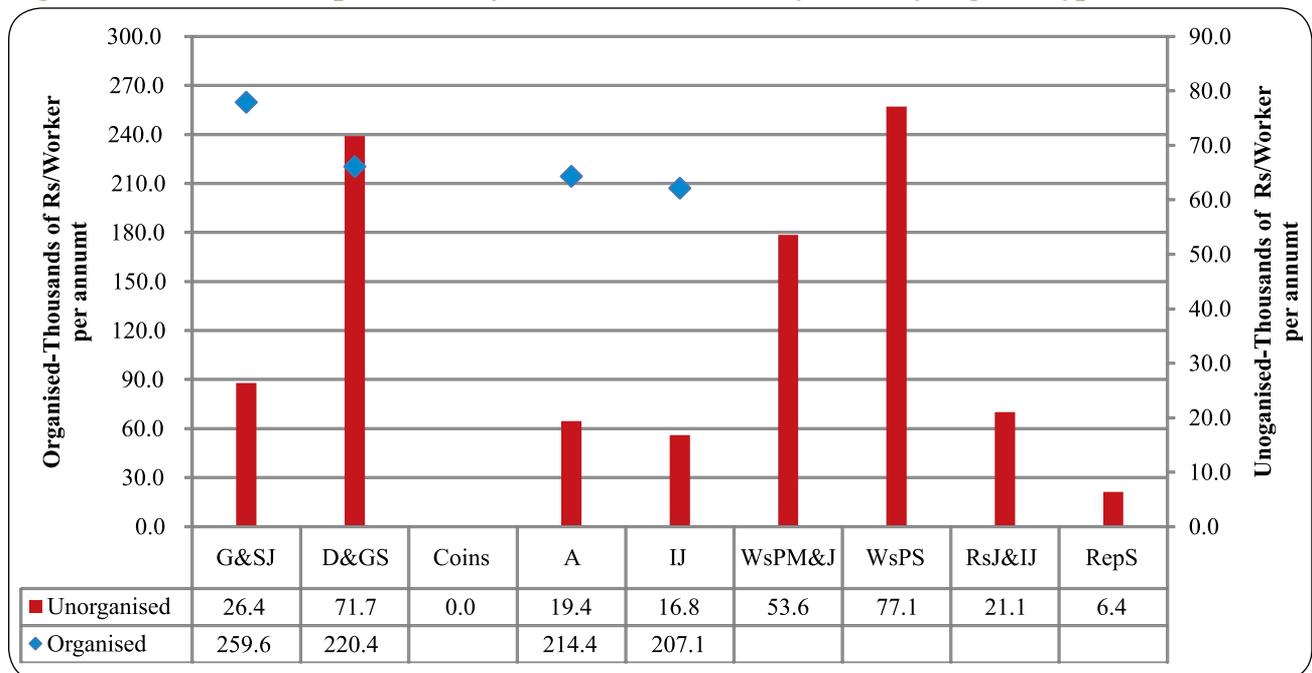
Figure 6.9: Emoluments per worker of the Gems and Jewellery Sector by Regions (2015-16)



Source: NSS Enterprise Survey and ASI, 2015-16.

Note: Unorg- unorganised; Manu- manufacturing; Org- organised.

Figure 6.10: Emoluments per worker of the Gems and Jewellery Sector by Segment type (2015-16)



Source: NSS Enterprise Survey and ASI, 2015-16.

Note: Emoluments for Coins segment was negligible.

G&SJ- Gold and Silver Jewellery (32111); D&GS- Diamonds and Gemstones (32112); Coins (32114); A- Articles made of precious and semi-precious metals and stones (32119); IJ- Imitation Jewellery (32120); WsPM&J- Wholesale of Precious Metals and Jewellery (46498); WsPS- Wholesale of Precious Stones (46697); RsJ&IJ- Retail sale of Jewellery and Imitation Jewellery (47733); RepS- Repair and alteration services of Jewellery (95293).

Given the importance of manufacturing and also availability of data for both organised and unorganised units, a composite index has been constructed to examine the performance of G&J manufacturing across segments and regions.

The **Composite Index** is the arithmetic mean of the performance scores (normalised values, discussed below) of all the indicators.

To make data comparable across six crucial indicators⁹ (discussed above), the figures for each of the m have been rescaled from their raw values to a score ranging from 0 to 1, with 0 indicating lowest performance and 1 the highest performance. The higher values (of all the indicators) indicate better performance. The performance score of a region/segment for a particular indicator has been computed as

$$Z' = \frac{X - \min(X)}{\max(X) - \min(X)}$$

where X is the value of the indicator in a region/segment and max (X) and min (X) are the maximum and minimum values of the indicator, respectively, across all the regions/segments.

- As seen in table 6.6 the top two performing regions in the G&J sector were Gujarat and the West, followed by the Rajasthan, South, North, and the East, respectively.
- One noteworthy observation that can be made from Table 6.6 is that there is a substantial disparity between the CI values of Gujarat and of the West, and the difference increases by a huge margin when compared to the other four regions.
- The CI value of the Eastern region is the lowest compared to other regions. Given that the East has the largest number of manufacturing units, its relative poor performance does not bode well for the G&J sector.

Table 6.6: Region wise Composite Index (CI) values and ranks of Gems and Jewellery Sector (2015-16)

Region	Composite Index Values	Rank
Gujarat	0.85	1
West	0.73	2
Rajasthan	0.22	3
South	0.20	4
North	0.18	5
East	0.00	6

Source: NCAER computations using NSS Enterprise Survey and ASI data, 2015-16.

- The five manufacturing segments have been presented in descending order of the CI values in Table 6.7.
- Diamond and gemstone (D&GS) was the top performing segment (0.93), followed by those engaged in manufacture of gold and silver jewellery (G&SJ).
- Although Imitation Jewellery (IJ) accounted for 22 per cent of the total number of manufacturing units, it's performance was relatively poor.

⁹(i) share of workers in the organised sub-sector of the region/segment, (ii) average size of the enterprises (number of workers/number of enterprises), (iii) enterprise productivity (total output/number of enterprises), (iv) working environment (emoluments per worker), (v) contribution to the Indian economy (Gross Value Added/number of workers), and (vi) capital intensiveness of the enterprises (total fixed assets/number of enterprises).

Table 6.7: Segment wise Composite Index (CI) values and ranks of Gems and Jewellery Sector (2015-16)

Segment	Composite Index Values	Rank
Diamond and Gemstones (D&GS)	0.93	1
Gold and Silver Jewellery (G&SJ)	0.41	2
Articles of Gold and Silver (A)	0.10	3
Coins and legal tender (Coins)	0.08	4
Imitation jewellery (IJ)	0.05	5

Source: NCAER computations using NSS Enterprise Survey and ASI data, 2015-16.

One must take into consideration limitations of the dataset and methodology while drawing conclusions from this chapter. As mentioned earlier, ASI does not provide information on trade and service sectors. Therefore the sum total of all the units from the data available does not really represent the total number of units in the G&J sector of India. Also, the NIC 5 digit codes do not represent a very detailed picture of each segment of the G&J sector. For instance, NIC code 32112 corresponds to both diamonds and gemstones, and cannot be broken down further. Also, the CI methodology used gives equal weightage to all the indicators to avoid any bias. If the analysis had

been done for profits generated for the enterprise owners, the output per unit would probably have had a higher weightage, or if the study was intended to examine the welfare gains accruing to artisans involved in the industry, a higher weight would have been assigned to the emoluments per worker. However, the CI rankings do provide an insight into the regions and segments that have potential to contribute to the overall performance of the G&J manufacturing. Based on the focus of the reader, the critical ratios can be used to get a sense of the performance of the unorganised trading and service segments as well.

VII

CONTRIBUTION OF THE GEMS AND JEWELLERY SECTOR TO THE ECONOMY

The preceding chapters of the report presented the profile of the gems and jewellery (G&J) sector, through findings based on both primary and secondary research. Despite being a very important sector of the economy, which generates number of jobs and high income, and is also led by substantive domestic and export demand, the G&J sector suffers from the lack of quantification of most of its characteristics. It is embedded within a sub-sector of the manufacturing sector in the National Accounts Statistics (NAS), which is the source of all economic data from the government for the production sectors of the country. The extraction of its value from this sub-sector for estimating its contribution to the economy necessitates the use of some plausible ratios.

This chapter discusses the method used for estimating the contribution of the G&J sector to the economy. Before we proceed to describe the methodology used for quantifying the economic characteristics of the sector, we present the structure of the overall economy and of its broad sectors including agriculture, manufacturing, and services, the latter two of which include the G&J sector, according to NAS.

7.1 Structure of the Overall Economy

The importance of any production sector is determined by its contribution to the economy. All the goods-and services-producing sectors of an economy contribute to it by way of their respective shares in the:

- Value of output or value of total produce;
- Gross Value Added(GVA) or total income,

expressed as Value of Output minus Value of Input; and

- Employment.

These shares can vary significantly across different national as well as sub-national economies around the world. In India, some labour-intensive sectors, such as agriculture and construction, make a lower contribution to output and GVA but a more significant contribution to employment. Services, on the other hand, contribute significantly to both output and GVA but much less to employment.

The manufacturing sector is unique, because as per the official estimates, its share in output is substantial but just about half as much in GVA and further half in employment. It is not surprising, therefore, that the GVA per unit of output as well as labour per unit of output of the manufacturing sector is among the lowest for all the sectors.

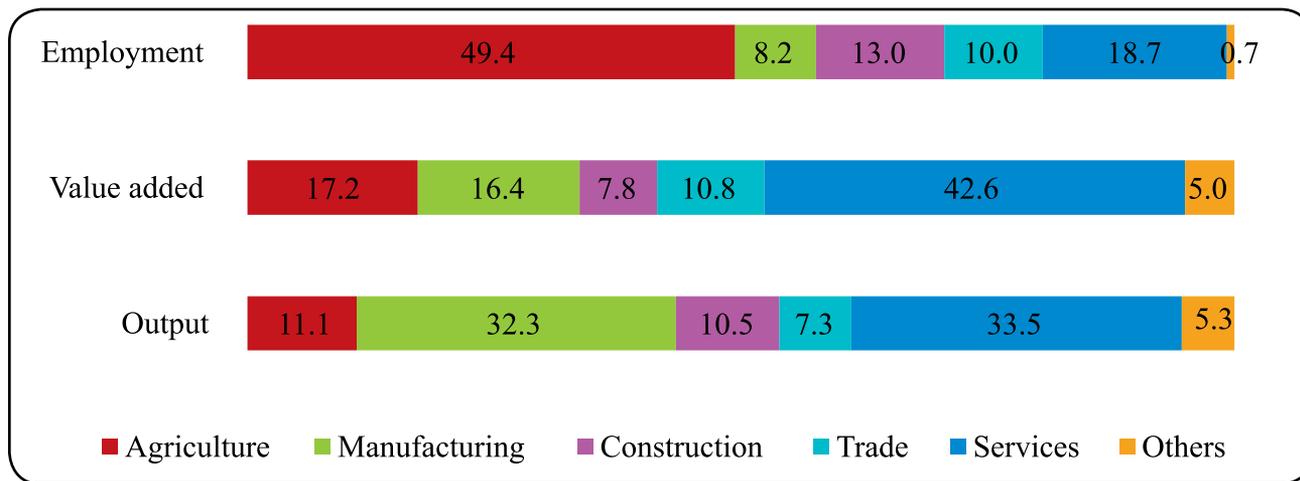
As per the latest NAS figures (NAS, 2019), published by the Central Statistics Office, Ministry of Statistics and Programme Implementation, agriculture accounted for just 11.1 percent of the total output and 17.2 percent of GVA in 2017-18. However, it accounted for as much as 49.4 percent of employment, wherein employment is expressed in terms of the number of jobs and has been estimated using the unit-level data from the Employment–Unemployment Survey (EUS), conducted by the Ministry of Labour and Employment in 2015–16.

The services sector, on the other hand, posted a reverse picture, and manufacturing, as

mentioned before, contributed about one-third (32.3 percent) of the total output but painted a dismal picture in terms of its shares in GVA and employment, at 16.4 percent and a mere 8.2

percent, respectively. Figure 7.1 delineates the shares of some important sectors in output, GVA, and employment, respectively.

Figure 7.1: Value Added per Unit of Output and Employment for the Major Sectors (in percentages)

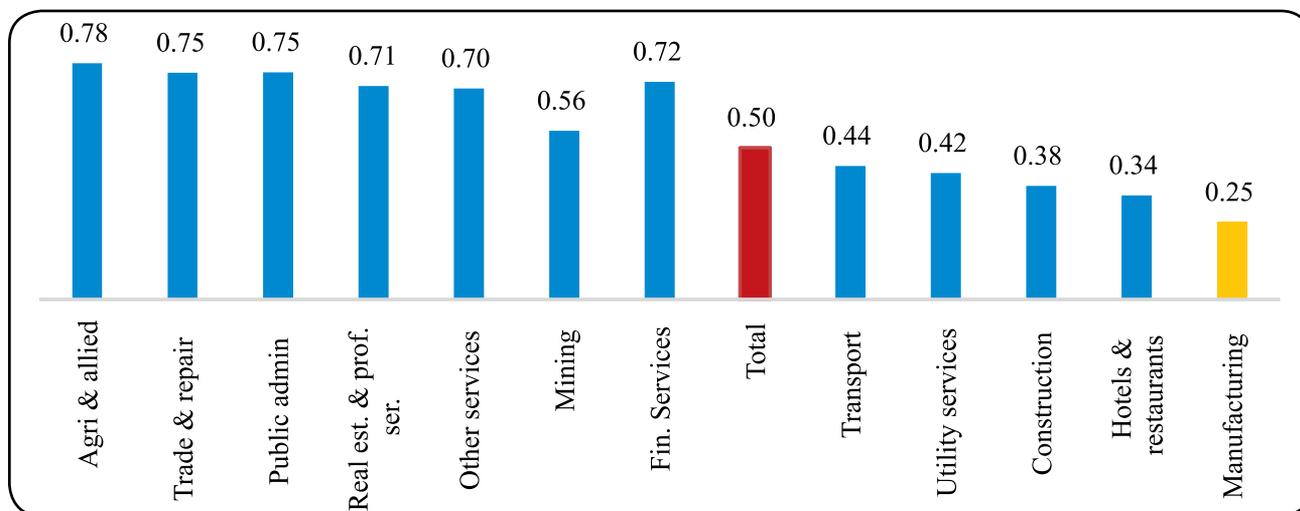


Source: NAS, 2019 and EUS, 2015.

Figure 7.1 suggests that though the manufacturing sector accounts for one-third of the total value of output produced in the country, yet because of its high input cost, its share in GVA

is only 16.4 percent. Among the major sectors of the economy, the manufacturing sector has the lowest value added to output ratio (Figure 7.2).

Figure 7.2: Value Added per Unit of Output for the Major Sectors (in ratios)



Source: NAS, 2019.

Note: Agri & allied- Agriculture & allied; Public admin- Public administration; Real est. & prof. ser. - Real estate & professional services; Fin. Services- Financial Services.

7.2 The Gems and Jewellery Sector- Data Sources

The gems and jewellery (G&J)¹² industry

is one of the fastest growing industries in the Indian economy, driven by both domestic as well as export demand. The domestic demand is heavily dependent on religious and cultural

¹²G&J refers to the gems and jewellery industry, which corresponds with the scope of this study.

factors, and witnesses a spurt, irrespective of price, during several auspicious occasions like festivals and weddings. India is reportedly the largest consumer of gold in the world. The external demand is explained by the demand for intricate and unique designs in jewellery-making as well as the skills involved in diamond cutting and diamond polishing. Most of these skills run through the family, generation after generation.

Despite the sector's importance to the economy, its actual contribution to overall GVA and employment is not known. In order to quantify its contribution, we have mainly used the officially available data sources by Ministry of Statistics and Programme Implementation. These data sources are detailed below.

- **National Accounts Statistics**

The National Accounts Statistics (NAS) is an annual publication prepared and released by the Central Statistics Office (CSO), which presents the complete accounting framework for measuring the performance of the economic activities being undertaken in the country. The underlying concepts and methodology of compilation is mostly standardised under the United Nations System of National Accounts (SNA) of the United Nations Statistics Division (UNSD). However, the procedures and approximations are shaped by the country-specific data collection system. The estimates of production and value added are presented only at a broad level of disaggregation, which is not enough to capture estimates of the G&J sector.

- **Enterprise Surveys**

These are nation-wide surveys conducted by CSO and the National Sample Survey Office (NSSO) to canvass the non-agricultural units. CSO conducts the Annual Survey of Industries (ASI), canvassing the manufacturing units registered under Sections 2(m)(i) and 2(m)(ii) of the Factories Act, 1948. The NSSO conducts the Enterprise Surveys of the unregistered enterprises but these are conducted once in a few years, the latest being for the year 2016-17.

These two surveys are the principal sources of industrial statistics in India. ASI facilitates suitable data collection of the organised manufacturing sector based on appropriate sampling techniques, while surveys conducted by NSSO collect data on the unorganised manufacturing sector. In both the surveys, the units are identified by the 5-digit codes as given in National Industrial Classification (NIC). Hence, these surveys are reliable sources of production and value added data at a fairly disaggregated level.

- **Supply and Use Tables**

The central framework of the SNA also provides for the compilation of Supply and Use Tables (SUTs), with a focus on the processes of production and consumption of individual types of goods and services. The SUTs depict, in the form of matrices, where the products come from and how they are used. Their main use is to act as an integration framework for balancing the national accounts, by recording how the supplies of different kinds of goods and services originate from domestic industries and imports, and how those supplies are allocated between various intermediate or final uses, including exports. The SUTs are prepared by CSO with a long lag. The latest available SUT is for 2015-16. The SUTs are pre-requisites for the construction of an Input-Output (IO) Table.

- **Input-Output Table**

While the SUTs depict the actual input use and output flows in the economy, and are therefore useful for estimating the share of a particular sector in the overall economy, IO tables are useful for measuring and quantifying the indirect contribution, arising from the interlinkages among different sectors of the economy. All economic sectors exert both a direct as well as an indirect impact on the economy. The indirect impact is also called the second-round or spill-over impact. The IO model is the most widely used technique to arrive at a measure for quantifying the indirect impact.

The indirect benefits resulting from the interlinkages of a sector with other sectors are obtained in the Leontief Inverse matrix, simply called the “inverse” matrix, and subsequently through the multipliers. The multipliers represent a quantitative expression of the extent to which some initial “exogenous” force or change is expected to generate additional effects through the interdependencies associated with some assumed and/or empirically established “endogenous” linkage system.

To be specific, if a sector increases its output, more inputs are required, including more intermediates from other sectors. Such an interconnection of a particular sector with other sectors is termed as a “backward linkage”, and is represented by an “output multiplier”. This is the column sum of the inverse matrix. The higher the multipliers, the larger is the indirect impact on the economy.

The employment multiplier is the ratio of the employment linkage coefficient to the employment direct coefficient. The direct coefficient is the employment to output ratio

and the employment linkage coefficient is obtained by multiplying the row vector of the employment direct coefficient with the inverse matrix.

Overall, the G&J industry is an amalgamation of different segments, each belonging to different types of major sectors of the economy. For example, hand-made and machine-made jewellery falls under the manufacturing sector while trade and repair work are part of the services sector. In order to estimate the contribution of the G&J industry to the overall economy, it is first extracted from manufacturing, trade, and repair services.

7.3 The Manufacturing Segment of the G&J Sector

Within the manufacturing sector, G&J falls under “Other Manufacturing”, which further falls under “Others”. NAS provides actual values of output and value added for both these broad sub-sectors. However, a further breakup of the “Other Manufacturing” sub-sector is not available (for details of industries which constitute the “Other Manufacturing” sub-sector, see Box 7.1).

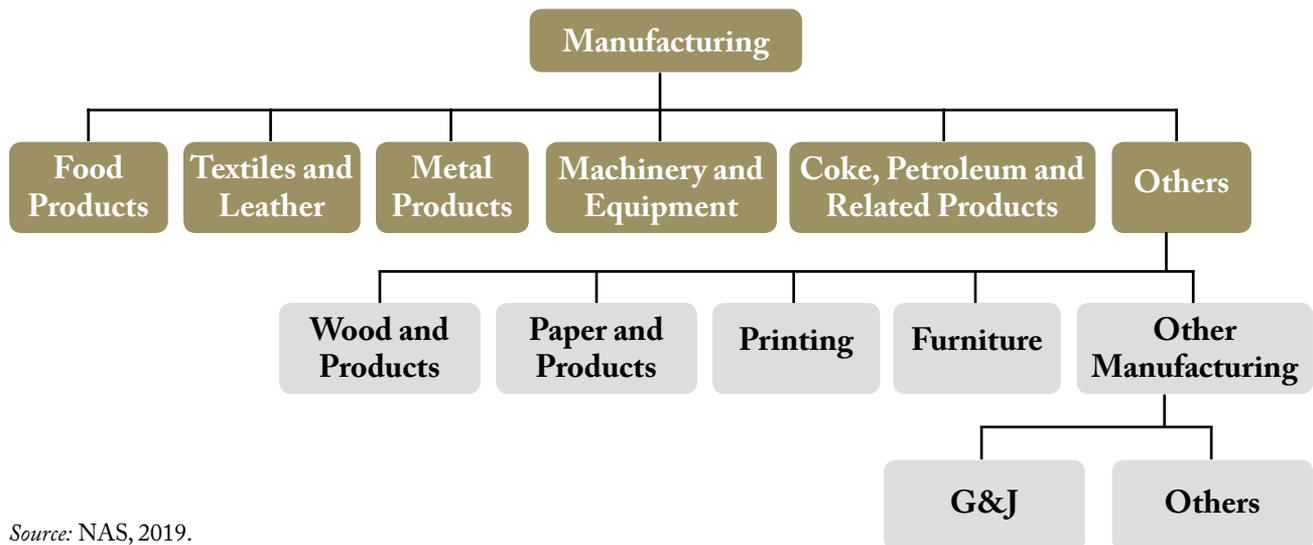
Box 7.1: Details of Industries that Fall under “Other Manufacturing”

As per the CSO’s “Note on Compilation of Supply and Use Tables”, the industries which fall under the “Other Manufacturing” segment are as follows:

Manufacture of jewellery of gold, silver and other precious or base metal, clad with precious and semi-precious metals and stones; working of diamonds and other semi-precious stones; production of worked pearls; manufacture of other articles of gold, silver and other precious and semi-precious stones and metals; manufacture of dental fillings, dental wax and dental laboratory furnaces, dental instruments, artificial teeth, bridges, etc.; manufacture of laboratory apparatus, bone plates and screws, syringes, needles, cannulas, etc.; manufacture of measuring instruments, orthopaedic devices, ophthalmic goods and other medical and dental instruments not elsewhere classified; includes recovery of materials such as paper, plastics, used beverage cans and metals, into distinct categories, from garbage; also includes the processing of metal and non-metal waste and scrap and other articles into secondary raw material; manufacture of musical instruments, sports goods, games and toys, stationery articles, protective safety equipment, umbrellas, walking sticks, articles of personal use and other articles not elsewhere classified.

The categorisation of the manufacturing sector, as per NAS, is illustrated in Figure 7.3.

Figure 7.3: Categorisation of the Manufacturing Sector



Source: NAS, 2019.

Values of output and value added for Trade and Repair services are also available at an aggregate level. Table 7.1 presents the contribution of these

aggregate sub-sectors to the economy, as per the statements of NAS, 2019.

Table 7.1: Percentage Shares of the Sectors and Sub-sectors in the Economy

Sectors	Categories	Sub-categories	Output	Value Added	
Agriculture			11.1	17.2	
Mining			2.0	2.3	
Manufacturing	Food Products		5.3	1.8	
	Textiles and Leather Products		3.6	2.1	
	Metal Products		4.6	2.0	
	Machinery and Equipment		6.8	3.8	
	Coke, Petroleum and Related Products		9.6	5.4	
	Others	Wood and Products		0.3	0.3
		Paper and Products		0.5	0.2
		Printing and Publishing		0.2	0.2
		Furniture		0.5	0.3
		Other Manufacturing		0.8	0.2
		Repair and Installation of Machinery and Equipment		0.0	0.0
	Total Others		2.4	1.3	
	Total Manufacturing		32.3	16.4	
Trade and Repair Services			7.3	10.8	
Services			47.3	53.2	
Total			100.0	100.0	

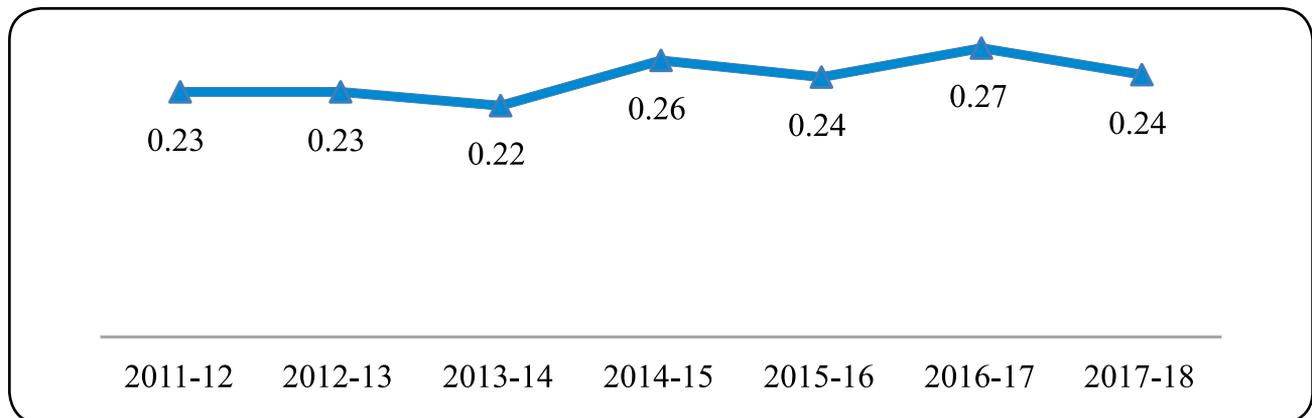
Source: NAS, 2019.

The table suggests that while overall manufacturing contributes 32.3 percent to output and 16.4 percent to GVA, the corresponding figures for “Others” are just 2.4 percent and 1.3 percent, respectively. The shares of the “Other Manufacturing” segment within “Others” in output and value added were even lower, at 0.8

percent and 0.2 percent in 2017-18.

Notably, the share of “Other Manufacturing” in the overall GVA has remained at 0.2–0.3 percent since 2011-12 (Figure 7.4). It may be noted that these are direct shares of the sectors and sub-sectors in the overall economy.

Figure 7.4: Percentage Share of “Other Manufacturing” in GVA



Source: NAS, 2019.

In absolute terms, the total Value of Output of the “Other Manufacturing” sub-sector, of which G&J is a part, was Rs 2,60,957 crore, for 2017-18. Its value added was Rs 37,907 crore for the same year.

The SUT is for 2015-16. However, using NAS, 2019, the key characteristics have been estimated for 2017-18 as well.

In the Use Table, G&J is listed as a separate row item, which gives its total use for intermediate consumption (for industry use), household consumption, exports and inventory. In the Supply Table, this row refers to its total supply through domestic production as well as imports.

To arrive at the numbers for 2017-18, the data on household consumption has been obtained from NAS, and trade data has been obtained from the Reserve Bank of India (RBI).

In the NAS, there is a separate category among the demand-side components, called “Valuables”. This refers to the net acquisition of valuables by households pertaining to precious items like gold, gems, ornaments and precious stones, and is included under Gross Capital

Formation (GCF), as a separate category. The items included in “Valuables” have HS codes, as follows:

- 7108 (gold),
- 7106 (silver),
- 7113 and 7114 (gold and silver ornaments),
- precious articles with HS code 710231 (diamonds),
- 7103 (other gems and stones), and
- 711019 (platinum).

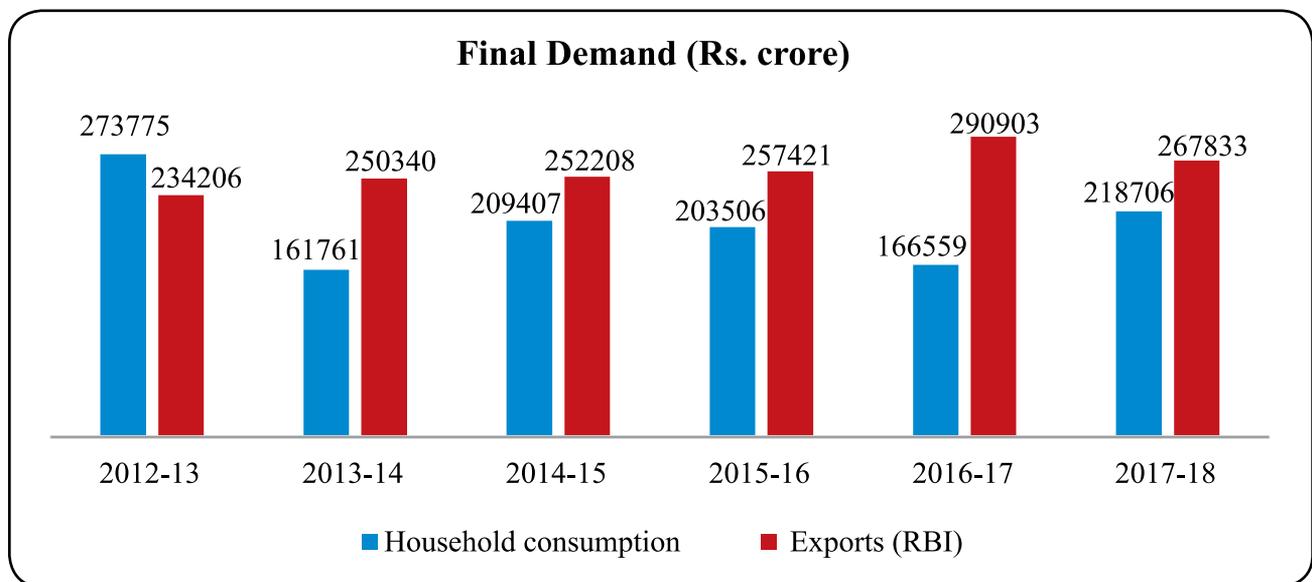
The value of “Valuables”, as in NAS, 2019, for 2017-18 is given as Rs 2,18,706 crore. This represents the expenditure incurred on net acquisition of the above-listed items, or the domestic consumption of G&J products. The final demand components of G&J products are determined based on the methodology used in the new series of National Accounts. The percentage distribution of G&J use by these components is given in Table 7.2. The data on household consumption is sourced from NAS, 2019; exports, in rupee terms, from RBI; and intermediate consumption and inventory from the SUT.

Table 7.2: Percentage Distribution of Final Demand Components

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Household consumption	33.7	24.6	28.4	27.8	22.9	28.2
Exports	28.8	38.1	34.2	35.2	39.9	34.5
Intermediate consumption	36.5	36.5	36.5	36.2	36.5	36.5
Inventory	1.0	0.7	0.8	0.8	0.7	0.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: NAS, 2019.

The time series of values of household consumption and exports are given in Figure 7.5.

Figure 7.5: Values of Domestic and External Consumption of G&J Manufacturing (Rs Crore)

Source: NAS, 2019.

The basic characteristics of the total supply and consumption of G&J products are given in Table 7.3.

Table 7.3: Total Supply and Demand of G&J Manufacturing (Rs. Crore)

Sl. No.	Particulars	2015-16 (SUT)	2017-18 (NAS 2019)
Total Demand			
1.	Household Consumption (Valuables)	1,97,256	2,18,706
2.	CIS	5,828	6,462
3.	Exports	2,57,421	2,67,833
4.	Total Final Use	4,60,505	4,93,001
5.	Intermediate Use	2,64,984	2,83,683
6.	Total Use at purchaser's price	7,25,489	7,76,684
Total Supply			
7.	Imports	3,63,290	4,58,763
8.	Total Supply at Purchaser's Price	7,25,489	7,76,684

Source: NAS, 2019, SUT 2015-16.

The columns in the SUT present G&J as a part of the “Other Manufacturing” industry. The broad category of products (given as row items) produced by this industry are:

- o Medical precision, optical instruments;
- o Gems and jewellery; and
- o Miscellaneous manufacturing.

The G&J component has been taken out from the “Other Manufacturing” sub-sector, and is kept in a separate column and identified as the

“G&J” industry.

The Supply Table gives the values of the products and by-products produced by the G&J industry while the Use Table presents the inputs used in the G&J industry. It should be noted that the columns depict domestic production, which is used to arrive at the Gross Value Added, unlike rows which also include exports and imports.

The values of domestic production and value added are given in Table 7.4.

Table 7.4: Values of Domestic Output and GVA (Rs. Crore)

Sl. No.	Particulars	Data Source	2015-16	2017-18
1.	Domestic Value of Output (at bp)	NAS	3,57,399	2,60,957
2.	- Other Manufacturing	SUT	44,630	32,587
3.	- G&J	SUT	3,12,769	2,28,370
4.	Gross Value Added	NAS	34,732	37,907
5.	- Other Manufacturing	SUT	1,463	1,597
6.	- G&J	SUT	33,269	36,311
Key Ratios				
1.	Value Added to Output Ratio	=4/1	9.7	14.5
2.	- Other Manufacturing	=5/2	3.3	4.9
3.	- G&J	=6/3	10.6	15.9

Source: NAS, 2019, SUT 2015-16.

Value Added to Output Ratio for the Manufacturing Segment

While the manufacturing sector, as a whole, has the least value added to output ratio, as

presented in Figure 9.2 earlier, this ratio varies across different sub-sectors within it. This ratio, in percentage terms, for 2016-17, is presented in Table 7.5.

Table 7.5: Value Added to Output Ratios for the Manufacturing Sub-sectors

Sector	Categories	Sub-categories	VA to Output Ratio (%)	
Manufacturing	Food Products		17.2	
	Textiles and Leather Products		28.6	
	Metal Products		21.7	
	Machinery and Equipment		28.5	
	Coke, Petroleum and Related Products		28.3	
	Others	Wood and Products		36.9
		Paper and Products		25.6
		Printing and Publishing		37.1
		Furniture		33.8
		Other Manufacturing		14.5
		Others		4.9
		G&J		15.9
		Repair and Installation of Machinery and Equipment		45.5
Total Others		26.4		
Total Manufacturing		25.5		

Source: NAS, 2019.

The variation in the VA to output ratio within an aggregate sector is notable. While at the aggregate level, the manufacturing sector's ratio is 26 percent, it varies from 5 percent to 45 percent at the disaggregated level. This may be the case within these sub-sectors as well, for which NAS does not give any values.

With regard to the G&J manufacturing segment, our interactions with GJEPC suggest that this ratio may be as high as 90 percent for some categories.

7.4 Non-manufacturing Segments of the G&J Industry

Besides the manufacturing segment, the

G&J industry also comprises the Wholesale and Retail Trade, and Repair segments. For these two segments, no disaggregated data are available from NAS or SUT. Hence, for estimating the share of G&J in the total output and value added, we have had to deep-dive into the unit level data of enterprise surveys. The units surveyed in these surveys correspond to the 5-digit codes of the latest industrial classification scheme, the National Industrial Classification (NIC-2008).

As a first step, all the 5-digit codes belonging to the G&J industry, within the Trade and Repair segments, were identified. These codes are detailed in Table 7.6.

Table 7.6: Description of NIC Codes for the G&J Sector

Category	NIC Code	Description
Trade	46498	Wholesale of precious metals and jewellery
	46697	Wholesale of precious stones
	47733	Retail sale of jewellery and imitation jewellery
Services	95293	Repair and alteration of jewellery

Source: www.mospi.gov.in.

The survey estimates suggest that of the total Trade output, only 4.2 percent is accounted for by the G&J trade segment, and of the total Repair output, 3.6 percent is accounted for by the G&J repair segment. The corresponding shares in value added are 3.5 percent and 4.3 percent, respectively.

7.5 The Overall G&J Industry – Direct Share in the Economy

Table 7.7 presents the total output and value added for the G&J industry, based on these and findings for the manufacturing segment.

Table 7.7: Value of Output and Value Added for the G&J Sector

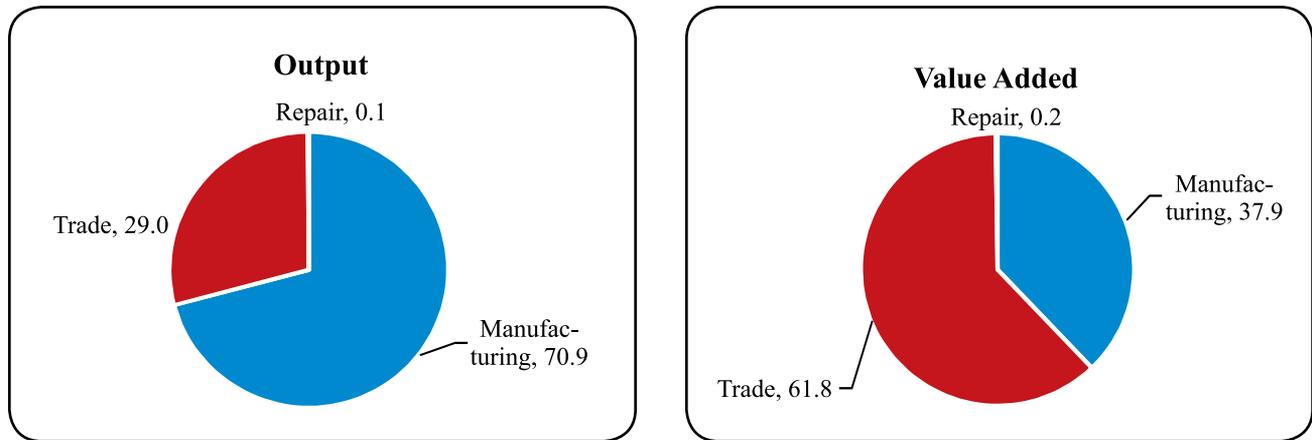
Sector	As per NAS		Share of G&J in the Sub-sector (%)		G&J—Calculated		Share of G&J in the Overall Economy (%)	
	Output (Rs. Crore)	Value Added (Rs. Crore)	Output	Value Added	Output (Rs. Crore)	Value Added (Rs. Crore)	Output	Value Added
Other manufacturing	2,60,957	37,907	87.5	95.8	2,28,370	36,311	0.74	0.23
Trade	22,41,342	16,79,832	4.2	3.5	93,440	59,202	0.30	0.38
Repair and installation of machinery and equipment	11,174	5,085	3.6	4.3	398	220	0.00	0.00
Total of the above	25,13,473	17,22,825	-	-	3,22,208	95,733	1.04	0.62
Total of the economy	3,08,51,305	1,54,82,715	-	-	-	-	-	-

Source: NCAER computations.

The key findings are as follows:

- The total value of domestic produce of the manufacturing segment of the G&J sector is estimated at Rs 2,28,370 crore for 2017-18. The Value Added for this segment is estimated at Rs 36,311 crore.
- The value of produce of the trade segment of the G&J sector is estimated at Rs 93,440 crore. The Value Added is Rs 59,202 crore.
- The repair segment contributes very little, at Rs 398 crore to the output and Rs 220 crore to VA.
- The overall G&J sector's direct share in the economy works out to be 1.04 percent in output and 0.62 percent in VA, in 2017-18.
- The shares of each segment within the total output and VA of the G&J sector are depicted in Figure 7.6.

Figure 7.6: Percentage Shares of G&J Segments in the Overall Output and Value Added



Source: NCAER computations.

- With respect to employment, it is estimated that there are 42.89 lakh workers in the G&J sector. This translates into its direct share to the total number of workers, at 0.64 percent.

7.5.1 Gems and Jewellery–Indirect Share in GVA and Employment

The direct effects on a sector relate to a unit increase in the production of a sector when the demand or inputs for this sector increase by one unit. These are, therefore, the immediate effects of the additional demand or inputs. However, the suppliers of this additional demand require additional inputs from other producers, and those producers, in turn, need additional inputs from their input suppliers, and so on. Thus, the initial additional demand that generates direct effects also induces a chain of activities in the entire production system of the economy. Hence, the overall economic impact of a particular sector far exceeds the direct impact due to the interlinkages among all the sectors of the economy. The impact arising from such interlinkages is called ‘indirect impact’ or the ‘second-round impact’ or the ‘spill-over impact’.

The Input-Output (IO) model measures these interlinkages, and hence arrives at the direct as well as indirect impact of an economic sector. With the quantification of these interlinkages, it is possible to see how an additional demand in a particular sector affects production in other sectors of the economy. Although some of these questions can be answered intuitively, yet the

advantage of the IO model is that it quantifies the impact through a value of the multiplier by which a particular sector is expected to grow following such changes in a sector.

In theory, in the framework of the input-output analysis, if a sector increases its output due to an additional demand, more inputs (purchases) are required, including more intermediates from other sectors. Such an interconnection of a particular sector with other sectors from which it purchases inputs (demand side) is termed as a “backward linkage”, or an “output multiplier”, which can be interpreted as the cumulative increase in the output of the economy that is induced by one additional unit of the final demand of a certain sector. The higher the multipliers, the larger are the effects on the input-output system of the economy.

The basic requirement of the IO model is a consistent IO table, which is prepared from the SUTs of an economy. The SUTs signify the matrix representation of a nation’s economic transactions and depict how the output of one industry is used as an input in other industries, thereby making each industry dependent on other industries as both the user and the supplier. A column in a Use Table represents an industry and presents the values of all the products (kept in rows) used as inputs in its production process. On the other hand, a column in a Supply Table lists the values of the industries’ products and by-products.

The SUTs for India, previously available for 2012–13, have been updated for 2015–16 for this study. Also, the original SUTs of 140 industries and 66 products have been aggregated to 80 industries and 80 products, with all the components of G&J included as both a separate industry as well as a separate product.

While the 80 industry columns present the intermediate transactions in the economy, additional columns in the Use Table present the final use, which refers to the product's sales to households and government as their consumption expenditure; the product's use in fixed investment; and its net exports. Similarly, additional rows present the primary inputs consisting of taxes less subsidies on production and the gross value added comprising payments for labour, capital, land, and imported inputs.

These SUTs are converted into an IO table for deriving the multipliers for all industries. The transformation of the SUT into the IO table can result in either a “product by product” matrix or an “industry by industry” matrix. Methodologically, the “product-by-product” IO tables are compiled by post-multiplying the use matrix and value added matrix with the transpose of the input coefficient matrix, which presents the input requirement of products as a share of the industry output for each industry in the Supply Table.

The “industry-by-industry” IO tables are derived by pre-multiplying the use matrix and final use matrix with the transpose of the output coefficient matrix. This matrix presents the use of each product in an industry as a share of its total supply.

In the original tables for 140 products by 66 industries, the gems and jewellery segment is placed as a separate product among manufactured products but not as a separate industry. Also, its components in the Trade and Repair segments are not placed separately. Hence, we have extracted the G&J components from the corresponding industries/products to keep them as separate industries as well as products, using their shares, as given in Table 8.7. These components are combined to form an aggregate G&J industry and G&J product.

The multipliers—output and employment—are derived from the hence-prepared IO table, used as a model for arriving at the quantification of interlinkages among the sectors. The model suggests that the G&J sector has strong backward linkages with other sectors of the economy, with the value of its output multiplier being 4.0308. This means that with a unit increase in demand generated in the G&J sector, a total output equivalent to 4.0308 units is produced in the economy, owing to the interlinkages, and hence, the spill-over effect. Consequently, the total share, comprising the direct as well as indirect shares, of the G&J sector is 2.5 percent of the total GVA of the economy.

The employment multiplier, as per the IO model, is 3.9105. This means that with one new job created in the G&J sector, a total of 3.9105 jobs are created in the economy. Hence, the total share (direct as well as indirect) of the G&J sector in employment is 2.5 percent.

7.6 Gems and Jewellery Sector by Segment and Region

We have attempted to derive the values of gross value added and the values of output at segment level as well as at region level too. For this, we have taken inputs from the primary survey conducted for the study and the relevant ratios obtained from the secondary sources. However, it is made sure that the overall GVA and output values at aggregate level remain intact.

The primary survey provides the estimated number of workers by region and by different segments of G&J sector. No financial data could be obtained from the primary survey. We have obtained the output per worker and value added per worker ratios, by segments and regions, from the enterprise surveys - NSS for unincorporated enterprises and ASI for registered enterprises under Factories Act.

These ratios are applied on the estimated number of workers obtained from the primary survey, to derive the value of output and value added for each segment and region. However, it should be noted that the segments in NSS and

ASI do not exactly match with the segments in the primary survey. The NSS and ASI have “manufacturing of jewellery of gold and silver” as one segment whereas in the primary survey, “handmade jewellery” and “machine-made jewellery” are separate segments. Similarly, “working on diamond and stones” is one segment in NSS and ASI whereas in the primary survey, these are separate segments.

We have done a concordance between the segments accordingly and applied the output per worker and value added per worker ratios on

primary survey’s estimated number of workers. Hence derived estimates of values of output and value added are then made consistent with National Accounts Statistics by applying their distribution on the aggregate values of output and value added in manufacturing, trade and repair segments of the G&J sector.

The estimated number of units and workers, as derived from the primary survey, are given in Table 7.8 and Table 7.9 below. Further, Tables 9.10 and 9.11 present the estimated values of output and value added by segments and regions.

Table 7.8: Estimated number of units by segments and regions

Region	Diamond	Other Gems and semi precious stones	Hand-made Jewellery	Machine-made Jewellery	Retailer	Total Units
East	0	0	1,55,949	683	69,604	2,26,237
North	0	0	47,743	3,559	1,20,647	1,71,950
South	0	0	1,25,762	5,855	1,40,068	2,71,684
West	0	0	60,879	3,556	98,416	1,62,851
Gujarat	18,036	0	10,989	168	45,716	74,908
Rajasthan	-	7,378	34,809	2,028	37,528	81,743
Total	18,036	7,378	4,36,130	15,849	5,11,979	9,89,372

Source: NCAER Gems & Jewellery Survey, 2019.

Table 7.9: Estimated number of workers by segments and regions

Region	Diamond	Other Gems and semi precious stones	Hand-made Jewellery	Machine-made Jewellery	Retailer	Total Workers
East	0	0	5,21,463	11,419	2,59,385	7,92,266
North	0	0	1,25,866	93,646	3,72,430	5,91,942
South	0	0	2,60,595	32,048	5,72,188	8,64,831
West	0	0	2,19,474	21,060	3,40,917	5,81,451
Gujarat	8,19,926	0	18,975	10,977	1,10,076	9,59,954
Rajasthan	-	88,269	2,07,378	1,06,321	96,510	4,98,479
Total	8,19,926	88,269	13,53,752	2,75,471	17,51,507	42,88,925

Source: NCAER Gems & Jewellery Survey, 2019.

Table 7.10: Estimated Gross Value Added by segments and regions (Rs. crore)

Region	Diamond	Other Gems and semi Precious stones	Hand-made Jewellery	Machine-made Jewellery	Retailer	Total
North	0	0	2,750	2,046	15,212	20,009
Rajasthan	0	888	2,665	1,366	1,919	6,838
East	0	0	4,378	96	6,944	11,418
West	0	0	5,780	555	10,501	16,835
Gujarat	9,835	0	1,107	640	3,850	15,432
South	0	0	3,744	460	20,996	25,201
Total	9,835	888	20,424	5,164	59,422	95,733

Source: NCAER computations.

Table 7.11: Estimated Value of Output by segments and regions (Rs. crore)

Region	Diamond	Other Gems and semi Precious stones	Hand-made Jewellery	Machine-made Jewellery	Retailer	Total
North	0	0	17,553	13,059	19,583	50,195
Rajasthan	0	3,942	12,147	6,228	3,794	26,111
East	0	0	33,847	741	8,857	43,445
West	0	0	40,186	3,856	29,636	73,679
Gujarat	67,213	0	3,378	1,954	5,169	77,715
South	0	0	21,608	2,657	26,798	51,064
Total	67,213	3,942	1,28,719	28,496	93,838	3,22,208

Source: NCAER computations.

VIII

EXPORT COMPETITIVENESS OF THE GEMS AND JEWELLERY SECTOR

The Gems and Jewellery (G&J) sector in India is export-intensive. The consistent exports by the G&J sector have led to higher investments, employment, and contribution to Gross Value Added in the Indian economy. With the large-scale sale of its products in the international competitive market, the sector has gradually grown to become more competitive, productive, cost-effective, and oriented towards being an organised and more technologically advanced industry. Although the industry is dependent on imports for raw material and inputs, it serves the domestic as well the international markets through exports, which is an advantage for the national economy. The Government too plays a part in the promotion of exports in the G&J sector. In this chapter, we discuss the export competitiveness of the sector and its specific segments that bring in significant foreign reserves.

Following is a brief outline of the various sections in this chapter. The first section presents an overview of the competitiveness of India's G&J sector in the world market. This is followed by a small section on the trade competitiveness of the sector with respect to the other major exporting sectors of the India. The third section highlights the trade competitiveness of the major segments of the G&J sector in India. The fourth section offers a detailed account of the relative export growth of the various segments of the G&J sector in India. The concluding section presents a summary of the chapter.

8.1 Competitiveness in the World Market

The G&J sector of India plays a significant role in the world market. Despite being ranked

18th in the world in terms of its overall share in exports for all the products, India ranks 6th in exports as far as the G&J sector is concerned. The countries ahead of it include Switzerland at the top, followed by Hong Kong, the United States of America (USA), United Kingdom (UK), and United Arab Emirates (UAE). Table 8.1 presents the share of the top ten countries in the export of gems and jewellery, the corresponding shares of all the products exported, the long-term growth of exports in the last nine years, and the trade competitiveness of the country with respect to the G&J sector. An analysis shows a decline in the growth of world exports by the G&J sector over the last four years, with a CAGR of -2.12 per cent. The year 2018 was not a good year for exports. Barring the USA, UK, China, and Belgium, all the top ten contributing countries suffered in 2018, especially Hong Kong, which exhibited a contraction of 21.77 per cent. However, India has done relatively better, with its Compound Annual Growth Rate (CAGR) over the last five years being -0.30 per cent in contrast to the contraction of 1.70 per cent at the international level.

The trade competitiveness of the sector has been analysed in the first two sections via the **Revealed Comparative Advantage (RCA)**, which is an index used in international economics for calculating the relative advantage or disadvantage of a certain country in a certain class of goods or services, as indicated by trade flows. It is based on the Ricardian comparative advantage concept, most commonly called the Balassa Index, which was introduced by Béla Balassa and Mark Noland (1965). In particular, the RCA of a country with regard to a particular product/commodity/good is defined by:

$$RCA_{cs} = \frac{X_{cs} / \sum_{s' \in S} X_{cs'}}{\sum_{c' \in C} X_{c's} / \sum_{s' \in S, c' \in C} X_{c's'}}$$

where c, c' represent the country index; S , a set of countries, here overall countries in the world; s, s' represent the commodity index; S , a set of commodities, here all the commodities exported; and X denotes export, that is, the RCA is equal to the proportion of the country's exports from the sector under consideration, here the G&J sector, divided by the proportion of the world exports from that sector. Comparative advantage is "revealed" if the $RCA > 1$. If the RCA is less than unity, the country is said to have a comparative disadvantage in the commodity or industry. The concept of a revealed comparative advantage is similar to that of the economic base theory, which follows the same calculation, but considers employment rather than exports.

In addition to the RCA, simple ratios like the value of exports, export growth represented by CAGR), and shares in national and international exports (SHN) have been suitably used to quantify the strength of the specific sector and its segments. These are defined as:

$$RCA_{cs}^t = 100 * \left[\left(\frac{X_{cs}^t}{X_{cs}^{t_0}} \right)^{\frac{1}{t-t_0}} - 1 \right] SHN = 100 * \frac{X_{cs}^t}{X_c^t}$$

where, t and t_0 indicate time periods, t being the current one.

An analysis of trade competitiveness, as reflected by the RCA, reveals that India's competitiveness is only next to that of Switzerland and UAE. China, the topmost country in all product exports, is not even competitive and the second ranked USA is merely competitive, with an index of 1.14 (Table 8.1).

Table 8.1: Trade Competitiveness of India and Major Countries in the World

Sl. No	World/Country	Share of All Products	Share of Gems and Jewellery	CAGR (% per annum) 2009-18	CAGR (% per annum) 2014-18	Growth Rate 2017-18	Trade Competitive Index
	World	100.00	100.00	7.99	-2.12	-1.03	1.00
1.	Switzerland	1.61	12.45	25.88	-3.14	-3.68	7.76
2.	United Arab Emirates	1.64	7.03	-	3.56	-1.34	4.29
3.	India	1.67	6.15	2.33	-0.38	-5.82	3.68
4.	Hong Kong, China	2.94	10.45	10.93	-4.62	-21.77	3.55
5.	United Kingdom	2.52	7.27	12.28	-3.04	47.74	2.89
6.	Singapore	2.13	2.61	10.63	20.17	-0.39	1.22
7.	Canada	2.33	2.81	6.34	-2.93	-2.9	1.21
8.	Belgium	2.41	2.88	3.63	-5.26	6.7	1.19
9.	United States of America	8.61	9.78	5.8	-0.11	5.87	1.14
10.	China	12.89	3.08	11.59	-24.89	11.89	0.24

Source: Trade Statistics for International Business Development, ITC.

Note: CAGR- compound annual growth rate.

8.2 Competitiveness in National Exports

Exports by the G&J sector are second only to those of mineral fuels, mineral oils and products of their distillation; bituminous substances; and the mineral waxes sector in terms of the share in export merchandise in India. Table 8.2 presents the distribution of six major groups of industries based on a harmonised system (HS) two-digit codes, with their shares in exports and the annual growth of exports in the respective

sector. The CAGR of exports in the sector for the last ten years since 2009 is 2.09 per cent, while that for the last five years is slightly negative (-0.30 per cent), while the annual current growth rate in 2017-18 was negative (-5.82 per cent). Nevertheless, the contribution of the G&J sector in Indian merchandise is 12.41 per cent; in fact, in 2017, its share was 14.39 per cent, accounting for the highest contribution to national exports, significantly more than those of the minerals sector.

Table 8.2: Performance of the Major Sectors (by Two-Digit HS Code) in India (2009-2018)

Code	Sector	% Share in 2018	% Share in 2017	CAGR (% per annum) 2009-18	CAGR (% per annum) 2014-18	% Annual Growth Rate (AGR) 2017-18	Trade Competitive Index
Total	All products	100.00	100.00	6.93	0.43	9.20	1.00
71	Natural or cultured pearls, precious or semiprecious stones, precious metals, clad with precious metal and articles thereof; imitation jewellery coins	12.41	14.39	2.33	-0.38	-5.82	3.68
29	Organic chemicals	5.49	4.59	10.94	10.19	30.73	2.39
30	Pharmaceutical products	4.42	4.36	12.34	5.19	10.71	1.46
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes	14.95	12.13	8.07	-6.19	34.54	1.15
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	5.65	5.48	13.76	5.94	12.4	0.71
84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	6.32	5.63	12.33	10.68	22.53	0.54

Source: Trade Statistics for International Business Development, ITC.

Note: CAGR- compound annual growth rate; AGR- annual growth rate.

As far as trade competitiveness is concerned, out of the six major export grossers, the G&J sector has the maximum RCA with an index of 3.68, among other countries in this sector of commodities in comparison to the other sectors. The mineral fuels sector, which has the maximum share in national exports, is third in the list, with an RCA as low as 1.15. This means that India exports 3.68 times its 'fair share' of gems and jewellery whereas it exports 1.15 times of its 'fair share' of mineral oil.

8.3 Segment-Wise Competitiveness in the G&J Sector

The G&J sector (HS Code 71) has a wide range of commodities under the broad categories of diamonds, precious and semi-precious stones,

gold, silver, platinum, and other items. The following section deals with the segment-wise exports and their trade competitiveness. The segment-wise analysis excludes some of the items which are of industrial use and, therefore, the total of HS code 71 may differ slightly from the "total" presented here. This classification is based on what the Gems and Jewellery Export Promotion Council (GJEPC) adopts. The nomenclature of the products has also been taken from their documents. For clarification, the applicable HS codes of 4-6 digits have been mentioned against the respective commodities. Table 8.3 depicts the share of different segments of gems and jewellery products in India's G&J Sector, as grouped here, and also their share in the international exports-related codes of the G&J Sector.

Table 8.3: Percentage Share of Products in the Gems and Jewellery Sector

Sl. No.	Segment	Product HS Code	% Share in India's G&J Sector		% Share in World Exports of the Related Segment	
			2017	2018	2017	2018
	Total G&J	-	100.00	100.00	6.68	6.40
	Finished Products					
1.	Cut and polished diamonds	710239	54.46	60.89	26.73	27.48
2.	Synthetic stones	710490	0.52	0.66	20.7	19.78
3.	Gold jewellery	711319	19.97	29.07	8.94	11.25
4.	Silver jewellery	711311	10.45	2.07	36.63	10.78
5.	Coloured gemstones	710391+710399	1.01	1.08	4.93	4.91
6.	Costume and fashion jewellery	7117	0.48	0.49	2.93	2.71
7.	Pearls	710110+710122	0.01	0.01	0.08	0.29
	Raw Products					
1.	Coins including legal tenders	7118	3.39	2.1	35.96	19.04
2.	Rough diamonds	710231	4.19	3.5	4.19	3.24
3.	Rough coloured gemstones	710310	0.09	0.05	3.06	1.23
4.	Rough synthetic stones	710420	0.01	0	0.67	0.38
5.	Silver bar	7106	0.02	0.03	0.05	0.07
6.	Platinum	7110	0.05	0.06	0.08	0.07
7.	Raw pearls	710121	0	0	0.16	0.01
8.	Gold bar	7108	5.35	0	0.7	0

Source: Trade Statistics for International Business Development, ITC.

Table 8.3 reveals that cut and polished diamonds constitute a dominant group in the G&J sector, contributing 60.89 per cent to the total gems & jewellery exports of India, followed by gold jewellery. Rough diamonds, coins including legal tenders, silver jewellery and coloured gemstones constitute the other segments which contribute significantly to exports. Indian cut and polished diamonds account for 27.48 per cent of the exports in the world market, while the second important segment, viz., gold jewellery, has a world market share of 11.25 per cent. Its share in the world market has increased since 2017 (8.94 per cent). Coins including legal tenders constitute a small share of 2.10 per cent in the national exports, but their contribution to the world market of coins is very impressive, to the extent of 19.04 per cent. Although synthetic stones account for just 0.66 per cent of the share in national merchandise exports, they contribute a handsome 19.78 per cent to the world exports. Silver jewellery, which has share of 2.07 per cent in India's G&J exports, contributes 10.78 per cent to the total world exports. In fact, in 2017, silver jewellery accounted for 10.45 per cent of

Indian exports and 36.63 per cent of the world exports of silver jewellery.

The segment-wise long-term and short-term growth figures of products in the G&J sector have been presented in Table 8.4. The segments in which exports have grown in the last four years are cut and polished diamonds (moderate 1.90 per cent per annum, with current growth at 5.95 per cent), synthetic stones (very high 75.74 per cent per annum, with current growth at 20.91 per cent), gold jewellery (low 0.77 per cent per annum, with current growth being as high as 37.93 per cent), coloured gemstones (high 10.24 per cent per annum, with current growth at 0.84 per cent), silver bars with a share of just 0.03 per cent (moderate 6.83 per cent per annum, with current growth at 37.27 per cent) and platinum (high 19.98 per cent per annum, with current growth at 8.23 per cent). The segment of coins, including legal tenders, stands alone with the highest short-term annual growth of more than 1000 per cent. The segments in which export has consistently declined over time are pearl, raw pearl, rough diamond, rough coloured gemstones, rough synthetic stones, gold bar, and silver jewellery.

Table 8.4: Growth and Trade Competitiveness of the Gems and Jewellery Sector by Segments

Sl. No.	Segment	CAGR (% per annum) 2009-18	CAGR (% per annum) 2014-18	AGR (%) 2017-18	Trade Competitiveness Index	
					2017	2018
	Total G&J	3.39	-0.27	-5.24	3.97	3.83
	Finished Products					
1.	Cut and polished diamonds	4.56	1.9	5.95	15.86	16.46
2.	Synthetic stones	38.25	75.74	20.91	12.28	11.85
3.	Gold jewellery	1.26	0.77	37.93	5.31	6.74
4.	Silver jewellery	13.33	-18.47	-81.23	21.74	6.45
5.	Coloured gemstones	5.59	10.28	0.84	2.92	2.94
6.	Costume and fashion jewellery	1.08	-9.9	-3.49	1.74	1.62
7.	Pearls	-4.33	-0.47	-12.55	0.04	0.18

(Contd.)

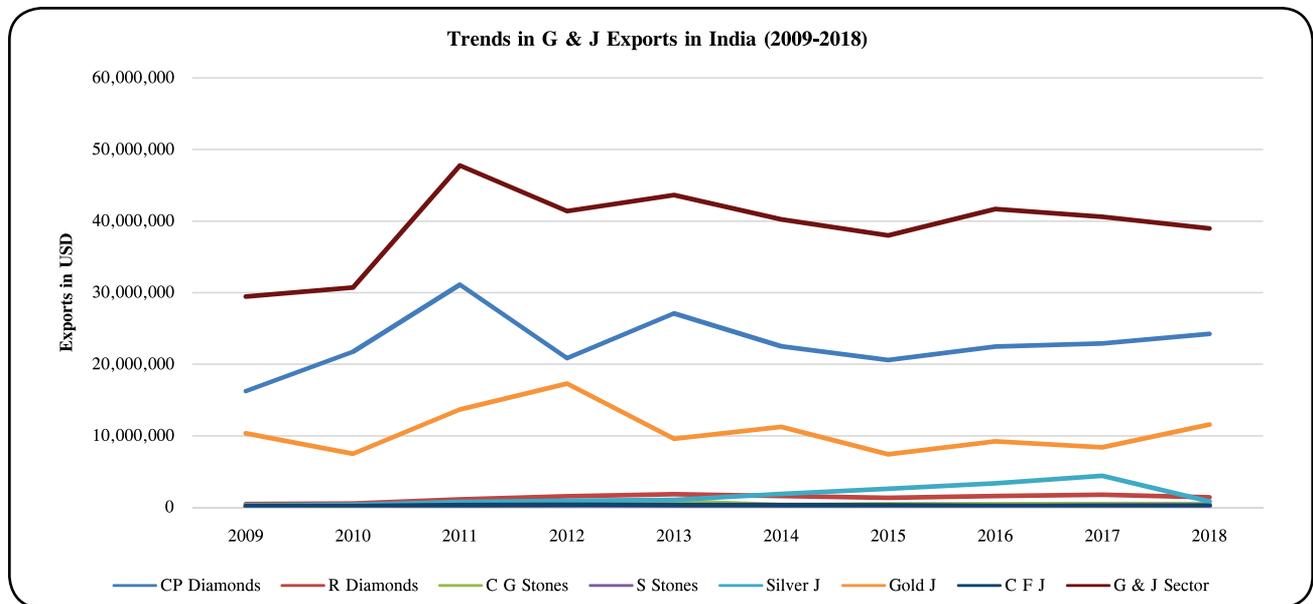
Table 8.4: Growth and Trade Competitiveness of the Gems and Jewellery Sector by Segments (Contd.)

Sl. No.	Segment	CAGR (% per annum) 2009-18	CAGR (% per annum) 2014-18	AGR (%) 2017-18	Trade Competitiveness Index	
					2017	2018
Raw Products						
1.	Coins including legal tenders	38.11	1,074.14	-41.27	21.34	11.4
2.	Rough diamonds	13.61	-3.21	-20.9	2.48	1.94
3.	Rough coloured gemstones	2.08	6.07	-49.27	1.82	0.74
4.	Rough synthetic stones	27.19	-8.49	-23.07	0.4	0.23
5.	Silver bar	-19.61	6.83	37.27	0.03	0.04
6.	Platinum	-36.92	19.98	8.23	0.05	0.04
7.	Raw pearls	-30.94	-68.49	-95.69	0.09	0
8.	Gold bar	-52.52	-90.08	-99.99	0.41	0

Source: Trade Statistics for International Business Development, ITC.

Note: CAGR- compound annual growth rate; AGR- annual growth rate.

The nine-year annual growth figures for cut and polished diamonds, rough diamonds, coloured gemstones, synthetic stones, silver jewellery, gold jewellery, costume and fashion jewellery, and coins including legal tenders, have been shown in Figure 8.1.

Figure 8.1: Trend in Gems and Jewellery Exports in India (2009-2018)

Source: Trade Statistics for International Business Development, ITC.

Table 8.4 reveals that some of the segments of the Indian G&J sector have very high trade competitiveness. The cut and polished diamonds segment, with an index of 16.46 per cent, tops the list of segments exhibiting consistently high export trends. The exports by the cut and polished diamonds segment of India's G&J sector is 16.46 times its fair share in the world market. Synthetic stone, having a share of just 0.67 per cent, has a trade competitiveness of 11.85 per cent. The silver and gold jewellery segments have a trade competitiveness index of more than 6 per cent. Other notable segments having index values of more than 1 are rough diamonds (1.94 per cent) and coloured gemstones (2.94 per cent).

8.4 Relative Growth of Gems and Jewellery Exports in India

The export-intensive segments of the G&J sector, viz., cut and polished diamonds, rough diamonds, coloured gemstones, synthetic stones, silver jewellery, gold jewellery, costume and fashion jewellery, and coins including legal tenders, and their export growth in comparison to the world growth of the corresponding segment have been discussed separately in the light of the **surplus share** and **surplus growth** over world ratios and trade competitiveness. The **surplus share index** of the segments has been defined as

$$SSI_{cp}^{t-t_0} = \frac{\left(\frac{X_{cp}^t}{X_{wp}^t} - \frac{X_{cp}^{t_0}}{X_{wp}^{t_0}} \right)}{\left(\frac{X_{cp}^t}{X_{cs}^t} - \frac{X_{cp}^{t_0}}{X_{cs}^{t_0}} \right)}$$

where c represents the country index; p , the product/segment index; w , the world; s , the sector index comprising all products/segments; X , export; and t, t_0 are two time points, with t being the current one. Thus, the surplus share

means the ratio of the difference in share of the segment in the related segment of the world's G&J sector at the two points of time (here the last five years) and that of the difference in the share of India's G&J sector in the corresponding two points of time (here, the last four years), and it denotes the times when the market share in the world will increase/decrease by one unit increase/decrease in its share in the related sector. The surplus growth of a segment is defined as the difference of the Annual Growth Rate (AGR) of India's exports of the segment and the AGR of world exports of the segment, as measured by the CAGR 2009-18, CAGR 2014-18, and AGR (2017-18), along with the trade competitiveness index, as measured by the RCA, which are given in the related tables.

8.4.1 Cut and Polished Diamonds

This segment has consistently exhibited a higher share in the national merchandise exports as well in the world market related to the segment. The export share of cut and polished diamonds in the Indian G&J sector has hovered in the range of 50-70 per cent in the last ten years, with a share of 60.89 per cent in 2018, while in another spectrum, the contribution of the cut and polished diamonds segment in the world market has shown a gradual increase from 22.66 per cent in 2014 to 27.48 per cent in 2018. Despite having such a good market share, the segment has a surplus share index of just 0.96, implying that a 1 per cent increase in the share of the segment in India's G&J sector will result in an increase of a 0.96 per cent share in the world market. The segment needs to be technologically upgraded to increase the index. Table 8.5 presents the surplus share index and surplus growth over the world export market and trade competitiveness of the segment over the current and last years.

Table 8.5: Surplus Share Index, Surplus Growth over the World Export Market and Trade Competitiveness of Cut and Polished Diamonds

Surplus Share Index	Surplus Growth			Trade Competitiveness Index	
	CAGR (% per annum) 2009-18	CAGR (% per annum) 2014-18	AGR (%) 2017-18	2017	2018
0.96	-0.04	4.79	2.88	15.86	16.46

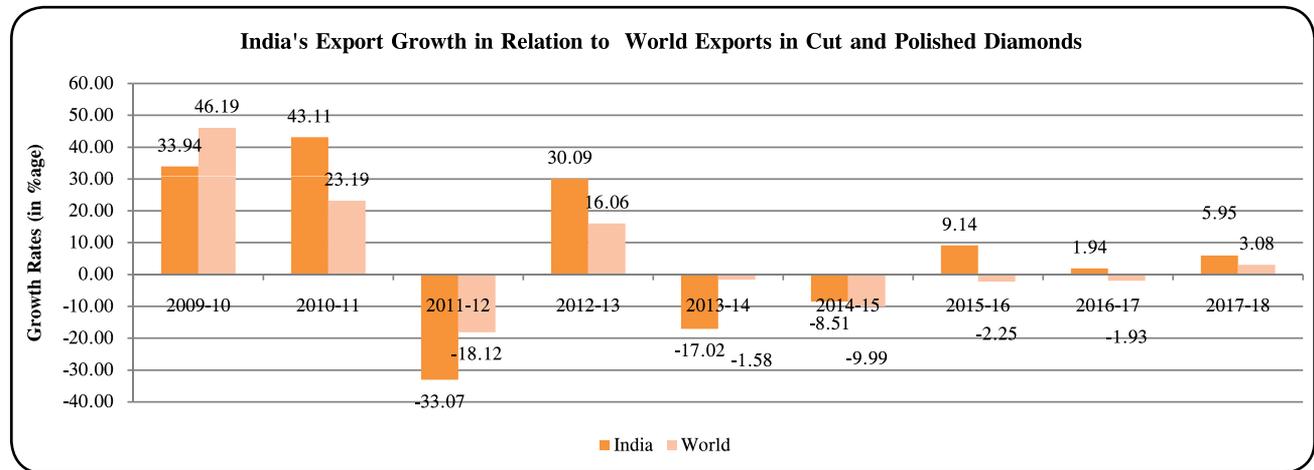
Source: Trade Statistics for International Business Development, ITC.

Note: CAGR- compound annual growth rate; AGR- annual growth rate.

Exports in this segment have witnessed positive and negative growths. However, the Indian growth for the last three years has been positive, leading to 5.95 per cent in 2017-18. Contrary to this, the world growth was consistently negative from 2013-14 to 2016-17, it became positive only in 2017-18, recording a growth of 3.08 per cent. There has been massive

surplus growth in the short span of five years, including in the current year. India is trade-competitive in this segment to the extent that it exports 16.46 times its fair share to the world market, and the advantage has increased from the last year. The annual national and world export growth rates of this sector have been shown in Figure 8.2.

Figure 8.2: India's Export Growth in Relation to World Exports in Cut and Polished Diamonds



Source: Trade Statistics for International Business Development, ITC.

8.4.2 Synthetic Stones

The share of synthetic stones in the national exports of the G&J sector is a meagre 0.67 per cent but accounts for a share of almost 20 per cent in the world's synthetic stones market. The synthetic stones segment achieved this growth over the two years. Earlier, its share in the national exports was in the range of 0.05-0.09 per cent during the period 2009-15, which increased to 0.21 per cent in 2016, and then to 0.52 per cent in 2017, and to 0.66 per cent in 2018. Similar is the trend for its contribution to the world market of synthetic stones. Earlier, the Indian synthetic stones segment contributed just 2.24-4.21 per cent in the world synthetic stones market during

the period 2009-2015. However, subsequently, its contribution increased to 9.46 per cent in 2016, and to 20.70 per cent and 19.78 per cent in 2017 and 2018, respectively. The surplus share index of this segment, based on the performance of the last four years, is 29.07 per cent. This means that a mere increase of a 1 per cent share in India's G&J sector has resulted in a 29.07 per cent increase in its share in the world market. This segment thus has a tremendous scope. A slight increase in the national pie may help it rule over the world market. Table 8.6 presents the surplus share index and surplus growth over the world export market and trade competitiveness of the segment over the current and last years.

Table 8.6: Surplus Share Index, Surplus Growth over the World Export Market and Trade Competitiveness of Synthetic Stones

Surplus Share	Surplus Growth			Trade Competitiveness Index	
	CAGR (% per annum) 2009-18	CAGR (% per annum) 2014-18	AGR (%) 2017-18	2017	2018
29.07	21.83	70.02	-5.63	12.28	11.85

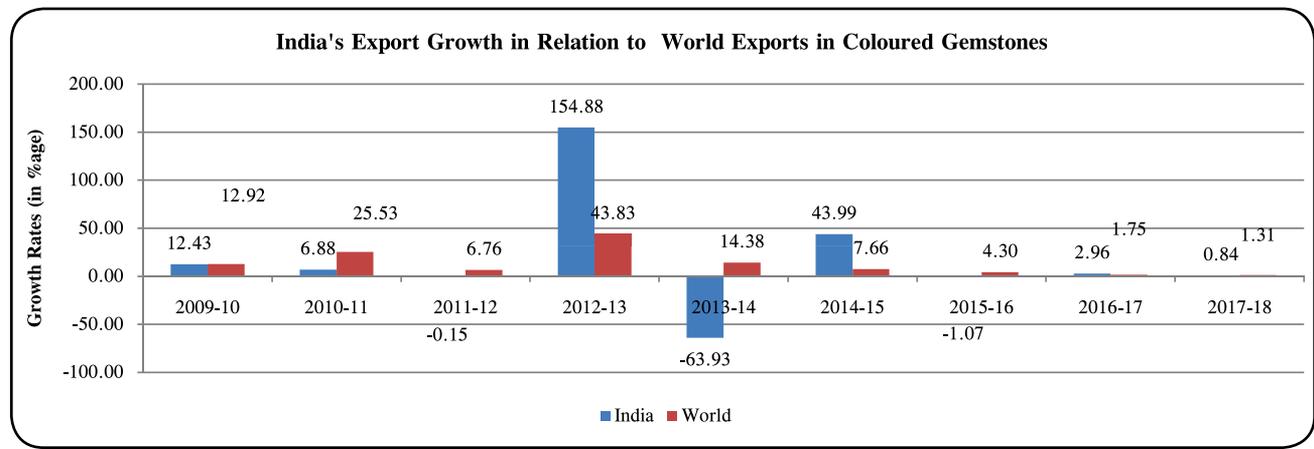
Source: Trade Statistics for International Business Development, ITC.

Note: CAGR- compound annual growth rate; AGR- annual growth rate.

The export growth of the Indian synthetic stones segment has been mind-blowing, as it has been exhibiting a long-term compound annual growth rate of 38.25 per cent over the last nine years. The segment has a long-term high growth share of 16.42 per cent in the world exports too. The growth surplus has been positive except in the current year when world exports grew by 26.54 per cent in comparison to the growth 20.91 per cent in Indian exports. The segment is the most trade-competitive in the G&J sector.

Its competitive index measured 11.85 per cent in 2018. This means that exports in this segment account for 11.85 times their fair share in the world market. Another related segment of rough synthetic stones has a trade competitiveness of just 0.23, implying that it is not competitive at all. This segment may be used for strengthening the competitiveness of the synthetic stones segment rather than its own exports. The annual national and world export growth rates of the sector have been shown in Figure 8.3.

Figure 8.3: India's Export Growth in Relation to World Exports in Synthetic Stones



Source: Trade Statistics for International Business Development, ITC.

8.4.3 Gold Jewellery

The share of gold jewellery in the Indian G&J sector ranged between 21.94 per cent and 35.06 per cent during the period 2009-2015, which fell to the lowest in the decade to 19.47 per cent in 2016, but it rose again to 29.07 per cent in 2018, and created a share of 11.25 per cent in the world market in 2018. Earlier, the contribution of the

gold jewellery segment in the world market was 7.52-9.75 per cent during the period 2013-17. It has a surplus share index of 2.48, which implies that a 1 per cent increase in the domestic G&J sector will increase its world market share by 2.48 times. Table 8.7 presents the surplus share and surplus growth over the world export market and trade competitiveness of the segment over the current and last years.

Table 8.7: Surplus Share Index, Surplus Growth over the World Export Market and Trade Competitiveness of Gold Jewellery

Surplus Share	Surplus Growth			Trade Competitiveness Index	
	CAGR (% per annum) 2009-18	CAGR (% per annum) 2014-18	AGR (%) 2017-18	2017	2018
2.48	-8.34	7.29	28.31	5.31	6.74

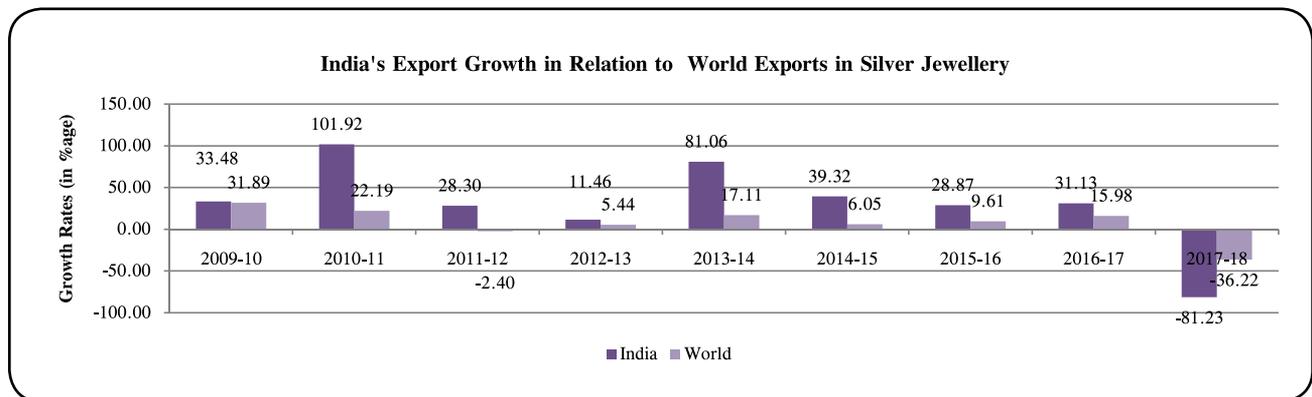
Source: Trade Statistics for International Business Development, ITC.

Note: CAGR- compound annual growth rate; AGR- annual growth rate.

The exports of the Indian gold jewellery segment have alternated between a rise and fall in the last nine years, with the growth in 2017-18 standing at 28.31 per cent. The growth of exports in the world market exhibited a different pattern with positive growth during the period 2009-14, followed by negative growth during the period 2014-17, and then a growth of 9.62 per cent over

the last year. It has had an average surplus growth during last four years. The segment is trade-competitive, with index values of 5.31 in 2017 and 6.74 in 2018. The value of Indian exports in this segment in 6.74 times its fair share in the world market. The annual national and world export growth rates of the sector have been shown in Figure 8.4.

Figure 8.4: India's Export Growth in Relation to World Exports in Gold Jewellery



Source: Trade Statistics for International Business Development, ITC.

8.4.4 Silver Jewellery

This segment has consistently grown in a linear fashion from 2009 to 2017. Its share in the Indian G&J sector increased from 0.91 per cent in 2009 to 10.45 per cent in 2017 but there was a sudden decline in the same in 2018 to 2.07 per cent. Similarly, the share in the world market grew from 5.84 per cent in 2009 to 36.93 per cent in 2017 but suddenly crashed to 10.78 per cent in 2018. The silver jewellery segment had a bad year in 2018 though otherwise its share in the world

market is five times its share in the national G&J sector. Its surplus share index worked out to be 3.98 per cent, which means that a 1 per cent increase in the segment's share in India's G&J sector will increase to more than four times its share in the world market. Thus, a small increase in the segment drives big gains in the world market. Table 8.9 presents the surplus share and surplus growth over the world export market and trade competitiveness of the segment over the current and last years.

Table 8.8: Surplus Share Index, Surplus Growth over the World Export Market and Trade Competitiveness of Silver Jewellery

Surplus Share	Surplus Growth			Trade Competitiveness Index	
	CAGR (% per annum) 2009-18	CAGR (% per annum) 2014-18	AGR (%) 2017-18	2017	2018
3.98	7.46	-14.17	-45.01	21.74	6.45

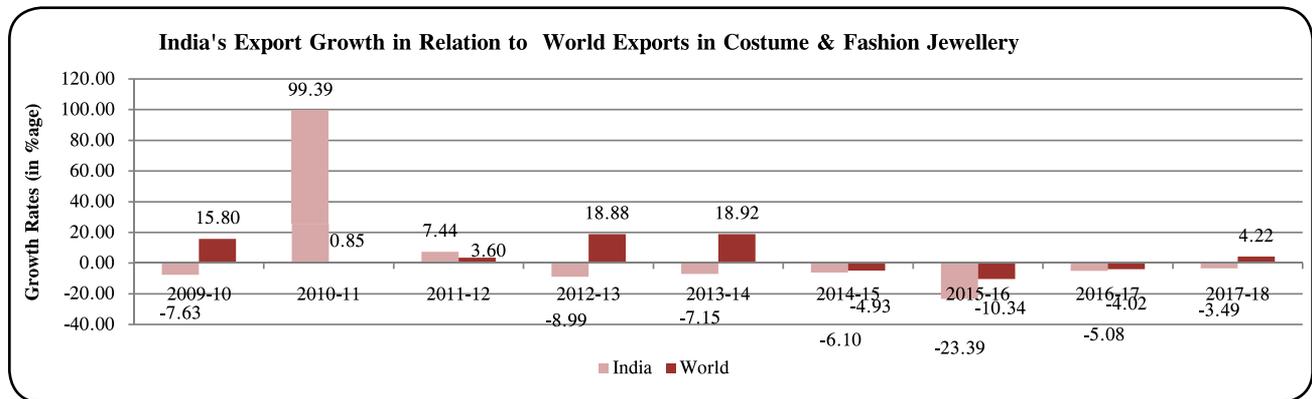
Source: Trade Statistics for International Business Development, ITC.

Note: CAGR- compound annual growth rate; AGR- annual growth rate.

The export of silver jewellery segment always exhibited positive growth except during the current year when its export decreased from US\$ 43.90 lakh in 2017 to US\$ 8.24 in 2018, signifying a massive fall of 81.23 per cent. The growth of exports in the world market also declined in 2018 but only by 36.22 per cent. The trade competitiveness of the segment, which was

21.74 in 2017, decreased to 6.45 in 2018. It is a very important sector in terms of its consistent growth during the period 2009-2017 and needs to be nurtured for achieving greater benefit in future. The annual national and world export growth rates of the sector have been shown in the Figure 8.5.

Figure 8.5: India's Export Growth in Relation to World Exports in Silver Jewellery



Source: Trade Statistics for International Business Development, ITC.

8.4.5 Coloured Gemstones

Coloured gemstones account for a more than four times share in the world market in comparison to its share in national exports. It has a share of 4.91 per cent in the related segment of the world market. The surplus share index of the segment is a healthy 3.00, which means that just

a 1 per cent increase in the share of the segment in India's G&J sector will result in an increase of 3.00 per cent in the market share of the world. Table 8.9 presents the surplus share index and surplus growth over the world export market and trade competitiveness of the segment over the current and last years.

Table 8.9: Surplus Share Index, Surplus Growth over the World Export Market and Trade Competitiveness of Coloured Gemstones

Surplus Share	Surplus Growth			Trade Competitiveness Index	
	CAGR (% per annum) 2009-18	CAGR (% per annum) 2014-18	AGR (%) 2017-18	2017	2018
3.00	-6.89	6.55	-0.48	2.92	2.94

Source: Trade Statistics for International Business Development, ITC.

Note: CAGR- compound annual growth rate; AGR- annual growth rate.

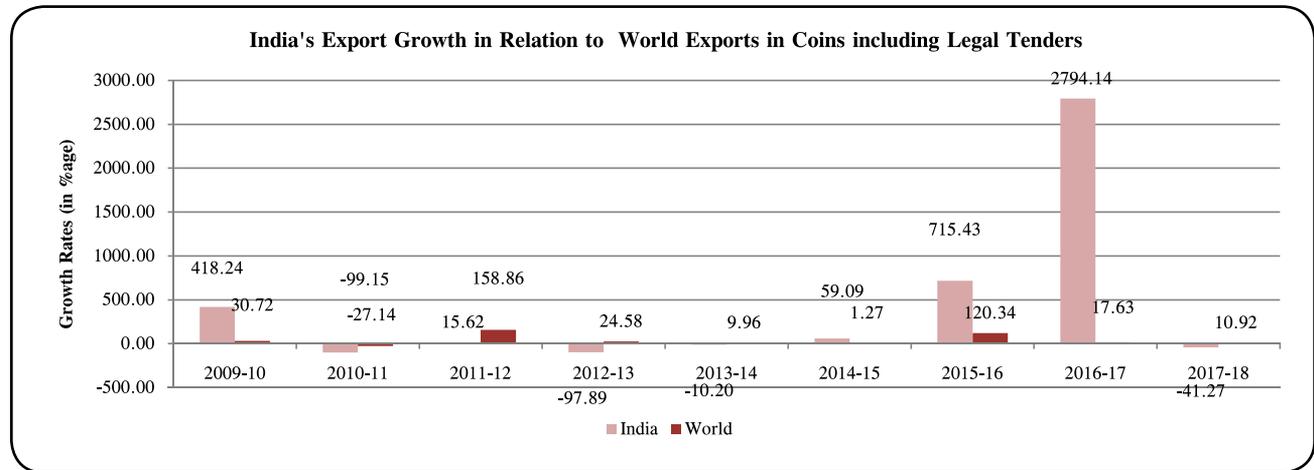
This segment has achieved positive surplus growth over the short term of four years. The coloured gemstones segment had the maximum growth in exports for the year 2012-13, at 154.88

per cent, followed by a maximum decline at 63.93 per cent in the year 2013-14, and for the last four years, the growth has been normal. In comparison to this, its contribution in the world market of

coloured gemstones was around 7.88 per cent during the period 2009-2012, then increasing to 12.18 per cent in 2013, but quickly falling to 3.84 per cent next year, and going up to 4.91 per cent in 2018. Another related segment that of rough coloured gemstones, had a trade competitiveness of 0.74 in 2018, implying that it is no longer trade-competitive. The two segments may be planned and worked out in such a way that they

strengthen the overall competitiveness. The trade competitiveness of the segment, as measured by the RCA, was a healthy and consistent 2.94 in the current year 2018 and 2.92 during the last year. This means that India's exports of coloured gemstones accounts for 2.94 times its fair share in the world market. The annual national and world export growth of the sector has been shown in Figure 8.6.

Figure 8.6: India's Export Growth in Relation to World Exports in Coloured Gemstones



Source: Trade Statistics for International Business Development, ITC.

8.4.6 Costume and Fashion Jewellery

The value of exports in this segment of costume and fashion jewellery gradually fell from US \$3.49 lakhs in 2012 to a meagre US \$1.94 lakhs in 2018. The share of this segment in the G&J sector similarly declined from 0.84 per cent in 2012 to a mere 0.49 per cent in 2018. As a result, the market share of the costume and fashion jewellery segment of India's G&J sector in the corresponding world segment went down

from 5.86 per cent in 2012 to 2.71 per cent in 2018. However, the surplus share index of 3.25 indicates that a 1 per cent increase in the domestic G&J sector will result in an increase of 3.25 per cent in its world market share. Thus, a slight increase in the production/export of this segment can lead to an increase in the market share. Table 8.10 presents the growth of the surplus share and surplus growth over the world export market and trade competitiveness of the segment over the current and previous years.

Table 8.10: Surplus Share Index, Surplus Growth over the World Export Market and Trade Competitiveness of Costume and Fashion Jewellery

Surplus Share	Surplus Growth			Trade Competitiveness Index	
	CAGR (% per annum) 2009-18	CAGR (% per annum) 2014-18	AGR (%) 2017-18	2017	2018
3.25	-3.20	-5.99	-7.71	1.74	1.62

Source: Trade Statistics for International Business Development, ITC.

Note: CAGR- compound annual growth rate; AGR- annual growth rate.

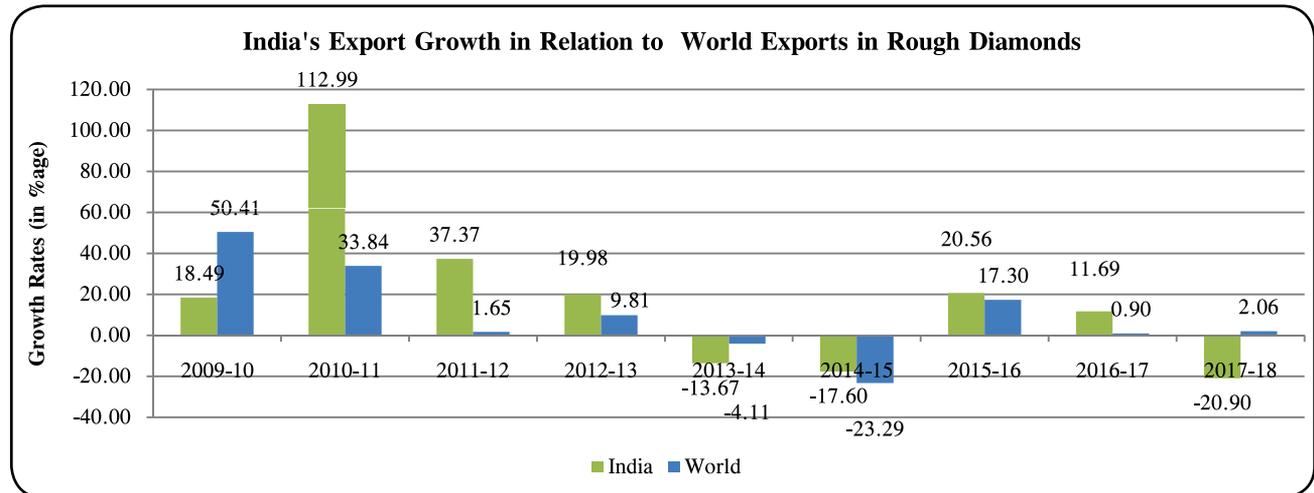
This segment has been continuously facing negative growth in India, from -8.99 per cent in 2012-13 to -3.49 per cent in 2017-18. A similar

pattern has also been observed in the world growth of this segment, which was negative from 2014-15 to 2016-17. However in 2017-

18, it grew to 4.22 per cent. Its surplus growth has been negative in every sense for the last nine years. However, the segment is trade-competitive, as measured by the RCA. Its competitiveness index in 2018 was 1.62, which means that the value of exports in this segment was 1.62 times of

its fair share in the world market. The index has decreased from 2017 onwards. The segment has a surplus share index and is trade-competitive. The annual national and world export growth of the sector has been shown in Figure 8.7.

Figure 8.7: India's Export Growth in Relation to World Exports in Costume and Fashion Jewellery



Source: Trade Statistics for International Business Development, ITC.

8.4.7 Coins including Legal Tenders

This segment had been neglected, recording very little exports of US \$44 to \$70 during the period 2013-15, after which it increased to US \$ 5078 in 2016, and galloped further to US \$ 14.24 lakhs. Thereafter, however, exports for this segment decreased to US \$ 8.36 lakh. Its share in the national G&J sector was also dismal at less than 0.01 per cent during the period 2011-16,

though the pace of growth picked up in 2017, with a share of 3.39 per cent, which, however, again fell to 2.10 per cent in 2018. The quantum leap in exports of this segment in recent two years led to an increase in its share in the world market of coins to 35.96 per cent in 2017 and to 19.04 per cent in 2018, transforming it into potentially one of the most competitive segments in the G&J sector (Table 8.3).

Table 8.11: Surplus Share Index, Surplus Growth over the World Export Market and Trade Competitiveness of Coins including Legal Tenders

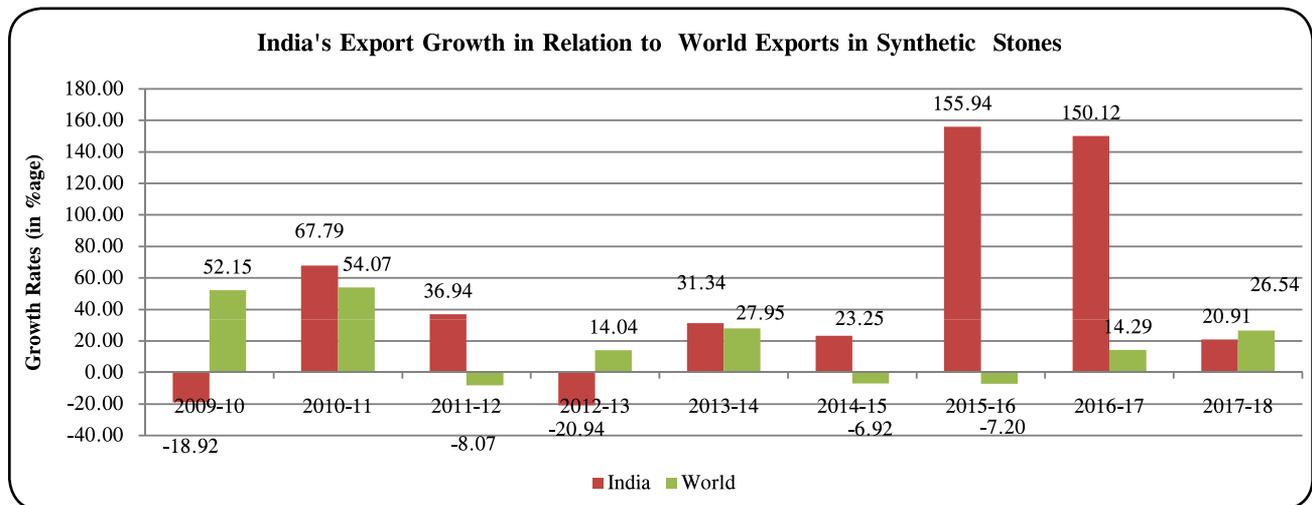
Surplus Share	Surplus Growth			Trade Competitiveness Index	
	CAGR (% per annum) 2009-18	CAGR (% per annum) 2014-18	AGR (%) 2017-18	2017	2018
9.06	8.04	593.59	-52.19	21.34	11.40

Source: Trade Statistics for International Business Development, ITC.

Note: CAGR- compound annual growth rate; AGR- annual growth rate.

The surplus share index of 9.06 indicates that a 1 per cent increase in the domestic G&J sector will result in an increase of 9.06 per cent in its world market share. Thus, a slight increase in the production/export of this segment can lead to a nine-fold increase in the market share.

Table 8.11 presents the surplus share and surplus growth over the world export market and trade competitiveness of this segment over the current and preceding years. The annual national and world export growth of this sector has been shown in Figure 8.8.

Figure 8.8: India's Export Growth in Relation to World Exports in Coins including Legal Tenders

Source: Trade Statistics for International Business Development, ITC.

This segment is the second most trade-competitive after that of synthetic stones, as measured by the RCA for the last two years. Its competitiveness index in 2018 was 11.40, which implies that the exports in this segment were worth 11.40 times the fair share in the world market. In fact, the trade competitiveness of the segment was almost double in 2017 with an index of 21.34 per cent. However, the index has decreased from 2017 onwards.

8.4.8 Rough Diamonds

The segment has an almost equal share in

the national merchandise exports and the world market at 3-4 per cent in both cases. However, the share of this segment has decreased in 2018 in both India's G&J sector as well as in the world market since the last year. The surplus share index for the segment is just 0.41, which means that in order to attain a 1 per cent increase in the world market, the share of the segment in India's G&J sector has to increase by almost 2 per cent. Table 8.12 presents the surplus share and surplus growth over the world export market and trade competitiveness of the segment over the current and last years.

Table 8.12: Surplus Share Index, Surplus Growth over the World Export Market and Trade Competitiveness of Rough Diamonds

Surplus Share	Surplus Growth			Trade Competitiveness Index	
	CAGR (% per annum) 2009-18	CAGR (% per annum) 2014-18	AGR (%) 2017-18	2017	2018
0.41	5.62	-1.32	-22.95	2.48	1.94

Source: Trade Statistics for International Business Development, ITC.

Note: CAGR- compound annual growth rate; AGR- annual growth rate.

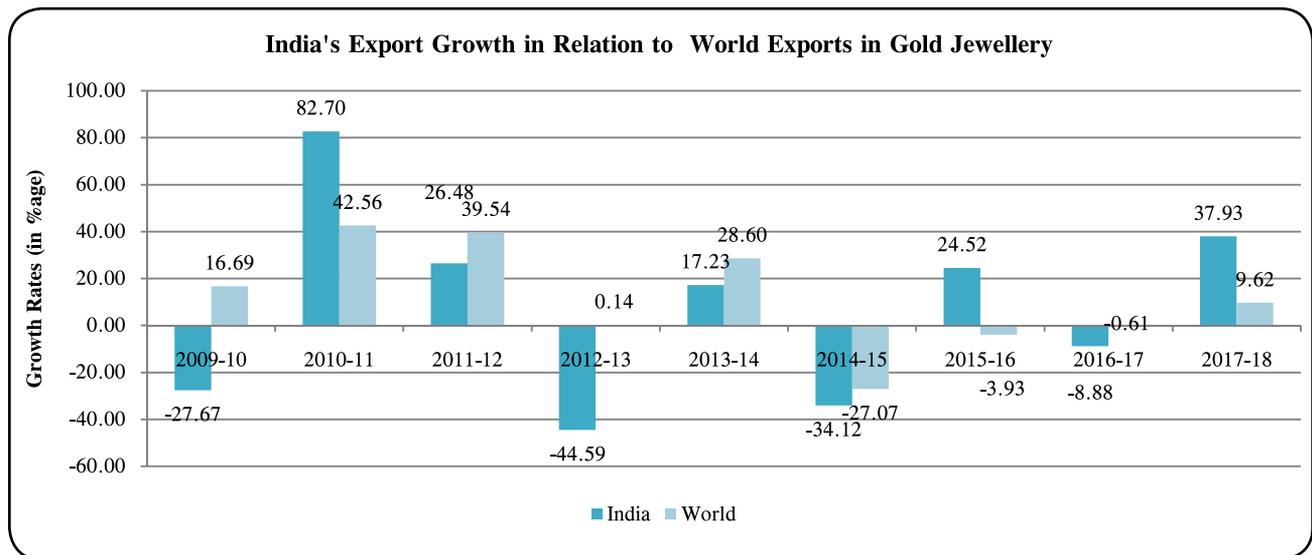
This segment experienced a positive surplus growth in the long-term series, but in the short term and more during the current year, there has been a decline. The export of rough diamonds in 2018 was abysmally low to the extent of recording a contraction by 20.90 per cent. The export

growth of this segment has to be analysed along with the segment of cut and polished diamonds, which has grown significantly. There has not been much growth in the world market for rough diamonds over the last three years. Despite this, the trade competitiveness of rough diamonds, as

measured by the RCA, is a healthy 1.94, implying that it has 1.94 times of its fair share in the world market. The annual national and world export

growth figures of this sector have been shown in Figure 8.9.

Figure 8.9: India's Export Growth in Relation to World Exports in Rough Diamonds



Source: Trade Statistics for International Business Development, ITC.

8.5 Summary of the Overall Gems and Jewellery Sector

As mentioned earlier, in the overall analysis of the G&J sector, some of the items which are of industrial use have been excluded, and therefore, the total of HS code 71 may differ slightly from the total of the group discussed here. This classification is based on what the Gems and

Jewellery Export Promotion Council (GJEPC) adopts. In the case of the surplus share index, the share of the G&J sector at two points in world export and the corresponding figures for India's export merchandise have been taken. Table 8.13 presents the surplus share index and surplus growth over the world export market and trade competitiveness of the sector over the current and previous years.

Table 8.13: Surplus Share Index, Surplus Growth over the World Export Market and Trade Competitiveness of Gems and Jewellery Sector in India

Gems and Jewellery Sector	Surplus Share	Surplus Growth			Trade Competitiveness Index	
		CAGR (% per annum) 2009-18	CAGR (% per annum) 2014-18	AGR (%) 2017-18	2017	2018
	1.09	-5.38	1.74	-4.22	3.86	3.78

Source: Trade Statistics for International Business Development, ITC.

Note: CAGR- compound annual growth rate; AGR- annual growth rate.

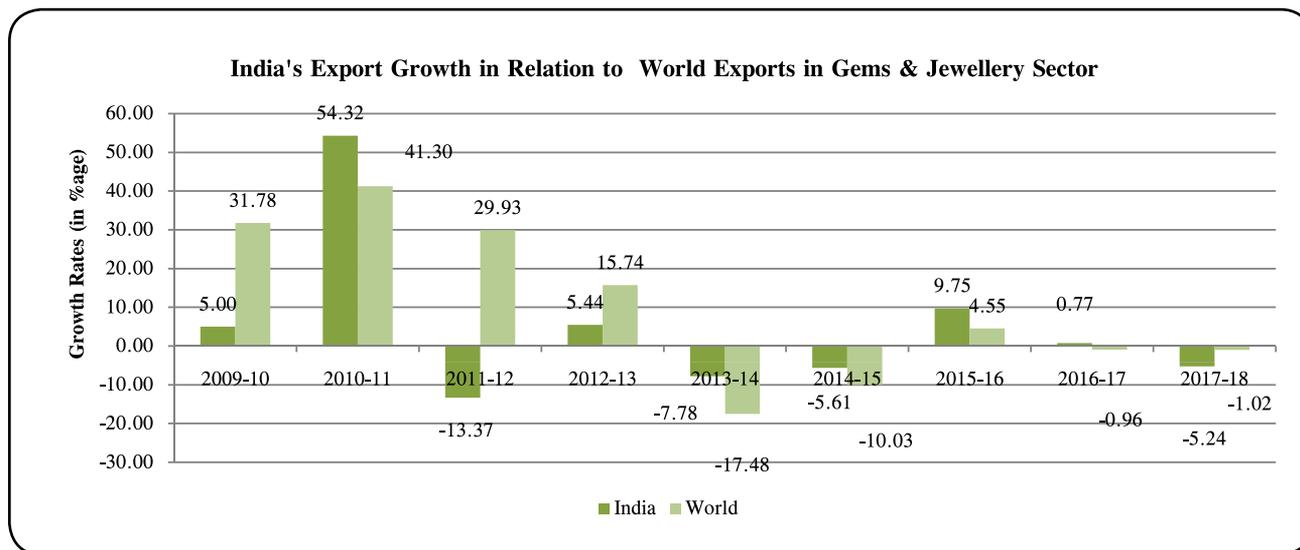
The share of the G&J sector in the Indian merchandise export gradually increased from 12.67 per cent in 2009 to 16.01 per cent in 2016, and then declined to 14.20 per cent in 2017 and 12.32 per cent in 2018. The world share of the

G&J sector exhibited a similar pattern, gradually increasing from 2.36 per cent in 2009 to 4.33 per cent in 2013, then falling to 3.57 per cent in 2014 to 3.99 per cent in 2016, followed by a decline in the next two years, recording 3.21 per cent in 2018.

The surplus share index for the Indian G&J sector comes out to be just 1.09, which implies that a 1 per cent increase in the share of the G&J sector in national exports will lead to an increase of 1.09

per cent in the corresponding world market. The G&J sector needs a technological upgradation of its products to facilitate an increase in the surplus share index.

Figure 8.10: India's Export Growth in Relation to World Exports in the Gems and Jewellery Sector



Source: Trade Statistics for International Business Development, ITC.

In the recent past, India had a positive growth of 5.45 per cent in 2012-13, then experienced negative growth in the next two years, followed by a massive growth of 9.75 per cent in 2015-16, only to experience diminished growth of 0.77 per cent in the next year, and the growth rate stood at -5.24 per cent for 2017-18. In the case of world exports, the sector exhibited a similar pattern, achieving positive growth from 2012-13 (15.73 per cent) to 2015-16 (4.26 per cent), and thereafter negative growth for the next two years.

In 2017-18, the decline in world export was 1.09 per cent, which was much smaller as compared to the decline of 5.24 per cent in Indian exports in 2017-18. The same scenario can be seen in the case of negative surplus growth. However, the trade competitiveness index, as measured by the RCA, was 3.86 in 2017 and 3.78 in 2018. This means that India exports commodities in the G&J sector at 3.78 times the fair share in the world market.

IX

IMPACT OF GOVERNMENT POLICIES ON EXPORT AND GROWTH OF THE GEMS AND JEWELLERY SECTOR

9.1 Introduction

In order to boost the growth of the Gems and Jewellery (G&J) sector, in general, and promotion of exports, in particular, the Government of India has come up with policy measures from time to time incorporating different regulations, schemes, and initiatives for stakeholders in various segments of the supply chain. In spite of the fact that the industry has primarily family owned businesses and is highly unorganised, it is export-oriented and generates a lot of employment.

9.2 Methodology

This chapter discusses the impact of major government policies and initiatives on the business interests and perceptions of selected: (i) G&J units, (ii) Associations, and (iii) exporters.

Data on the impact of these policies was collected through canvassing of questionnaires containing both structured as well as open-ended questions posed to selected G&J units, exporters, and Associations by the NCAER research team, which visited these units.

1. Following were the various Government policies and schemes covered in the main questionnaire for the G&J units:

- Good and Services Tax (GST);
- Demonetisation of high value currency notes;
- Foreign Direct Investment (FDI);
- Free Trade Agreement (FTA);
- Interest Equalisation / Subversion Scheme (IES);

- Skill Development Scheme;
- Technology and Quality Up-gradation (TEQUP);
- Lean Manufacturing Competitiveness for Micro, Small and Medium Enterprises (MSMEs) Scheme;
- Special Notified Zones (SNZs);
- Jewellery Parks; and
- Bureau of Indian Standards (BIS) Hallmarking Standards.

The 'Make in India' scheme was covered via secondary analysis.

2. The open-ended questions included in the questionnaires for the G&J units, Associations and exporters covered the following themes:

- Expectations of G&J units from the Gems and Jewellery Export Promotion Council (GJEPC) in terms of services and support;
- Expectations of G&J units from the Government on the revision of schemes/benefits or announcement of new schemes;
- Challenges faced by industry Associations;
- Assessment of the level of skills pertaining to Associations;
- Assessment of the level of technology pertaining to Associations;
- Expectations of Associations from the GJEPC with regard to services and support;

- Expectations of Associations from the Government on the revision of schemes/benefits or announcement of new schemes;
- Expectations of exporters in the G&J sector from the GJEPC in terms of services and support; and
- Expectations of exporters from the Government on the revision of schemes/benefits or announcement of new schemes.

9.3 Government Policies and Schemes

This section briefly discusses each of the Government policies and schemes impacting the G&J sector.

9.3.1 Goods and Services Tax GST

The Goods and Services Tax (GST) is a multi-stage, destination-based indirect tax for the entire country levied on every value addition in the supply chain with effect from July 2017. It replaces many indirect taxes. The GST rates within the G&J sector vary widely, ranging between 0.25 per cent for rough diamonds to 18.0 per cent for repairing and related services. Policy announcements in September 2019 related to GST, Corporate Tax and export credit limits for MSMEs made by the Union Finance Minister are expected to provide a much-needed boost to the G&J industry in India. Most of these measures are in accordance with the recommendations made by the GJEPC in the recent past. In the Union Budget 2019-20, the GST rate was reduced from 18 to 5 per cent (*5 per cent without Input Tax Credit (ITC) for services by way of job work in relation to gems and jewellery¹³.

9.3.2 Demonetisation

Demonetisation, or banning of high-currency notes of Rs 500 and Rs 1000 denominations was announced by Prime Minister Narendra Modi on November 8, 2016. An analysis of the demand

for gold based on data from the World Gold Council for the four quarters of 2015-16, 2016-17, 2017-18, and 2018-19 and their annual quarter-to-quarter showed that demonetisation did not affect the demand for gold either for jewellery or for bars and coins in the quarter when it came into effect. Rather in the next quarter, consumer demand increased by 50 per cent and in the next to next quarter, by 66 per cent. In the case of gold jewellery, the growth in demand for the next two quarters after the closure of demonetisation was steeper.

Demonetisation did not impact the cut and polished diamond industry in a big way as the major market for polished diamonds lies outside India. Also, larger organised sector players in the industry undertake most of their purchase and sales transactions in US dollars, with only employee expenses primarily required to be paid in Indian rupees. However, small and mid-size diamond polishing firms having their main presence in the local trade were significantly impacted as a lot of such trades are targeted at smaller unorganised jewellery players that were starved of cash following demonetization¹⁴. Data presented in the chapter on 'Export Competitiveness of Gems and Jewellery sector', shows that exports, which grew by 10.30 per cent in 2016-17, suffered heavily in 2017-18, with a fall in growth by 5.96 per cent and a further decline in 2018-19 by 2.12 per cent.

9.3.3 Foreign Direct Investment (FDI)

The Government of India allows 100 per cent Foreign Direct Investment (FDI) in the G&J sector through the automatic route. For exploration and mining of diamonds and precious stones, FDI is allowed up to 74 per cent under the automatic route. For exploration and mining of gold and silver, and minerals other than diamonds and precious stones, metallurgy and processing, FDI is allowed up to 100 per cent under the automatic route¹⁵. In this sector, FDI

¹³<https://www.ibef.org/industry/gems-jewellery-india.aspx>.

¹⁴<https://economictimes.indiatimes.com/industry/cons-products/fashion/-/cosmetics/-/jewellery/demonetisation-to-take-shine-off-gems-jewellery-care-report/articleshow/55671929.cms?from=mdr>.

¹⁵<https://economictimes.indiatimes.com/industry/indl-goods/svs/metals-mining/policy-allowing-100-fdi-in-automatic-route-for-mining-has-enhanced-fdi-narendra-singh-tomar/articleshow/67818356.cms?from=mdr>.

grew 4.6 times, from US \$151 million (2010-14) to US\$ 695 million (2014-18).

9.3.4 Free Trade Agreements (FTAs)

Free Trade Agreements (FTAs) are arrangements between two or more countries that primarily agree to reduce or eliminate customs tariff and non-tariff barriers on substantial trade between them (Department of Commerce). According to ASSOCHAM, since the G&J sector mostly depends on imports of raw materials for its survival and competitiveness in the world market, entering into FTAs with countries possessing raw materials plays a significant role in the G&J industry.

9.3.5 Interest Equalisation Scheme (IES)

The Interest Equalisation Scheme (IES) for pre- and post-shipment rupee export credit was approved by the Government of India with effect from 1 April 2015 for a period of five years. Under this scheme, banks reduce the interest rate charged to the eligible exporters as per the extant guidelines on interest rates on advances by the rate of interest equalisation. With effect from 2 November 2018, the interest equalisation rate was increased from 3 per cent to 5 per cent for exports by the MSME sector manufacturers under the IES pre- and post-shipment rupee export credit. Earlier this year, the Finance Minister announced measures for relief and credit support related to businesses, especially MSMEs, to support the Indian economy's fight against COVID-19¹⁶. Further, the Reserve Bank of India (RBI) has also extended the IES on pre- and post-shipment rupee export credit with the same scope and coverage, for one more year, that is, up to 31 March 2021.

9.3.6 Skill Development Scheme

The Pradhan Mantri Kaushal Vikas Yojana (PMKVY), India's largest skill certification scheme, was launched by Prime Minister Narendra Modi on 15 July 2015. This scheme is being implemented by the National Skills Development Corporation (NSDC) under the guidance of the Ministry of Skill Development and Entrepreneurship (MSDE). The Gems & Jewellery Skill Council of India (GJSCI) is the nodal entity for skill development of the Indian G&J industry. Gems and jewellery has been identified by the NSDC as a high-growth sector to initiate skill-training programmes. In December 2016, the foundation stone for the fifth centre of the Indian Institute of Gems and Jewellery (IIGJ) was laid in Varanasi, Uttar Pradesh. The other four centres of IIGJ are located in Mumbai, New Delhi, Jaipur, and Kolkata.¹⁷

9.3.7 Technology and Quality Upgradation (TEQUP)

The Technology and Quality Upgradation (TEQUP) scheme was in operation up to 30 September 2017, and is not an ongoing scheme. It aimed at encouraging MSMEs to adopt energy-efficient technologies through the Small Industries Development Bank of India (SIDBI). The components of the scheme include: organising training and awareness programmes on energy efficiency; conducting energy audits and detailed project reports; implementing pilot projects on 'energy-efficient technologies', and providing subsidies/reimbursement of expenditure incurred on product certification licenses from national standardisation bodies or International Product Certifications.¹⁸

¹⁶<https://pib.gov.in/PressReleasePage.aspx?PRID=1623601#:~:text=Finance%20Minister%20announce%20measures%20for,Economy's%20fight%20against%20COVID%2D19&text=Relief%20to%20Real%20Estate%20Projects,extended%20up%20to%20six%20months>.

¹⁷[https://www.pmkvyofficial.org/App_Documents/News/PMKVY%20Guidelines%20\(2016-2020\).pdf](https://www.pmkvyofficial.org/App_Documents/News/PMKVY%20Guidelines%20(2016-2020).pdf).

¹⁸Development Commissioner, Ministry of MSME.

9.3.8 Lean Manufacturing Competitiveness for the MSMEs Scheme

This scheme, launched by the Ministry of Micro, Small and Medium Enterprises (MSMEs) has been operational since July 2009. To quote the Government of India (GoI),¹⁹ “The main objective of the scheme is to assist Indian MSMEs to reduce the manufacturing costs through proper personnel management, better space utilisation, scientific inventory management, improved process flows, reduced engineering time, etc.”

9.3.9 Special Notified Zone (SNZ):

With a view to develop India into an international diamond training hub, a Special Notified Zone (SNZ) was opened at the Bharat Diamond Bourse in Mumbai on 20 December 2015. The creation of SNZs has ensured the regular availability of direct supply of rough diamonds in the country itself and within easy access, thereby not only saving time and effort of travel for diamond manufacturers, who have access to more centres for procuring rough diamonds, but has also minimized middlemen commissions and eventually costs.

9.3.10 Jewellery Park

The Government of Maharashtra and GJEPC had signed a memorandum of understanding (MoU) in 2018 to open a jewellery park in Ghansoli, Navi Mumbai, where local workers and factories in the hand-made sector would be relocated to develop their trade, and improve their work environment and standard of living. The Park is expected to become operational within a few years from the signing of the agreement.

9.3.11 Bureau of Indian Standards (BIS) Hallmarking Standards

The Bureau of Indian Standards (BIS) has revised the standard for gold hallmarking in India from January 2018 onwards. The gold

jewellery hallmark will now carry a BIS mark, purity in carat and fitness as well as the unit's identification and the jeweller's identification mark. The move is aimed at ensuring a quality check on gold jewellery. The Government of India is considering making hallmarking mandatory for selling of gold jewellery.

9.3.12 Make in India

The 'Make in India' Initiative was launched globally in September 2014 as part of the Government of India's renewed focus on the country's domestic manufacturing sector. For achieving this, a specific action plan was drawn for 21 key sectors including the G&J sector. The various components of 'Make in India' are: (i) Policy initiatives; (ii) Fiscal incentives; (iii) Infrastructure creation; (iv) Ease of doing business; and (v) Innovation, (Research and Development (R&D) and skill development.

The next section presents the findings of the interviews with members of the G&J units and Associations, and exporters engaged in the G&J sector.

9.4 Findings From Interviews With Stakeholders In The G&J Sector

9.4.1 G&J Units

This section presents the feedback received from the selected G&J units surveyed through a questionnaire containing both (a) structured, and (b) open-ended questions. This enabled the researchers to collect information on the perceptions, comments, reactions, and impact pertaining to various government policies, schemes, agreements, and interventions. The responses received from selected States have been grouped into six regions. The survey findings could provide valuable insights to policymakers and other stakeholders responsible for the growth and development of the sector to enable them to formulate appropriate policies and actions for the sector.

¹⁹Guidelines for the Improvement of Lean Manufacturing Competitiveness Schemes, Development Commissioner, MSME, GoI.

Findings Based on Structured Questions

Impact of Goods and Services Tax (GST)

- **GST simplified the process of filing of taxes:**

The Goods and Services Tax (GST) was rolled out in July 2017. The most common question asked about GST is whether it has simplified the process of filing of taxes both for those it is applicable to as well as other stakeholders, including implementing agencies and policymakers. The feedback received from selected G&J units has been presented in Table 9.1. Overall, the units filing GST accounted for 60.80 per cent of the respondents while the balance 39.21 per cent did not give any responses.

Out of those who gave responses, a majority, that is, 67.91 per cent agreed that GST had simplified the process of filing taxes. About 20.0 per cent disagreed with this perception whereas about 12 per cent said that they had no idea. Across the regions, there was not much variation in the responses from those who agreed that GST had simplified the process of filing taxes. The percentage of such units varied from being the maximum in the North (82.74 per cent) and minimum in the East (53.85 per cent).

Overall, a majority of the respondents, that is, about 68 per cent, agreed that GST had simplified the process of filing taxes. Across the regions, the proportion of such respondents varies between the 54.0 per cent in the East to 83.0 per cent in the North.

Table 9.1: Distribution (%) of Responses by the G&J Units: Impact of GST on the Process of Filing of Taxes

Region	Response Rate (%)			Impact of GST on the Process of Filing of Taxes (%)		
	Response received	No Response received	All	Yes	No	No Idea
North	65.3	34.69	100.00	82.74	12.72	4.53
East	62.8	37.23	100.00	53.85	20.57	25.59
West	78.8	21.2	100.00	70.61	23.67	5.72
South	41.8	58.16	100.00	61.95	25.65	12.43
Gujarat	67.8	32.2	100.00	77.09	7.26	15.65
Rajasthan	57.1	42.94	100.00	71.12	27.67	1.21
Total	60.8	39.21	100.00	67.91	19.94	12.16

Source: NCAER Gems & Jewellery Survey, 2019.

- **Claiming refund of input costs under the Input Tax Credit (ITC):**

The need to claim refund of all input costs incurred by the G&J units is one of the major concerns with regard to GST. Various stakeholders in the sector have reported that claiming input costs is not an easy task as it necessitates maintaining proper accounts for being able to file a claim if and when the need arises. The feedback received in this regard has

been presented in Table 9.2. When asked about the extent to which the G&J units were able to claim refund of the input costs, out of the 61.0 per cent who responded, 58.16 per cent replied in the positive, 24.20 per cent said 'No', and the rest 17.62 per cent said, 'No idea'. Across the regions, the proportion of respondents who replied in the positive varied between being the highest in Gujarat (76.19 per cent) to the lowest in the West (44.51 per cent).

Table 9.2: Distribution (%) of Responses by the G&J Units: Claiming Refund of Input Costs under ITC

Region	Response Rate (%)			Claiming Refund of Input Costs under ITC (%)		
	Response received	No Response received	All	Yes	No	No Idea
North	75.5	24.53	100.00	78.53	17.00	4.47
East	51.3	48.72	100.00	51.48	23.75	24.77
West	94.3	5.75	100.00	44.51	24.19	31.30
South	38.4	61.61	100.00	59.31	26.39	14.30
Gujarat	67.7	32.26	100.00	76.19	7.28	16.53
Rajasthan	55.5	44.54	100.00	44.90	51.62	3.50
Total	60.4	39.62	100.00	58.16	24.20	17.62

Source: NCAER Gems & Jewellery Survey, 2019.

In a nutshell, more than 58.0 per cent of the respondents reported that they were able to claim refund under the Input Tax Credit, with the proportion of respondents varying between 44.51 per cent in the West to 78.53 per cent in the North. Although overall Only 24 per cent of the respondents replied in the negative, the proportion of such respondents was the highest in Rajasthan, at 51.62 per cent.

- **Refund of input costs:**

Apart from the issue of claiming input costs, as mentioned above, getting easy and timely refund from the department is another major concern for the depositors of GST. Accordingly, the units covered under the survey were asked whether getting a refund of input costs was easy and timely or not. The responses have been presented in Table 9.3. Overall, about 72.88 per cent of the respondents gave their response while the remaining 27.12 per cent did not. Out of the 72.88 per cent of the respondents who gave an

answer, only 32.23 per cent said that getting a refund was easy and timely, whereas 24.29 per cent said it was 'easy but delayed' and 11.69 per cent found it 'cumbersome'. About 31.78 per cent said that they had no idea. Across the regions those who reported that getting a refund was 'easy and timely', the proportion of respondents varied between being the lowest in Rajasthan (18.36 per cent) to the highest in Gujarat (66.41 per cent). The proportions of respondents who reported that it was 'easy but delayed' were the lowest in Gujarat (9.04 per cent) and the highest in the North (35.66 per cent). The proportion of respondents who said that the process was 'cumbersome' varied from being the lowest in Rajasthan (2.60 per cent) to the highest in the West (19.46 per cent). To sum up, it was found that overall, more than 50.0 per cent of the respondents agreed that getting refund of input costs under ITC was easy but an equal proportion of the respondents also mentioned that there was a delay in the refund process.

Table 9.3: Distribution (%) of Responses by the G&J Units: Ease of Getting a Refund under ITC

Region	Response Rate (%)			Ease of Getting Refund under ITC (%)			
	Response received	No Response received	All	Easy and Timely	Easy but Delayed	Cumbersome	No Idea
North	79.03	20.97	100	41.47	35.66	15.99	6.87
East	56.03	43.97	100	27.70	29.89	10.71	31.68
West	97.04	2.96	100	31.00	19.12	19.46	30.43
South	61.77	38.23	100	25.81	20.03	9.75	44.44
Gujarat	73.57	26.43	100	66.41	9.04	8.01	16.54
Rajasthan	95.71	4.29	100	18.36	23.55	2.60	55.49
Total	72.88	27.12	100	32.23	24.29	11.69	31.78

Source: NCAER Gems & Jewellery Survey, 2019.

Overall, only 32.23 per cent of the respondents said that getting refund under ITC was easy and timely and about 24.29 per cent said that it was easy but delayed. However, in the State of Gujarat, about 66.41 per cent of the respondents found that getting a refund was easy.

- **Impact of GST on the volume of business:**

Ever since GST has replaced other forms of indirect taxes, there have been reactions in favour and against it from various stakeholders in terms of its impact on the volume of business being done by enterprises. However, in absence of any empirical assessment of the data, the perceptions remain subjective. The data collected during the field survey for this has been presented in Table 9.4. Overall, about 80.0 per cent of the surveyed units responded to this question. Out of this, a majority, that is, 41.72 per cent, reported a

‘decrease’ in the volume of their business. Only 13.36 per cent of the units said that the volume of their business had increased due to the impact of GST. About 27.0 per cent said that the implementation of GST had had ‘no impact’. There is not much variation across the regions in respect of those who reported a ‘decrease’ in the volume of business. The proportion of such respondents varies between 43.09 per cent and 48.85 per cent except in the region of Rajasthan, where the corresponding figure was only 15.62 per cent. In Rajasthan, 40.03 per cent of the respondents reported ‘no impact’ (Table 9.4).

To sum up, a majority of the respondents (41.72 per cent) found that the volume of their business had decreased due to GST. Only 13.30 per cent of the respondents reported an increase in the volume of their business whereas 27.07 per cent reported ‘no impact’.

Table 9.4: Distribution (%) of Responses by the G&J Units: Impact of Implementation of GST on the Volume of Your Business

Region	Response Rate (%)			Impact of Implementation of GST on the Volume of Business (%)			
	Response received	No Response received	All	Increased	Decreased	No Change	No Idea
North	90.26	9.74	100	12.86	43.77	41.08	2.28
East	68.63	31.37	100	15.10	43.09	27.31	14.50
West	90.03	9.97	100	10.37	48.48	15.74	25.41
South	71.93	28.07	100	19.00	48.85	15.52	16.63
Gujarat	77.61	22.39	100	22.01	45.47	25.18	7.33
Rajasthan	99.17	0.83	100	1.25	15.62	40.03	43.10
Total	80.21	19.79	100	13.36	41.72	27.07	17.85

Source: NCAER Gems & Jewellery Survey, 2019.

Impact of Demonetization

- **Post-demonetisation impact on demand in the G&J sector:**

On 8 November 2016, the Government of India announced the demonetisation of all notes of denominations of Rs 500 and 1,000. It also announced the issuance of new notes in

denominations of Rs 500 and 2,000 in lieu of the demonetised banknotes. The issue of the extent to which demonetisation has had an impact on demand in the G&J sector has been debated extensively but there is no prior data to substantiate the claims and counter-claims. The data collected during this survey on this issue provides ample scope to justify the claims

and counter-claims. These findings have been presented in Table 9.5. The survey reveals that the post-demonetisation impact on the G&J sector was adverse, at least in the short term, whereas the supporters of demonetisation termed it a transitional effector a temporary phenomenon. Overall 65.12 per cent of the surveyed units reported a decrease in demand and 23.65 per cent said that there was 'no change' in demand. Only 8.86 per cent of the units surveyed vouched for an increase in demand post-demonetisation. Across the regions, there was not much variation in the responses. The

proportion of those reporting a decrease in demand varied from being the highest in the North (77.67 per cent) to the lowest in the East (56.49 per cent). The increase in demand was reported to be the highest in the West (22.72 per cent) and the lowest in Rajasthan (1.26 per cent).

A majority of the units (65.12 per cent) reported a decrease in demand due to demonetisation whereas 23.65 per cent said that there was no change in demand. Only 8.68 per cent reported an increase in demand post-demonetisation.

Table 9.5: Distribution (%) of Responses by the G&J Units: Post-demonetization Impact on Demand

Region	Response Rate (%)			Post-demonetization Impact on Demand (%)			
	Response received	No Response received	All	Increased	Decreased	No Change	No Idea
North	99.92	0.08	100	3.05	77.67	18.80	0.48
East	98.25	1.75	100	10.42	56.49	31.56	1.54
West	96.16	3.84	100	22.72	59.98	14.33	2.96
South	89.24	10.76	100	7.77	65.39	22.41	4.44
Gujarat	98.67	1.33	100	4.99	66.61	22.84	5.56
Rajasthan	99.45	0.55	100	1.26	69.03	29.01	0.69
Total	96.38	3.62	100	8.86	65.12	23.65	2.39

Source: NCAER Gems & Jewellery Survey, 2019.

Impact of Foreign Direct Investments (FDI)

The Government of India has permitted 100 per cent Foreign Direct Investment (FDI) in the G&J sector under the automatic route. Table 9.6 presents the perceptions of the target respondents about the impact of the FDI policy on the overall business in the sector. The response rate in this regard was, however, poor. Out of the total units that responded (76.16 per cent), a majority (74.91 per cent) said that they had 'no idea' about

this matter, and 11.83 per cent found 'no change'. Only 6.62 per cent said that the impact of the FDI policy had been positive whereas another 6.64 per cent found it to be negative. Not much variation was observed in the responses received from the regions.

Overall, about three-fourth of the respondents expressed their ignorance regarding the FDI policy, 11.83 per cent observed 'no change' and just 6.62 per cent found its impact to be positive.

Table 9.6: Distribution (%) of Responses by the G&J Units: Impact of the FDI Policy (FDI under the Automatic Route) on the Overall Business of the Sector

Region	Response Rate (%)			Impact of the FDI Policy (FDI under the Automatic Route) on the Overall Business of the Sector (%)			
	Response received	No Response received	All	Positive	Negative	No Change	No Idea
North	71.17	28.83	100	0.79	1.12	11.11	86.97
East	85.56	14.44	100	7.83	14.15	6.6	71.4
West	84.69	15.31	100	10.2	10.89	35.46	43.45
South	46.92	53.08	100	1.28	2.26	8.61	87.85
Gujarat	98.86	1.14	100	4.03	0.38	2.49	93.11
Rajasthan	95.00	5.00	100	14.62	1.61	4.67	79.09
Total	76.16	23.84	100	6.62	6.64	11.83	74.91

Source: NCAER Gems & Jewellery Survey, 2019.

Impact of Free Trade Agreement (FTA)

India has negotiated trade liberalisation agreements with several countries and trade groupings, including the pre-FTA level schemes and alternative trade relaxation programs with ASEAN, Sri Lanka, and Thailand. The feedback on the impact of 'Free Trade Agreement (FTA)' with several countries with respect to the G&J sector has been presented in Table 9.7. Out of the total number of units surveyed, 77.41 per cent responded to the question regarding impact

of FTA, And among those that responded, 72.11 per cent said that they did not have any idea on this issue while about 14.0 per cent found 'no change' due to the FTA. Only 6.50 per cent reported that the impact of FTA on the G&J sector had been positive while 7.47 per cent found it to be 'negative'.

Almost three-fourth of the respondents expressed their ignorance about FTA, about 14.0 per cent said that it had brought 'no change' and just 6.50 per cent found its impact to be positive.

Table 9.7: Distribution (%) of Responses by the G&J Units: Impact of the Free Trade Agreement

Region	Response Rate (%)			Impact of the Free Trade Agreement (%)			
	Response received	No Response received	All	Positive	Negative	No Change	No Idea
North	72.84	27.16	100	10.31	2.20	12.29	75.22
East	86.74	13.26	100	5.43	14.69	8.99	70.89
West	92.04	7.96	100	9.82	12.06	34.79	43.33
South	47.65	52.35	100	2.64	3.34	7.37	86.65
Gujarat	98.67	1.33	100	4.80	0.77	2.89	91.54
Rajasthan	89.17	10.83	100	4.36	1.56	13.55	80.53
Total	77.41	22.59	100	6.50	7.47	13.93	72.11

Source: NCAER Gems & Jewellery Survey, 2019.

Impact of the Interest Equalisation/Subversion Scheme

The Interest Equalization Scheme (earlier called the Interest Subvention Scheme) for Pre- and Post-shipment Rupee Export Credit was announced by the Government in November 2018. The scheme allows an interest equalisation rate of 3 per cent on such credit for the export of products covered under 416 tariff lines identified under the scheme. These products are largely in the MSME/labour-intensive sectors including the G&J sector. Feedback on the impact of the 'Interest Equalisation Scheme' with several

countries with respect to the G&J sector has been presented in Table 9.8. Out of the total number of units surveyed, 75.12 per cent responded to the questions on the impact of the scheme. Out of the total respondents, 74.20 per cent said that they did not have any idea on this issue and about 14.0 per cent found 'no change' due to the FTA. Only 8.47 per cent found the impact of FTA on the G&J sector to be positive and 5.40 per cent found it to be 'negative'. Overall, about three-fourth of the respondents expressed their ignorance about the scheme; about 11.93 per cent said that it had brought 'no change' whereas just 8.47 per cent found its impact to be positive.

Table 9.8: Distribution (%) of Responses by the G&J Units: Impact of the Interest Equalisation/Subversion Scheme

Region	Response Rate (%)			Impact of the Interest Equalisation/Subversion Scheme (%)			
	Response received	No Response received	All	Positive	Negative	No Change	No Idea
North	70.96	29.04	100	0.90	0.45	11.27	87.37
East	83.15	16.85	100	21.25	9.74	7.16	61.85
West	83.71	16.29	100	9.26	11.96	30.83	47.95
South	49.63	50.37	100	1.47	2.16	8.32	88.05
Gujarat	99.05	0.95	100	3.46	0.77	2.12	93.65
Rajasthan	86.77	13.23	100	1.44	1.28	10.43	86.84
Total	75.12	24.88	100	8.47	5.40	11.93	74.20

Source: NCAER Gems & Jewellery Survey, 2019.

Impact of the Skill Development Scheme

The G&J sector has been identified by the NSDC as a high-growth sector to initiate skill-training programmes. With this in mind, the leading bodies from within the jewellery industry established the Gems and Jewellery Skill Council of India (GJSCI) in July 2012. The GJSCI caters to a wide range of skills across manufacturing and retailing in gems and jewellery. This includes the processing of diamonds and gemstones, computer-assisted designs, and hand-made gold jewellery, among others. The GJSCI represents all the areas and functions of the industry, such

as diamond processing, coloured gemstone processing, jewellery manufacturing, wholesale, retail and exports. The feedback received from the G&J units surveyed on the impact of the skill training organised by GJSCI is presented in Table 9.9. Out of the total number of units surveyed, responses were received from 77.75 per cent to the question on the impact of the scheme. Among those who responded to this question, 45.53 per cent said that they did not have any idea on this, whereas 17.84 per cent found 'no change'. However, 30.26 per cent found the training to have had a positive impact and 6.37 per cent reported the impact to be negative.

Overall, more than 45.0 per cent of the respondents said that they had 'no idea' about the scheme. Almost all the respondents (92.72 per cent) from Gujarat were not aware of the scheme followed by respondents in the South

(73.76 per cent). However, about 30.26 per cent found that the scheme had had a positive impact with the highest proportion of these respondents (54.08 per cent) being in the East followed by a corresponding 34.95 per cent in the North.

Table 9.9: Distribution (%) of Responses by the G&J units: Impact of the Skill Development Scheme

Region	Response Rate (%)			Impact of Skill Development Scheme (%)			
	Response received	No Response received	All	Positive	Negative	No Change	No Idea
North	70.78	29.22	100	34.95	0.57	12.11	52.37
East	92.77	7.23	100	54.08	6.73	15.13	24.06
West	79.68	20.32	100	21.02	13.55	36.45	28.98
South	49.7	50.3	100	4.12	10.26	11.85	73.76
Gujarat	99.05	0.95	100	4.40	0.38	2.49	92.72
Rajasthan	94.69	5.31	100	28.03	4.87	28.03	39.09
Total	77.75	22.25	100	30.26	6.37	17.84	45.53

Source: NCAER Gems & Jewellery Survey, 2019.

Impact of Technology Upgradation Scheme

The feedback received from the G&J units on the impact of the Technology Upgradation Fund Scheme (TUFS) or technology and quality upgradation support to micro, small and medium enterprises (TEQUP) is presented in Table 9.10. Overall, out of the total number of units surveyed, responses were received from 73.58 per cent of the respondents to the questions regarding the impact of the scheme. Out of this, 71.39 per cent said that they did not have any idea on this, whereas 13.01 per cent found 'no change'. Only 10.86 per cent reported a positive impact of the

scheme while 4.76 per cent reported the impact to be negative. Across all the regions, the highest proportion of units that found the scheme to be a positive support was in the East (26.21 per cent) followed by the West (11.63 per cent). In the rest of the regions, the proportions of respondents finding the impact positive varied from being just 0.91 per cent in the North to 3.73 per cent in the South.

Overall, more than 70 per cent of the units are not aware of the technology upgradation scheme, and the proportion of such units was more than 90 per cent in Gujarat and Rajasthan.

Table 9.10: Distribution (%) of Responses by the G&J units: Impact of Technology and Quality Upgradation (TEQUP) Support to MSMEs- an NMCP Scheme

Region	Response Rate (%)			Impact of Technology and Quality Upgradation (TEQUP) Support to MSMEs- an NMCP Scheme (%)			
	Response received	No Response received	All	Positive	Negative	No Change	No Idea
North	70.09	29.91	100	0.91	0.34	11.44	87.30
East	85.19	14.81	100	26.21	7.05	10.74	55.99
West	79.53	20.47	100	11.63	12.13	35.27	40.97
South	48.23	51.77	100	3.73	4.00	9.12	83.16
Gujarat	98.85	1.15	100	3.28	0.19	2.12	94.41
Rajasthan	78.03	21.97	100	1.42	0.18	4.28	94.12
Total	73.58	26.42	100	10.86	4.76	13.01	71.39

Source: NCAER Gems & Jewellery Survey, 2019.

Impact of Lean Manufacturing Competitiveness for MSMEs Scheme

The Lean Manufacturing Competitiveness Scheme for MSMEs was introduced by the Ministry of MSMEs with the objective of enhancing the manufacturing competitiveness of MSMEs through the application of various Lean Manufacturing (LM) techniques. Under this scheme, financial assistance is provided for implementation of lean manufacturing techniques, primarily the cost of lean manufacturing consultant (80 per cent by the Government of India, and 20 per cent by the beneficiaries). The feedback on this scheme received from the surveyed respondent units is presented in Table 9.11. The overall response to the question on the impact of this scheme was 74.57 per cent, out of which 73.23 per cent said that they had 'no idea' about the

scheme, and about 12 per cent said that they observed 'no change' after implementation of the scheme. Only 8.46 per cent found that the scheme had a positive impact. The rest of the respondents, that is, 6.77 per cent claimed that it had had a negative impact. Among all the regions, the proportion of respondents reporting a positive impact was the highest in the West, at 11.58 per cent, followed by the East (11.58 per cent). In the rest of the States, the proportion of respondents reporting a positive impact ranged between 2.45 per cent in Rajasthan to 9.83 per cent in the South.

To sum up, a majority of the respondents, that is, more than 73.0 per cent had 'no idea' about the scheme, and the proportion of such respondents was more than 90 per cent in Gujarat and Rajasthan.

Table 9.11: Distribution (%) of Responses by the G&J Units: Impact of the Lean Manufacturing Competitiveness for the MSMEs Scheme

Region	Response Rate (%)			Impact of the Lean Manufacturing Competitiveness for the MSMEs Scheme (%)			
	Response received	No Response received	All	Positive	Negative	No Change	No Idea
North	69.89	30.11	100	2.98	0.23	10.75	86.05
East	86.12	13.88	100	11.58	14.69	9.21	64.53
West	81.04	18.96	100	15.51	11.88	29.70	42.90
South	47.21	52.79	100	9.83	2.67	8.16	79.37
Gujarat	99.05	0.95	100	2.88	0.19	2.69	94.26
Rajasthan	85.4	14.6	100	2.45	0.49	5.37	91.69
Total	74.57	25.43	100	8.46	6.77	11.55	73.23

Source: NCAER Gems & Jewellery Survey, 2019.

Perceptions of Impact of SNZ/Jewellery Park on Overall Business in the G&J Sector

The Special Notified Zone (SNZ) is a trading centre where global miners can import and trade in rough diamonds without inviting income tax assessments. The move will help develop the country as a trading hub for rough diamonds. The GJEPC plans to set up an 'India Jewellery Park', with an investment of 14,467 crore at Navi Mumbai on the outskirts of Mumbai. Spread across 21 acres, the Park is expected to generate an annual turnover of Rs. 41,467 crore, with the major part of this income coming from exports. It will employ over one lakh workers, and enhance manufacturing, investment, export growth, and overall economic development of India, in general, and the State of Maharashtra, in particular. In this context, the surveyed units were asked about their perceptions of the SNZ and the Jewellery

Park, and the findings are presented in Table 9.12. Overall, out of the total units surveyed, only 45.35 per cent replied while the remaining 54.65 per cent did not. Out of those who replied, 69.06 per cent said that they had 'no idea' and 7.08 per cent did not perceive any change, and 19.60 per cent of the respondents said that the impact of the scheme was 'positive'. Across all regions, the proportion of such units was the highest in the West (37.67 per cent) and lowest in Gujarat (4.97 per cent). In the East, South, and Rajasthan, the proportion of such respondents varied between 18.0 per cent and 22.0 per cent.

Overall, a majority of the units, at 69 per cent, had 'no idea' about the SNZ and Jewellery Park. The proportion of such units was as high as 83.16 per cent in the North and 92.54 per cent in Gujarat.

Table 9.12: Distribution (%) of Responses by the G&J Units: Perceptions on the Impact of the Special Notified Zone/Jewellery Park on the Overall Business in the G&J Sector

Region	Response Rate (%)			Perceptions on the Impact of the Special Notified Zone/Jewellery Park on the Overall Business in the G&J Sector (%)			
	Response received	No Response received	All	Positive	Negative	No Change	No Idea
North	45.49	54.51	100	9.65	2.11	5.08	83.16
East	15.95	84.05	100	33.23	8.78	6.21	51.85
West	50.84	49.16	100	37.67	12.04	18.06	32.24
South	43.3	56.7	100	17.99	2.75	1.82	77.44
Gujarat	99.24	0.76	100	4.97	0.77	1.72	92.54
Rajasthan	72.24	27.76	100	22.18	1.91	10.89	65.01
Total	45.35	54.65	100	19.6	4.26	7.08	69.06

Source: NCAER Gems & Jewellery Survey, 2019.

Hallmarking Standards

According to the existing rules, gold jewellery should be hallmarked and sold in only three grades of 14, 18, and 22 carats. However, it has been learnt that the Government is considering the demand of allowing hallmarking of 20 and 24 carat jewellery also. The respondents' perceptions of the prevailing hallmarking standards for jewellery are presented in Table 9.13. Overall, the response rate for this question was 90.68 per cent.

Out of this, 11.28 per cent of the respondents said that they had 'no idea' about this issue. However, 72.23 per cent of the respondents reported a positive impact of hallmarking standards. Across the regions, the proportion of such units varied between 44.49 per cent and 92.01 per cent.

Overall, about 72.0 per cent of the units had positive perceptions of hallmarking standards for jewellery. However, the proportion of such units was the lowest in the West, at about 45.0 per cent.

Table 9.13: Distribution (%) of Responses by the G&J units: Perceptions on the Mandate on Hallmarking Standards

Region	Response Rate (%)			Perceptions on the Mandate on Hallmarking Standards (%)			
	Response received	No Response received	All	Positive	Negative	No Change	No Idea
North	97.87	2.13	100	55.60	7.52	7.02	29.85
East	97.21	2.79	100	81.23	13.29	2.87	2.62
West	89.9	10.1	100	44.49	11.47	31.10	12.94
South	72.43	27.57	100	79.90	4.83	4.93	10.34
Gujarat	92.59	7.41	100	88.64	1.05	0.63	9.69
Rajasthan	99.29	0.71	100	92.01	6.99	0.72	0.28
Total	90.68	9.32	100	72.23	8.66	7.83	11.28

Source: NCAER Gems & Jewellery Survey, 2019.

Overall Assessment of the Impact of Government Policies and Schemes on the G&J Sector

The G&J sector has benefited from Government policies and schemes in many ways. A majority of the enterprises reported that GST simplifies the process of filing taxes, that they were able to claim refund on the input costs under ITC, and that it was also easy for them to get a refund on ITC, but many complained that the refund process was delayed. In the opinion, post-demonetisation, the demand for products decreased considerably. The enterprises surveyed were not aware of many of the initiatives and schemes. For instance, more than 70 per cent of the enterprises did not have an idea about FDI, FTA, and IES. There was little awareness about skill development schemes too, which are crucial for business development in the sector, with almost half the enterprises surveyed saying that they had no information about these schemes, while one-third said that these schemes had had a positive

effect. A majority of the enterprises were also not aware of the schemes for technology upgradation and lean manufacturing competitiveness, and of SNZs and jewellery parks. A majority of the enterprises had positive perceptions of hallmarking standards. These findings imply that policy planners and those responsible for implementing Government schemes in the G&J sector need to initiate awareness programs on a large scale to ensure that the benefits of these schemes trickle down to the enterprises.

9.5 Findings Based on Open Ended Questions

The findings based on responses to open-ended questions about the impact of Government schemes and policies for the G&J sector are delineated in detail in the following tables. The recommendations and suggestions made by the G&J units, Associations, and exporters, to the GJEPC are listed region-wise in Tables 9.14 to 9.22.

Table 9.14: Recommendations Made by G&J Units in Various Regions to the GJEPC for Providing Services and Support

Northern Region
<p><i>Delhi:</i></p> <ul style="list-style-type: none"> • Educate retailers about the various government schemes available for them; • Open a GJEPC office in Delhi; • Make exhibition costs reasonable; • Start awareness programmes on gold quality and hallmark. Make random checks on shops for their hallmark products, and open an office in Delhi's Chandni Chowk, and in every zone. • Remove export licences to enable all units to avail of the facilities and benefits of export. • Open more laboratories, and centres for diamond certification. • Provide training to jewellers and their employees to cope with the industry demands. Provide knowledge on export and import under one roof for jewellers. • Provide knowledge on export payment systems and offer guidelines on export. • Reduce import duty, and promote traditional jewellery through exposures in exhibitions. Resolve the issues affecting traders. • Segregate the display of diamond and gold in exhibitions. • Abolish bank guarantees for business loans.

Haryana:

- Provide knowledge about exports and new technologies. Provide internship or placement to the students after completion of their course.
- Launch a common portal/platform of GJEPC in every city where the concerned stakeholders can share their problems and interact with the GJEPC.
- Ban hallmarking of 22 carat jewellery, and retain hallmarking only for 20 carat jewellery. Also, provide relaxations in hallmarking.
- Restrict entry in exhibitions only for manufacturers and wholesalers and keep the retailers out.

Eastern Region

West Bengal:

- Open training centres for the G&J sector.
- Set up jewellery parks with good facilities for promoting a better work atmosphere;
- Provide old age pension as the artisans suffer from loss of eye sight and other occupation-related health problems;
- Provide security arrangements in the clusters;
- Ensure that banks offer loans to units in the G&J sector at low rates of interest.
- Fix uniform gold rates throughout the country;
- Establish hallmark centres.

Bihar:

- Provide bank loans at low interest rate and skill training for the artisans to boost the business in the sector, in order to counter the fall in income after implantation of GST;
- Reduce the registration cost for hallmarking services.

Jharkhand:

- Motivate and support small crafts persons through training, and support through to help them develop their businesses.
- Prioritise the interests of small traders.
- Provide bank loans at a low interest rate for small players and provide them with maximum support so that their future does not become uncertain and jobless workers get employed in the sector.
- Take the initiative to gainfully employ crafts persons in the sector so that they do not migrate to other States from Jharkhand for their livelihood.

Odisha:

- Open hallmarking centres.
- Arrange for Common Facility Centres (CFCs) and jewellery parks.
- Take steps for development of jewellery workers.

Tripura:

- Open a jewellery park in Tripura.
- Introduce health insurance for the workers and their families.

Western Region

Maharashtra:

- Organise business tours from Mumbai to Delhi.
- Reduce membership charges of Associations.
- Organise training programmes for unskilled family workers, and differently abled workers.

Southern Region

Andhra Pradesh:

- Encourage local goldsmiths as artisans coming from other States, mainly West Bengal, and entry of corporates and limited companies, are affecting the job opportunities of local workers.
- Provide a government complex for artisans at a low rent.
- Provide incentives to small hand-made jewellery workers.
- Make security arrangements for jewellers. Also provide them health/life insurance and support with pension for those in the 50+ age group.
- Take measures to counter the decline in sales by small jewellers due to the advent of corporate jewellers like Joyalukkas and Kalyan Jewellers. Establish jewellery parks with retail shops for goldsmith workers and retailers in big malls.

Karnataka:

- Standardise gold rating and provide online assistance to G&J units.
- Develop a new scheme for the benefit of retailers.
- Encourage more vigorous online sale of products.
- Organise training programmes and also CFCs.
- Reduce GST from 3per cent to 1 per cent to generate more business as workers are finding it difficult to get work.

Telangana:

- Provide adequate support to G&J units for skill development, loans, subsidies for machinery and tools, and housing for poor goldsmith families.
- Establish a testing laboratory for gems in Telangana.
- Provide loans for working capital to units at low interest rates.
- Offer subsidies for technology upgradation.
- Ensure provision of sanitation facilities and health card for health insurance due to prevalence of diseases of eyes, skin, and limbs among workers in the G&J sector.
- Provide life insurance for goldsmith workers in risky jobs.
- Promote vigorous online sale of products.

Tamil Nadu:

- Ensure strict action on hallmarking as nobody is doing hall marking at present.
- Arrange for loan facilities for small artisans and job workers to ensure the smooth running of their businesses.

Gujarat Region

Gujarat:

- Resolve the problems of small traders, who are disadvantaged due to various schemes and rebates offered by big traders that attract customers.
- Make hallmarking compulsory.
- Since Surat is a very big market for G&J units, make all facilities available for exports in Surat.
- Upload a database of prominent customers so that the traders get to know about customer details.
- Maintain a uniform price in the entire market to prevent undesirable and unhealthy competition that may affect small traders.

Rajasthan Region

Rajasthan:

- Open sales promotion facilities for export in Rajasthan.
- Provide machinery at the district level in Rajasthan for the development of skilled labour.

Source: NCAER Gems & Jewellery Survey, 2019.

Table 9.15: Recommendations Made by G&J Units in Various Regions to the Government for Revision of Existing Schemes/Benefits or Announcement of New Schemes

Northern Region

Delhi:

- Make government policy for trading documents and provision of business loans easier.
- Make hallmarking mandatory for 22 and 18 carat jewellery. Ensure adherence to quality by hallmarking centres.
- Fix minimum wages. Stop wholesalers from entering the retail business.
- Provide e-communication facility for all types of services.
- Fix the maximum age for all workers in this field at 40 years and thereafter provide them pension.
- Setup a manufacturing park in Delhi.
- Reduce import duty.
- Ensure timely refund of GST. Provide concessions on GST if the consignment returns to India.
- Establish a hub where hand-made jewellery workers can sell their products.
- Ensure provision of export facilities for small jewellers so that they can avail of the same facilities available to big jewellers.
- Liberalise domestic tariffs.

Haryana:

- Maintain price stability and reduce import duties.
- Provide loans to jewellers in rural areas for working capital.
- Reduce GST rates, and ensure that GST is not applicable for hand-made jewellery;
- Check the hallmark quality at every shop and make it effective. Also introduce hallmarking for silver products.

Eastern Region

West Bengal:

- Ensure that banks provide loans at low interest rates for job workers.
- Provide skill training for unskilled job workers.
- Arrange for better security services for G&J units.
- Fix the same amount of gold as labour charges for all job workers.
- Install machines for processing and jewellery making in every area.

Odisha:

- Provide entitlement to the pension scheme for workers older than 60 years.
- Provide loans at subsidised rates.
- Improve awareness about GST
- Introduce policies to improve the condition of local artisans in this sector, and provide them raw materials, and generate awareness about government schemes.
- Resolve the problem of high charges on digital payments.

Bihar:

- Provide loan facility at a low interest rate.
- Arrange for CFCs and skills training.
- Make adequate security arrangement for all jewellers.
- Reduce taxes from 3 per cent to 1 per cent.
- Fix uniform rates for hallmarking in the whole market.

Jharkhand:

- Ensure safety and security of small jewellers.
- Provide bank loans at low interest rates.
- Offer CFC and hallmarking facilities, and skills training.

Assam:

- Ensure a uniform gold rate across India,
- Provide financial support to the units that need it.
- Offer technology upgradation and skill training opportunities within the State.

Tripura:

- Provide old age pension for workers in the State.
- Arrange for loans from banks at low rates of interest.
- Offer health insurance for workers and their families.
- Open CFCs in the vicinity of the clusters.

Western Region

Maharashtra:

- Since loans under the Mudra scheme are not easily available, initiate more schemes for providing loans to small retailers for their business expansion. Increase the loan limit under the MUDRA scheme up to Rs 30 lakh for hand-made jewellery units to promote their growth.
- Simplify the procedure for GST refund claims.
- Arrange seminars on government schemes to generate awareness about them.

Southern Region

Tamil Nadu:

- Ensure easy availability of bank loans for G&J manufacturers to enable them to use the latest technology in their production.
- Fix the minimum wages for job workers and arrange to provide them loans at low rates of interest.
- Provide support for small craftsperson through skill up-gradation.
- Protect the livelihood of small job workers who have started dominating the G&J trade.
- Provide pensions to job workers after a certain age.
- Arrange sanitation facilities and housing for G&J workers.

Andhra Pradesh:

- Open government complexes with parking facilities, security arrangements, and web cameras, because of the prevailing high rentals of private premises for small artisans.

Karnataka:

- Provide loans to workers at low interest rates.
- Ensure implementation of effective schemes for the benefit of goldsmiths.
- Arrange skills training for G&J workers
- Make the process of documentation easier.

Kerala:

- Introduce attractive schemes for units and provide them financial assistance.
- Analyse and resolve the workers' problems.
- Reduce tax from 3 to 1 per cent.

Gujarat Region

Gujarat:

- Reduce or abolish customs duty on imports of cut and polish diamonds.
- Ensure access to legal facilities for resolving the labour issues.
- Fix uniform salaries for the workers. Protect hand-made jewellery units from the onslaught of machine-made jewellery units.
- Remove GST on the production of raw material certificates.

Rajasthan Region

Rajasthan:

- Check the hallmark centres so that the purity certified by them is as per the hallmarking standards.
- Simplify the GST process, which is currently slow and lengthy and seeking refund is time-consuming.

Source: NCAER Gems & Jewellery Survey, 2019.

Table 9.16: Challenges Faced by the Associations in the G&J Sector

Northern Region
<ul style="list-style-type: none"> • Customers mostly do cash transactions for the purchase of jewellery from small retailers. Demonetisation adversely affected the jewellery-making business and had a severe impact on wage earners in the industry. The billing system in GST is cumbersome as it entails three complicated steps: bi-monthly filing; quarterly filing; and annual filing of returns. In all these returns, the value of the purchased items should match the value of items sold. Although it has facilitated transparency in transactions, GST has also increased paperwork. • The demand for jewellery is also decreasing slowly as consumers are not willing to pay per cent tax on jewellery items. • Small manufacturers have to purchase raw materials from the open market as purchasing from government agencies like MMTC is quite expensive. • The Cost for testing the purity of gold is quite high, which increases the price of the finished products, thereby imposing a financial burden on the consumers. Since in Meerut (UP), 90.0 per cent of the gold jewellery is made of 20 carats, the jewellers want hallmarking to be introduced for ornaments in 20 carats.
Eastern Region
<ul style="list-style-type: none"> • The retailers are asking the job work contractor to supply the final product using their own gold. Majority of the job work contractors/workers hardly have the capital to invest on gold, as a result of which big dealers who have enough capital are investing in the same and getting orders in bulk. They operate at a lower margin in the form of wastage paid to the artisans. As a result, small artisans in Bowbazar, which is a hub of gold jewellery manufacturing in West Bengal, are becoming jobless and facing great hardship. It was also reported that the retailers who are getting job work from outside or outsourcing are showing (in books) 18 per cent charges for job work in terms of wastage. But they actually pay between 2.5- 6 per cent as wastage charges. • Competition from machine-made gold jewellery with lower cost is leading to shrinking of jobs for engagement of the artisans in the sector. Pipes and sheets used earlier for creating designs and shapes are now being made in machines instead of through the traditional methods used by the artisans earlier is also done on machine these days. This has resulted in the gradual transition of the sector from being labour-intensive to capital-intensive with displacement of labour engaged in the activity. In this context, there is a need to set CFCs, which would be cost- and time-effective and aid in mechanisation. • The artisans in Odisha need easy loans for working capital, advanced skill development training, registration of artisans after recommendation from the association, special market zones for exports, and skill training for artisans. • Artisans in Bihar face a situation of low working capital and low wage rates. All artisans in the State do not have 'artisan cards', which poses problems in availing of government assistance or loans for working capital. • The Association members in Bihar are not willing to pay for the higher fees for which the associations are not able to upgrade themselves. Also, there is a demand to register all artisans and provide them easy loans.

- Bihar also reported no work for skilled workers because people in the G&J sector mostly import raw material and use machines for making studded jewellery items. Thus, there is not enough work for all workers in Bihar.

Western Region

- In Maharashtra, mostly 23 carat gold ornaments are sold but the government has not permitted hallmarking of 23 carat gold ornaments. This needs to be considered at the earliest.
- There is lack of proper infrastructure, and safety and security provisions.
- Clerical work in business has increased.
- In the jewellery sector, imposition of a 3 per cent GST is excessive, which results in an increase in the rate of gold by up to Rs 1000/ per 10 gm. This has made customers unhappy, causing a decline in demand. GST has thus led to a drastic reduction in the volume of business in the G&J sector.
- Big retailers in the urban areas are also penetrating into the rural areas, posing a severe threat to small business units and artisans in the rural areas. Due to high import duty on rough metal, the volume of business of the manufacturing retailer has declined. Unpaid family workers also need skill training to enhance the volume of family business.
- Mudra loans are not easily available for those in the business. Associations hardly have any funds to conduct programmes or for technology promotion for hand-made and machine-made jewellery items. When the retailers/manufacturers visit banks to avail of loans under the PM Mudra Yojana, they are asked several questions and exhorted to produce collateral against the loan.
- Organising any training programme for unskilled workers is also a very expensive proposition for the associations, which need support from the GJEPC.
- Special jewellery zones should be set up skill development programmes should be organised in rural Maharashtra.
- Workers and traders engaged in the hand-made jewellery segment should be provided bank loans through government schemes.
- Artisans engaged in the hand-made silver jewellery segment should be issued certificates and provided livelihood support by the government.
- The problems faced in rural areas by the artisans, manufacturers, and traders need to be tackled by the government.

Southern Region

- Competition from corporate jewellers leads to low margins of profit. It was also reported from Andhra Pradesh that the entry of a large number of Bengali artisans is displacing the local workers in the craft.
- The entry of corporates and wholesalers into Telangana is affecting small traders, manufacturers, and artisans. Small job workers are also getting affected by heavy wastages and high making charges. There is lack of awareness on GST, taxation, and government policies and benefits.
- The associations find it difficult to interact with government officials and bureaucrats. The Associations want the government to provide pensions to artisans above 50 years of age, scholarships for their meritorious children, and facilities for bank loans. In addition, they want a hallmarking centre, and testing centres for checking the purity of gold.

Gujarat Region

- Due to labour problems, the association in the Gujarat region is facing losses. The members have closed their manufacturing units, and there is a dearth of artisans in the sector.

Rajasthan Region

- There are problems associated with the pricing of gemstones, which is not based on the same method like pricing of metals. The value of a gemstone is very subjective and fixed as per the demand and assessment of the trader itself. This makes categorisation of the size of business of a unit very difficult.
- A job work contractor assigns job work to several artisans. But due to the extremely unorganized nature of the gemstone market, it becomes difficult to estimate the number of workers engaged in the profession.
- Since mining is a State subject, the sector is being ignored by the Central Government. The Government policy should be directed at exploration of mines.
- There are difficulties in roping in gemstone traders from foreign countries to showcase their products in exhibitions in India because rich buyers contact them personally and buy their products without them having to travel abroad. The colour-stone exporters complain about the declining quality of gemstones from India. Further, the market is currently sluggish and workers are shifting to more lucrative business opportunities elsewhere. The economic crisis of the late 2000s also had a very negative impact on the demand for gemstones.
- The supply of gemstones, which were earlier imported from Africa, has declined in recent times and hence, their price has also increased. This is due to the fact that China has installed manufacturing units in Africa.
- There is also increasing competition from China, in particular, and South-east Asia, in general, due to the cheap labour and better technology available there. Jewellery making in India is relatively more labour-intensive and expensive.
- Demonetization had a temporary impact on the G&J business but thereafter cash transactions definitely reduced and affected small businessmen. The increase in taxes for G&J traders post implementation of GST, sales tax, and import tax has created problems for the people in the business. The technology gap in the current methods being used in the gemstone sector makes it difficult to compete with countries like China in the world market as they use upgraded technologies which require heavy investments.

Source: NCAER Gems & Jewellery Survey, 2019.

Table 9.17: Associations' Assessment of the Level of Skills

Eastern Region
<ul style="list-style-type: none"> • The General Secretary of the Akhil Bharatiya Swarnakar Sangha, Kolkata, said that about 99.0 per cent of the units in the Bowbazar area in Kolkata are engaged in hand-made jewellery manufacturing. He suggested the need for upgradation of skills in the application of various types of designs; and for spreading awareness about the quality of gold for making different products, and knowledge of market trends, among other things. • There is also need for opening proper training centres imparting both theoretical as well as practical orientation with job guarantees at the government level. Artisans in West Bengal should be imparted training in new designs. • The UPA Central Government conducted RPL-1 for certification involving 650 participants in 2014 on an experimental basis in the Bowbazar area. RPL-2 under PMKVY was conducted in Bowbazar in 2017 with 400 artisans, and a two-day training was imparted along with a reward of Rs500 to each participant. • Although Bihar is famous for its skilled artisans, presently, there is no work for them in the State, as prosperous businessmen are importing raw material and using machines for making studded jewellery.
Western Region
<ul style="list-style-type: none"> • To quote a spokesperson of the Indian Institute of Gems and Jewellery (Mumbai), “Contrary to popular belief, the Gems and Jewellery sector definitely requires education if the artisans are expected to upgrade their skills. For instance, they need to read instructions to be able to use new technology or learn about customers’ demands in terms of design or simply keep themselves abreast of the latest developments of the industry.” • Training centres should be provided for workers engaged in making plain jewellery to enable them to enhance the volume of their business.
Southern Region
<ul style="list-style-type: none"> • Workers in the G&J sector have moderate levels of skills and the associations are looking for upgraded skills more than the skills imparted through the PMKVY. One of the Associations mentioned that ‘primitive technology is presently being used in the State. Another Association reported that the artisans are adequately skilled but need financial support from GJEPC for their growth. • Jewellers in Chennai deal with hand-made jewellery entailing high labour costs and needing a high level of skills to make them competitive in the market. Since the gems and jewellery business is family- and caste-based, entry of workers from outside is difficult. This is why hand-made traditional Indian jewellery is becoming a dying craft. In order to incentivise new entrants into the sector, it is felt that training provided by CFCs could be quite beneficial. • Since enrolling in private training institutes is not affordable, short duration courses are more popular among the artisans. This necessitates government funding. • For producing machine-made jewellery, the artisans need to have basic education and a minimum level of computer literacy. They also need vocational education to be able to create the designs they have to work on.

Rajasthan Region

- Exhibitions to be used to upgrade skills of artisans, individual artisans I. Card should be issued. According to one gemstone manufacturer in Jaipur, training of workers in the sector need not be educated to operate basic tools and machinery.

Source: NCAER Gems & Jewellery Survey, 2019.

Table 9.18: Assessment of the Level of Technology by the G&J Associations

Northern Region

- Due to the advent of new technology like CAD, as also the rising popularity of artificial jewellery, there is a large displacement of workers, especially those engaged in manual designing of traditional jewellery. Thus, there is a need to provide special training to workers to enable them to work on new machines.

Eastern Region

- There is need for support for introduction of new technology in Odisha.

Western Region

- There is need for deploying the latest foreign technology to improve the quality of the products, ensure timely delivery, and increase the volume of the business.
- Manufacturers want to use new and modern technology but are in need of loan.
- This necessitates conduction of awareness programmes on the use of advanced technology by artisans in the G&J sector for creating innovative fashion and jewellery designs. Such programmes should be held in both rural and urban areas to facilitate the use of new technologies by workers engaged in the sector.

Southern Region

- Currently ancient technology is being used by the artisans and manufacturers in Andhra Pradesh and Kerala, and the workers express the willingness to switch to the use of advanced technology only if they are offered adequate subsidies for upgradation by the government. In Karnataka, some units have upgraded to new technology while others are still using obsolete technology as they need funds for upgradation. The G&J workers in Telangana and Tamil Nadu too have reported the use of basic technology and are willing to upgrade technology if adequate funds are available.

Rajasthan Region

- It has been pointed out that in Rajasthan, both goldsmith items as well as gemstone jewellery should be promoted instead of merely Gem gemstones.
- Some of the units that are participating in exhibitions organised by the GJEPC also need to upgrade their skills through training.
- The current methods used in the gemstone sector in India reflect a technology gap, which makes it difficult for the sector to compete in the world market with its counterparts in countries like China that use technologies requiring heavy investments.

Source: NCAER Gems & Jewellery Survey, 2019.

Table 9.19: Recommendations Made by G&J Associations in Various Regions to the GJEPC for Providing Services and Support

Eastern Region
<ul style="list-style-type: none"> • Training needs to be imparted to all artisans in Bihar. After that they should get a certificate that will entitle them to start their own setup. • The GJEPC should provide financial support to goldsmiths in Jharkhand and facilities available through CFC.
Western Region
<ul style="list-style-type: none"> • The GJEPC should facilitate the disbursal of loans to goldsmiths in Maharashtra from financial institutions at low rates of interest and ensure that facilities like CFCs are made available to them. • The GJEPC should also organise training programmes covering new designs, CAD, 3-D printing, use of lasers in jewellery designing, and making of lightweight jewellery, as also training for technology upgradation, especially in clusters and in rural areas. The GJEPC could introduce diploma and degree courses in gems and jewellery in colleges. • The GJEPC also needs to address the grievances of stakeholders in the sector. GST rates should be cut and high import duty on rough materials should be reduced. Loans should be made available at low interest rates.
Southern Region
<ul style="list-style-type: none"> • The Andhra Association recommends conducting meetings with the GJEPC to understand government policies. • There is also an urgent need to establish CFCs building with shops for small units. • Kerala expects the GJEPC to provide skills training and new technologies. • The associations in Karnataka, on the other hand, want the GJEPC to initiate export promotion measures and new designs for export market. • The associations in Telangana request the GJEPC to upgrade the information on Government policies from time to time for improving the performance of small units. • Tamil Nadu associations want strict laws to be imposed for implementation of hallmarking while Andhra Pradesh suggests that periodic meetings should be held with the GJEPC to help understand government policies. • The associations in the southern region also expect the GJEPC to arrange for loans and subsidy on machinery.
Rajasthan Region
<ul style="list-style-type: none"> • The GJEPC can organise orientation sessions for artisans to enable them to participate in exhibitions and interact with international buyers. • There is a demand for old patterns of gold and silver jewellery manufacturing by goldsmiths, and the GJEPC can provide a platform for goldsmiths to upgrade their skills.

Source: NCAER Gems & Jewellery Survey, 2019.

Table 9.20: Recommendations Made by G&J Associations in Various Regions for Revision of Government Schemes and Announcement of New Ones

Eastern Region
<ul style="list-style-type: none"> • According to the Association of Goldsmiths, Kolkata, identity card and certificates are currently being provided to craftsperson by the Development Commissioner, Handicrafts, Ministry of would be more appropriate if these were to be provided by the Ministry of Commerce. • Goldsmiths should also be given subsidies for sourcing inputs. • In hallmarking certification, 5 marks are prescribed for certification but goods are sold in the market after being awarded 3-4 marks due to lack of awareness among the customers. The Government should thus generate awareness among customers through various means of communication. Hallmark centres should be set up at the Panchayat level before hallmarking is made mandatory. • The CFCs can be used for promoting new technology and the latest designs. Machines can also be used for making cost-effective and time-saving inputs like pipes and sheets for use in jewellery making. • The Odisha Association wants loans for working capital to be given to active artisans. • The Jharkhand Association wants the Government to set up a district-wise jewellery hub for artisans and jewellers for the manufacturing and retailing of gems and jewellery items.
Western Region
<ul style="list-style-type: none"> • The Government built institutions for students interested in working in the gems and jewellery sector. Currently, it is mostly families that are engaged in the sector and the craftsmanship and skills are passed on from one generation to the other. Also, since the craft itself does not pay very well, few people from the present generation are interested in joining this profession. • There are only a few institutions like the IIJS that offer degree courses for training students in gems and jewellery, and even though many of these students are recruited by business houses, they leave soon as the remuneration is not enough. Also, there is no institution offering post-graduate courses in gems and jewellery. This is perhaps because short courses are more popular due to their affordability than long-term courses. • It is also recommended that the loan amount under the Mudra scheme should be raised from Rs1 lakh to Rs10 lakh to enable G&J units to expand their businesses. • The gold monetisation scheme, which was launched in 2015, should be implemented fully. • The entire all jewellery sector faced financial problems. Needs financial support from govt. with low interest for working capital and business expansion. • For business development, expansion and technology development should set up skill training facility in Kolhapur. • In rural areas very few know about various government schemes concerning the sector so awareness programmes need to be initiated by the govt. In rural areas customers don't want to pay GST and so its affecting the business. • Artisans engaged in handmade jewellery should be given certificate from govt. Job workers in Silver jewellery should be covered under insurance schemes and common facility centres should be set up.

Southern Region

- Andhra Pradesh feel that a Corporation should be established for goldsmiths and shops should be provided to those who can't afford for high rents. At present the banks are summarily rejecting loan applications of Goldsmiths.
- Special privileges like loans and shops should be given to small units for sustenance of their livelihoods. Otherwise it becomes difficult for them to compete with the big jewellers like Joy Allukkas, Kalyan jewellers , Srikumaran Jewellers etc.

Gujarat Region

- Government should exclude gold & silver from the category of 'luxurious items'.

Rajasthan

- Banks hardly provide loans to gold smiths including Mudra loans.
- Cluster are to be made with both GJEPC & Bharatiya Swarnakar Sangh. Easy source of training.
- Government should promote both Goldsmiths as well as Gem stone sector.
- Due to lack of support from the government in this sector, unit holders are forced to import expensive machinery and technology from China.

Source: NCAER Gems & Jewellery Survey, 2019.

Table 9.21: Recommendations Made by Exporters in Various Regions to the GJEPC for Providing Services and Support

Northern Region

- Currently, the GST procedure and refund system is very cumbersome and time-consuming. Similarly, the export trade process for tour exporters should also be simplified.
- The GJEPC should conduct exhibitions and get-togethers with exporters for the exchange of strategies and ideas. It should organise more exhibitions in the northern region and should support small exporters in international exhibitions.
- The drawback system is time-consuming and involves middlemen. It should be made more transparent.
- Exporters in Delhi suggest that the Government should provide a rebate on all forms of taxes. The GJEPC should inform exporters about government policies and conduct seminars in all major cities.

Eastern Region

- Exporters in West Bengal want loans for expanding their businesses.

Western Region

- The GJEPC should promote the silver sector and work for business expansion. It should also offer guidance to new exporters, and provide information on new schemes from time to time to diamond exporters. Further, the membership fees for GJEPC should be minimized and loans should be arranged by it at a minimum rate of interest.

Southern Region

- There is lack of skilled manpower and absence of any facility for export credit in the southern region.
- A specific portal should be made for the jewellery sector to enable retailers and manufacturers to source labour.
- There is also need for providing training to ensure the upgradation of skills, and for addressing the problems of low business and lack of benefits for exports.

Gujarat

- The G&J associations in the Gujarat region suggest that export-related obligations should be general and not against any special licence.
- The GJEPC should upload a database of the customers so that the exporters can learn details of customers and their credentials.
- Before taking any major decision such as that pertaining to GST, the GJEPC should consult the exporters. It should also arrange for technology advancement at competitive rates.
- Since the city of Surat in Gujarat is a hub for the sector, every facility for exports should be made available in Surat.
- No GST should be levied on the import of goods sent on consignment and those sent for exhibition. The GJEPC should devise a system that would enable exporters to see their pending shipping bills for settlement.
- The GJEPC should also conduct awareness programmes on tax-related information and new schemes.
- In case of imports, there is no advance payment system from the RBI.

Rajasthan Region

- Rajasthan reports that some items like gemstones that are used in production are not exempted from GST.

Source: NCAER Gems & Jewellery Survey, 2019.

Table 9.22: Recommendations made by G&J Exporters in Various Regions for Revision of Government Schemes and Announcement of New Ones

Northern Region

- Exporters operating in the G&J sector allege that MMTC's charges are inexorably high but the services being provided by it are very slow.
- Exporters also suggest that import and export duties should be reduced, and that the formalities for exports should be simplified.

Rajasthan Region

- Exporters in this region complain that the GST process is cumbersome and not user-friendly.

Eastern Region

- There is need for minimizing regulations on exports. Also, exporters should be imparted training in government rules and regulations for jewellery export, and have access to loans at low interest rates.

Western Region

- Awareness programmes should be organised to educate exporters about government schemes. The loan delivery system should also be simplified to facilitate speedier disbursement of loans.

Southern Region

- In this region, exporters complain of the cumbersome process of filing of GST. Further, some items like gemstones used in production are not exempted from GST. The MMTC charges are also very high.

Gujarat Region

- Customs duty on the import of cut and polished diamonds should be reduced or abolished.
- Subsidies should be given to exporters in the diamond industry. Jewellery parks and SNZs should be available in every State.
- Branding of Indian jewellery should be undertaken to facilitate its promotion in the international market. GST on raw materials should be removed.
- The certification process and disbursement of loans should be simplified for the G&J sector.

Source: NCAER Gems & Jewellery Survey, 2019.

SALIENT FINDINGS AND POLICY IMPLICATIONS

The gems and jewellery (G&J) sector accounted for about 14.2 per cent of the total merchandise exports of India during the period 2013-14 to 2017-18. This sector contributes the third highest share in total merchandise exports after engineering goods and petroleum products. According to COMTRADE data (2019), India's share in total world exports for gems and jewellery exports was as high as 6.4 per cent. The study on the Indian gems and jewellery sector conducted by NCAER, commissioned by GJEPC, revealed that, in 2019, there were a total of 9.89 lakh units and 42.89 lakh workers in the sector. Since the geographical area of a district can be very vast, the threshold for the same was restricted to at least 250 G&J units or a minimum of 1000 workers to be considered as a *cluster*.

- A total of 390 districts have been identified as clusters based on the number of units working in the G&J sector. When the classification was done on the basis of the number of workers engaged in the G&J sector, a total of 341 district clusters were found.
- When the classification was done on the basis of the number of workers, the major regional clusters for each segment were identified as follows:
 - **For diamonds:** Gujarat, accounting for 100 per cent of the workers;
 - **For gemstones:** Rajasthan, accounting for 100 per cent of the workers;
 - **For hand-made jewellery:** The East and the West regions, accounting for 26 and 20 per cent of the workers, respectively;
 - **For machine-made jewellery:** Rajasthan and the North region, accounting for 40 and 35 per cent of the workers, respectively; and

- **For the retail segment:** The South and the North regions, accounting for 34 and 22 per cent of the workers, respectively.

10.1 Analysis of Findings by Different Parameters

Following is an analysis of manpower by categories in the G&J sector, based on primary survey results:

- The sector is primarily and overwhelmingly filled with retailers and artisans making hand-made jewellery, accounting for 51.75 and 44.08 per cent, respectively, of the total of 42.89 lakh workers. Each of the other three segments, that is, diamonds, other gems and semi-precious stones, and machine-made jewellery, accounted for a share of less than 1.82 per cent, with the segment for other gems and semi-precious stones having the smallest share of 0.75 per cent among all the enterprises.
- The segment for hand-made jewellery mostly consists of own account enterprises whereas the segment for diamonds account for large enterprises or the organized segment. While the segments for hand-made jewellery and retailers have a rural orientation, the other three segments are primarily urban.

Following are the findings of the region-wise analysis for the G&J sector:

- The East region has the maximum rural-based enterprises, accounting for an employment of 43.22 per cent in rural areas, whereas Gujarat, in contrast, has the lowest level of employment of just 3.58 per cent in rural areas.
- The average employment per enterprise differs widely among the regions and segments. As compared to an average employment of 4.02

workers per unit in this sector, the Gujarat region has the maximum average of 12.82 workers per unit, followed by Rajasthan, with an average of 6.10 workers per enterprise.

Following are the findings of the analysis based on employment type for the G&J sector:

- The region-wise analysis shows that Gujarat accounted for the maximum level of formal employment, with the proportion of employees on the payroll in the G&J sector being as high as 90.15 per cent. The region has a negligible number of contract workers and only 9.35 per cent of unpaid family members and proprietors, which is the lowest amongst all the six regions. It is followed by the Rajasthan region, with a payroll employment as high as 80.91 per cent, while unpaid family members and contract workers account for employment figures of 12.17 per cent and 6.89 per cent, respectively.
- The segment-wise analysis showed that both the segments pertaining to diamonds, and other gems and semi-precious stones, fall in one category, accounting for almost 97 per cent of the formal employees, while these segments had no contract workers and very few unpaid family members, who may have been only proprietors. The hand-made jewellery sector had almost the same number of employees on the payroll and as unpaid family members. It had the maximum share of contract workers, at almost one-fifth of the total workers in the segment, amongst all the six regions.
- Almost one-tenth of the employees, or specifically 10.78 per cent, were female. As regards the participation of female workers, the West region emerged as a front-runner at 27.62 per cent, followed by the South, at 20.87 per cent of the total. The other four regions accounted for a female participation in the range of 3.64 per cent in Gujarat to 7.02 per cent in the North. As far as the segment-wise analysis is concerned, the maximum level of female participation was witnessed in the retail sector, at 20.39 per cent, while the minimum was observed for the diamonds

segment, at 3.06 per cent. The other three segments accounted for female employment in the range of 5.28 to 7.18 per cent.

The study found that the G&J sector needs skilled manpower and superior technology in order to diversify its activities as per the increasing demand, as well as to stay export-competitive and increase its share in the gross value added of the economy. The primary survey collected information from the enterprises on a few relevant indicators relating to the existing skills and technology, and the needs of the sector.

Following are the key findings of the skill mapping exercise:

- An analysis of the region-wise skills gap in specific segments reveals that in the hand-made jewellery segment, the South region had the highest skills gap while in the retail segment, the West region had the highest skills gap.
- The machine-made jewellery segment, which is otherwise well-equipped with skilled employees, has a skills gap of more than 26 per cent in the South region. The North and East regions, and the regions of Gujarat and Rajasthan, did not have any skill gap in the machine-made jewellery segment.

Following are the key findings of the technology mapping exercise:

- The region-wise comparison revealed that the East and West regions were far ahead of the other regions, with 61-62 per cent of their enterprises using superior technology, as compared to much lower corresponding figures of 25 per cent of the enterprises in the North and 17-18 per cent of the enterprises in the South and Gujarat regions. Meanwhile, Rajasthan was at the other end of the spectrum, with just 7 per cent of its enterprises using superior technology.
- The segment-wise analysis revealed that almost all the diamond units were willing to upgrade their technology if the various hindrances were taken care of, which were responsible for about 99 per cent of the total

technology gap. However, the gem stone and machine-made units and hand-made units reported only about 55 per cent and 66 per cent, respectively, of the total gap in technology.

The overall performance of the G&J sector was evaluated based on six crucial indicators/ratios, viz., (i) the share of workers in the organised sub-sector of the region/segment, (ii) average size of the enterprises or firm size (number of workers/number of enterprises), (iii) enterprise productivity (total output/number of enterprises), (iv) working environment (emoluments per worker), (v) contribution to the Indian economy (Gross Value Added/number of workers), and (vi) capital intensiveness of the enterprises (total fixed assets/number of enterprises). This was done for each region and segment separately. Based on the focus of the reader, these critical ratios can be used to judge the performance of the manufacturing (organised and unorganised) and unorganised trading and service segment.

Given the importance of manufacturing and also availability of data for both organised and unorganised units, a composite index, based on the six indicators mentioned above, was constructed to examine the performance of G&J manufacturing across segments and regions. The **Composite Index** is the arithmetic mean of the performance scores (normalised values) of all the indicators.

The composite index values revealed that-

- The top two performing regions in the G&J manufacturing were Gujarat and the West, followed by Rajasthan, South, North, and the East, respectively.
- The CI value of the Eastern region was the lowest compared to other regions. Given that the East had the largest number of manufacturing units, its relative poor performance does not bode well for the G&J sector.
- Diamond and gemstone (D&GS) was the top performing segment (0.93), followed by those units engaged in manufacture of gold and silver jewellery (G&SJ).

- Although Imitation Jewellery (IJ) accounted for 22 per cent of the total number of manufacturing units, its performance was relatively poor.

In its primary survey, NCAER collected data on the various sources of inputs and the sale of outputs to different destinations for the products manufactured/traded by the enterprises in the G&J sector. The chapter pertaining to sources of inputs and outputs and their destinations has two sections. While the first section basically provides the theoretical framework of the source of the input to the destination of the output, the second section outlines the distribution of units by the source (of the inputs) and destination (of the output) for five groups of related products, viz., diamonds, gemstones, gold, silver, and platinum. Some major findings relating to the same are as follows:

- Wholesalers were reported as an input source for 47.96 per cent of the surveyed units for procuring diamonds, for 31 per cent of the gemstones units, and for 35.62 per cent of the gold units.
- Manufacturers were reported as a second source of inputs by 13.93 and 17.26 per cent of the units procuring diamond and gold, respectively, whereas in the case of gemstones, 6.47 per cent of the units relied on imports.
- Overall, as a source of input, 48.62 per cent, 21.79 per cent, and 11.08 per cent of the surveyed units relied on the wholesalers, manufacturers, and retailers, respectively, for procuring gems and jewellery products.
- In the case of destinations for gems and jewellery products, 46.05 per cent of the units reported the sale of diamonds directly to consumers, 15.42 per cent to retailers, and 15.17 per cent stated that they exported their products.
- In the case of gemstones and gold related products, 36.45 per cent and 60.14 per cent of the units, respectively, reported making direct sales to consumers.
- As regards exports functioning as an output destination, the regions were divided into

two groups, with the Gujarat and Rajasthan regions falling into the first group, accounting for more than 9 per cent of the surveyed units reporting exports of their products. The second group comprised the other four regions, which reported negligible exports.

An analysis of the trade data revealed that the G&J sector in India plays a significant role in the world market. Although India is ranked 18th in the world, when measured in terms of its share in exports for all the products, it ranks 6th as far as the G&J sector is concerned. Following are the findings of the major segment-wise analysis pertaining to trade competitiveness:

- The segment for cut and polished diamonds is a dominant group in the G&J sector, contributing 60.89 per cent to the total merchandise exports of India, followed by gold jewellery. The other segments of the sector that contribute significantly to exports include rough diamonds, coins including legal tenders, silver jewellery, and coloured gemstones.
- The Indian cut and polished diamonds segment accounts for 27.48 per cent of the exports in the world market, while the second important segment of gold jewellery currently accounts for a world market share of 11.25 per cent, going up from 8.94 per cent in 2017.
- Coins, including legal tenders, constitute a small share of 2.10 per cent in the national exports, but their contribution to the world market of coins is very impressive, at 19.04 per cent.
- Although synthetic stones account for just 0.66 per cent of the share in national merchandise exports, they contribute a handsome 19.78 per cent to the world exports.
- Silver jewellery, which has share of 2.10 per cent in the share of India's gems and jewellery exports, accounts for a contribution of 10.78 per cent to the total world exports. In fact, in 2017, silver jewellery constituted 10.45 per cent of the Indian exports and 36.93 per cent of the total world exports. The share of the G&J sector in the Indian merchandise export gradually increased from 12.67 per cent in 2014 to 16.01 per cent in 2016, but declined to 14.20 per cent in 2017 and to 12.32 per cent in 2018.
- The world share of the G&J sector exhibited a similar pattern, increasing gradually from 2.36 per cent in 2009 to 4.33 per cent in 2013, and thereafter falling to 3.57 per cent in 2014, and to 3.99 per cent in 2016, followed by a further decline over the last two years, falling to 3.21 per cent in 2018.
- The surplus share index for the Indian G&J sector comes out to be just 1.09, which means that a 1 per cent increase in the share of G&J sector in national exports will lead to an increase of 1.09 per cent in the world market.
- The G&J sector needs to upgrade its products technologically in order to increase its surplus share index, and consequently its world market share. India achieved a positive growth of 5.45 per cent in its surplus share index in 2012-13, then experienced negative growth in the next two years, followed by a massive growth of 9.75 per cent in 2015-16. However, the growth declined to only 0.77 per cent in 2016-17, with the growth rate standing at -5.24 per cent for 2017-18.
- In the case of world exports, the sector exhibited a similar pattern, with positive growth witnessed from 2012-13 (at 15.73 per cent), to 2015-16 (at 4.26 per cent), followed by negative growth over the last two years. In 2017-18, the decline in the world exports of gems and jewellery was 1.09 per cent, which was much smaller as compared to the decline of 5.24 per cent witnessed in the Indian G&J sector in 2017-18. The same scenario was witnessed for both the Indian and world sectors as far as surplus growth was concerned. However, the Trade Competitiveness Index, as measured by the Relative Competitive Advantage, was 3.86 in 2017 and 3.78 in 2018.

The G&J sector has benefited from Government policies and schemes in many ways. Following are the findings of the perception-

based analysis of unit owners with regard to various recent policies of the Government:

- A majority of the enterprises were of the opinion that the implementation of GST has simplified the process of filing taxes. However, although the process for claiming refunds on the input costs under Input Tax Credit (ITC), was quite easy there were delays in getting the same.
- The enterprises expressed the opinion that post-demonetisation, the demand for products in the G&J sector had decreased considerably. It was also observed that the enterprises were not aware of many of the initiatives and schemes introduced by the Government.
- More than 70 per cent of the enterprises did not have any idea about Foreign Direct Investment (FDI), Free Trade Agreement, and the interest equalisation scheme.
- Almost half the enterprises were also not aware of skill development schemes, which are crucial for business development in the sector. However, one-third of the enterprises reported that they had experienced a positive impact of skill development schemes.
- A majority of the enterprises also did not know about schemes aimed at technology upgradation and lean manufacturing competitiveness, as well as about special notified zones and jewellery parks.
- Two-thirds of the enterprises were aware of the common facility centres and almost half of the enterprises, who were aware of the latter, had a positive perception about the scheme.
- A majority of the enterprises had positive perceptions about hallmarking standards. Policy planners and those mandated with implementing Government schemes in the sector also have the responsibility of starting awareness programmes on a large-scale basis to ensure that the benefits of these schemes trickle down to the enterprises.

The gems and jewellery industry is an amalgamation of different segments, each

belonging to different sectors of the economy. For example, the hand-made and machine-made jewellery segments fall under the manufacturing sector, whereas trade and repair work fall under the services sector. In order to estimate the contribution of the gems and jewellery industry to the overall economy, the contribution has first been extracted from manufacturing, trade, and repair services. The major findings based on these estimations are as follows:

- Within the manufacturing sector, gems and jewellery fall under “Other Manufacturing”, which further falls under the “Others” category. The National Accounts Statistics (NAS) provides actual values of the output and value added for both these broad sub-sectors.
- The values of output and value added for trade and repair services are also available at an aggregate level. According to NAS 2019, while overall manufacturing contributes 32.3 percent to the output and 16.4 percent to the GVA, the “Others” segment contributes just 2.4 percent to the output and 1.3 percent to the GVA. The shares of “Other Manufacturing” within the “Others” category in the output and GVA were even lower, at 0.8 percent and 0.2 percent, respectively, in 2017-18.
- Notably, the share of “Other Manufacturing” in the overall GVA has remained at 0.2–0.3 percent since 2011-12. The GVA of “Other Manufacturing”, as per NAS 2019, is Rs37,907 crores. The proportion of gems and jewellery manufacturing in this has been estimated from the Supply and Use Tables. Accordingly, the GVA for gems and jewellery manufacturing is estimated at Rs 36,311 crores.
- Besides the manufacturing segment, the gems and jewellery industry also comprises the wholesale and retail trade segment and repair segments. No disaggregated data are available from NAS or SUT for these two segments. Hence, for estimating the share of gems and jewellery in the total output and value added, the unit level data of enterprise surveys have been used. The units surveyed in these surveys correspond to the five-digit codes of the latest

industrial classification scheme, the National Industrial Classification (NIC-2008).

- The survey estimates suggest that of the total trade output, only 4.2 percent is accounted for by the gems and jewellery trade segment, and of the total repair output, 3.6 percent is on account of the gems and jewellery repair segment. The corresponding shares in value added are 3.5 percent and 4.3 percent, respectively. If these shares are imposed on the values of GVA of the trade and repair sectors, the GVA of the gems and jewellery trade sector works out to be Rs 59,202 crores, while that of the gems and jewellery repair sector works out to be Rs 220 crores.
- Taking all the components together, the total GVA of the G&J sector is estimated at Rs 95,733 crores. This translates to 0.62 percent of the total GVA of the economy for 2017-18, which is the direct share of the G&J sector in the economy.
- The combined G&J sector is kept as a separate sector in the Input-Output Table (IOT) to derive the indirect share of the sector to the economy, using the IO model and the output multipliers obtained through this model. The model suggests that the sector has strong backward linkages with other sectors of the economy, with the value of its output multiplier to be 4.0308. This means that with a unit increase in demand generated

in the G&J sector, a total output equivalent to 4.0308 units is produced in the economy, owing to the interlinkages and thereby, the spill-over effect. Consequently, the total share of the G&J sector, including both the direct as well as indirect shares, is 2.5 percent of the total GVA of the economy.

- Finally, with 39.76 lakh jobs in the G&J sector, its direct share to the total number of jobs stands at 0.64 percent. The employment multiplier, as per the IO model, is 3.9105. This means that with one new job created in the sector, a total of 3.9105 jobs are created in the economy. Hence, the total share (including the direct as well as indirect shares) of G&J sector in the number of jobs is 2.5 percent.

10.2 Gems and Jewellery sector vis-à-vis some major labour intensive sectors of India

If we look at similarities especially in terms of labour intensity, two other sectors in India that come to light immediately are textiles and leather. A close examination of the NIC codes (2008) shows that textiles and leather products fall under a broad three-digit category, whereas, all the gems and jewellery related segments are distributed under Code 321 and a few five-digit codes. Also, they fall under the “Other Manufacturing” segment. In order to get a sense of the G&J sector vis-à-vis the leather and textile sectors given below are some details on them:

Table 10.1: Leather, Textile and Gems & Jewellery Sector- some key points

Particulars	Leather	Textile	Gems and Jewellery
Nature	Labour Intensive and Export Oriented	Labour Intensive and Export Oriented	Labour Intensive and Export Oriented
Special Financial Assistance	ANNOUNCED & AVAILABLE as <i>Indian Footwear, Leather & Accessories Development Program (IFLADP)</i>	ANNOUNCED & AVAILABLE as <i>Special Package for Textile & Apparel Sector</i>	NOT AVAILABLE; <i>Indian Gem & Jewellery Development Program (IGJDP)</i> - proposed & submitted by GJEPC to the Government
Share of the sector in the value of output of manufacturing (%)	1.0	8.4	2.3
Output multiplier value	2.2	2.5	4.0
Employment multiplier value	3.0	5.3	3.9

The Indian Footwear, Leather and Accessories Development Programme (IFLADP) for 2017-18 to 2019-2020 promoted the sector in a big way by approving an expenditure of Rs 2600 crores for the same. The special package for the programme was introduced with the potential to generate 3.24 lakh new jobs in the forthcoming three years, which would assist in formalisation of 2,00,000 jobs as a ripple effect in the footwear, leather, and accessories sector. The seven sub-schemes introduced under the programme laid special focus on human resource development, promotion of institutional facilities such as upgradation of the existing campuses of excellence, setting up of three new skill centres, support to the formation of mega clusters, and brand promotion, among others.

Similarly, the textile sector is another area that the government has supported tremendously. In the year 2017-18, an amount of Rs 2565 crores was released to provide raw material support to the sector. Technology and skill support has also been provided to the sector via the 'Amended Technology Fund Upgradation Scheme' (2016) and the 'Scheme for Capacity Building in the Textile Sector (SCBTS)' from 2017-18 to 2019-20, with an outlay of Rs 1300 crores. In the year 2016, the Government had announced a special package of Rs 600 crores for export promotion in this sector. Under this broad category, a "Block Level Cluster Development Approach" was taken for the handlooms sub-sector, wherein an amount of up to Rs 2 crores was assigned for setting up common facility centres for meeting the skill and technology requirements of the sector. The Comprehensive Handloom Cluster Development Scheme (CHCDS), which is currently under implementation, aims to set up mega clusters with at least 15,000 handlooms, and each cluster is eligible for a funding amount of Rs 40 crores as the Government of India's share for a time period of five years.

The share of the G&J sector in the value of output of manufacturing is 2.3 per cent as compared to corresponding figures of 1.0 per cent for leather and 1.8 per cent for wearing apparel. Textiles, as a whole, account for a share

of 8.4 per cent. However, the output multiplier for the G&J sector is 4.0, which is much higher than the corresponding figures of 2.2 and 2.5 for the leather and textiles sectors, respectively. The employment multiplier for the G&J sector is 3.9, which is slightly higher than the corresponding figure for the leather sector (at 3.0) and lower than that for the textiles sector (at 5.3). Having a very high output multiplier, the G&J sector can have an impact that would be more significant and higher in magnitude as compared to that of the leather and textiles sectors. A high output multiplier signifies stronger backward linkages of the sector with other sectors of the economy. This implies that an increased demand and subsequently, increased output in this sector triggers activities in other sectors of the economy, much faster than that caused by sectors with comparatively lower multiplier values. In order to optimise the potential productivity of this sector, NCAER recommends the implementation of certain policy measures, as delineated below.

10.3 The Way Forward

- **Linkages to the Economy:** The G&J sector has very high backward linkages as compared to the other major sectors of the economy such as leather and textiles. This sector needs government intervention for its further development and growth. Similar to "Block Level Cluster Development Scheme" of textiles, this sector can also grow faster if a "District Level Cluster Development Scheme" is initiated for it. Despite the very high demand for Indian Jewellery in the world, the G&J sector in the country is informal in nature, and therefore needs assistance in skill and technology upgradation.
- **Clusters:** The cluster mapping exercise highlights that 47.4 per cent of the units and 51 per cent of the workers in the G&J sector account for manufacturing clusters, a majority of which (units and workers) are unorganised. Also, a large section of the clusters fall under the medium to micro range of units, and the potential categories need special attention so that they do not fall by on the wayside. Further, these small units cannot

undertake the exercise of brand creation by themselves. For instance, the handmade jewellery manufactured in India is unique and should be promoted in a big way by the Government. Finally, referring to the findings from Tables 2.1 and 2.2, **Jewellery Park(s)** could be set up in Mega and Large clusters (10 unit based and 54 worker based clusters); **Mega CFCs** could be set up in Medium clusters (10 unit based and 30 worker based clusters) and **CFCs** could be set up in Small to Potential clusters (370 unit based and 257 worker based clusters) .

- Skill and Technology:** The economic importance of the G&J sector, in particular, is underlined by the fact that it is one of the most labour-intensive sectors, thereby providing huge employment opportunities to artisans with traditional and modern skills. There is a Lack of skill set that is traditional. Craftmanship/skills unique to Indian G&J sector have been depleting. **Scheme of Fund for Regeneration of Traditional Industries (SFURTI) and Entrepreneurship and Skill Development Programme (ESDP)** are needed for the sector to upgrade the skills of existing employees and to attract youth to the industry. Given that the skill gap component of the technology gap is significantly high in most segments, skill development should also be a priority, and the industry should ensure the availability of infrastructure to provide vocational training to students/artisans over the next few years. Also, since technology gap is one of the major challenges of the gem and jewellery sector in India, technology upgradation is needed to enhance productivity, reduce cost, improve quality and also to face global competition. **Technology Upgradation Fund (TUF)** scheme should be designed and provided exclusively for G&J sector. The focus on skilling and technology (by segments and regions) and thereby, the establishment of mega clusters should be based on these findings. Another area that needs to be considered is the creation of shared facilities in the major jewellery

manufacturing clusters to enable them to avail of the advantages of modern technology, which is otherwise unaffordable for many small and informal units. Focus on skilling and technology upgradation should be based on the requirements specific to segments and regions. For instance, total technology gap in the West and Gujarat regions was more than 90 per cent (Table 4.19). However, although the skill gap in the Western region was the highest (29.76 per cent) the same for thr Gujarat region was as low as 2.54 per cent) (Table 4.11). Similarly, although the estimated technology gap of Diamond units was found to be as high as 99.72 per cent, the lack of skilled manpower component of the additional technology gap was as low as 0.35 per cent (Table 4.20).

- Domestic and International Economic importance:** The focus on specific segments should be based on their performance in the domestic and international markets.

In the domestic economy, the diamonds and gemstones segments accounted for the highest output per unit, followed by the gold and silver jewellery segments. In fact, the gold and silver jewellery segments had the highest GVA/worker, followed by the cutting and polishing of diamond and gemstones segments. The results of the analysis of the Composite Index (of key economic parameters) revealed that the cutting and polishing of diamond and gemstones segment was ranked first among all the segments. The region-wise analysis showed that Gujarat was the best performing region. The clusters engaged in these activities need to be given special attention to facilitate development and growth of the sector.

The segments of cutting and polishing of diamonds, synthetic stones, and gold and silver jewellery had the highest trade competitive index values in 2017 and 2018. Sincethe available funds need to be spent judiciously, efforts should be made to focus on these segments and the concerned regions in the G&J sector to enable them to optimise their potential and boost the performance of the sector.

- **Supply chain bottlenecks:** should be removed by reducing restrictions on the supplies of inputs like gold.
- **Impact of Major Policies:** The other areas that need attention include an analysis of the impact of demonetisation on the G&J sector, addressing the delay in obtaining refunds under the GST scheme, ensuring quality control including the nation-wide implementation of hallmarking, and ensuring easy financing options for enterprises in the sector.
- **Awareness and Brand creation:** It is imperative to undertake an awareness drive in the sector, as lack of awareness about some very helpful schemes/policies including FDI, FTA, interest equalisation, TEQUP, the lean manufacturing upgradation scheme, SNZs, and skill development hinders optimal performance by the sector. Only through awareness can units exploit the resources available to them. This would also aid in creating a special brand for Indian jewellery and promote it in a big way in the international markets.
- **Collaboration between stakeholders:** The G&J sector would also benefit from collaboration between industry and knowledge partners, for consultations with regard to policy-making and highlighting of issues that are important for all stakeholders. Universities and other research institutions can help in promoting innovation and capacity building, and increasing awareness among the enterprises about the schemes and facilities available.
- **NIC codes:** As mentioned in Section 7.3, within the manufacturing sector, G&J falls under “Other Manufacturing”, which further falls under “Others”. Given the relative importance of the G&J sector it should be considered a separate segment under NAS as in the cases of textile and leather.
- **G&J Census:** Finally, conducting a G&J Census will lead to a more exact and clear-cut identification of the clusters, segments, and beneficiaries, which, in turn, will facilitate the efficient implementation of policies, thereby helping make India a leading G&J manufacturing and trading hub in the world.

Annexure : I-A1

Cluster Mapping of Gems and Jewellery Sector (Based on Number of Units)

At 3 Levels

States – Districts – Town/Villages

East Region

8 States

86 Districts Clusters

Table A.I.1.1: Gems & Jewellery Cluster Mapping in East Region Based on Number of Units Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Assam	Cachar	Mfg. of Jewellery	80.0	Micro	Homogeneous	Gold Jewellery	1. Silchar town
2	Assam	Tinsukia	Mfg. of Jewellery	68.1	Micro	Homogeneous	Gold Jewellery	1. Tinsukia town
3	Assam	Kamrup Metropolitan	Mfg. of Jewellery	52.8	Micro	Homogeneous	Gold Jewellery	1. Guwahati
4	Bihar	Patna	Mfg. of Jewellery & Imitation	86.2	Micro	Heterogeneous	Gold/Silver Jewellery	1. Patna City 2. Patna Sadar
5	Bihar	Nalanda	Mfg. of Jewellery	83.0	Micro	Homogeneous	Gold Jewellery	1. Bihar Sharif
6	Jharkhand	Dumka	Mfg. of Jewellery & Imitation	69.7	Micro	Heterogeneous	Gold/Silver Jewellery	1. Dumka
7	Odisha	Kalahandi	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Gold/Silver Jewellery	1. Kalahandi
8	Tripura	West Tripura	Mfg. of Jewellery & Articles	62.5	Micro	Heterogeneous	Gold Jewellery	1. Agartala 2. Khaowai 3. Sonamora
9	West Bengal	Paschim Medinipur	Imitation	66.3	Mega	Homogeneous	Gold & Costume & fashion Jewellery	1. Daspur 2. Ghatal 3. Midnapore town
10	West Bengal	Howrah	Mfg. of Jewellery & Imitation	88.7	Mega	Homogeneous	Diamond & Gold Jewellery	1. Domjur
11	West Bengal	Nadia	Mfg. of Jewellery	71.6	Large	Homogeneous	Gold & Silver Jewellery	1. Ranaghat
12	West Bengal	South Twenty Four Parganas	Mfg. of Jewellery & Imitation	52.0	Medium	Heterogeneous	Silver & Gold Jewellery	1. Magrahat 2. Sonarpur 3. Baruipur
13	West Bengal	North Twenty Four Parganas	Mfg. of Jewellery	66.7	Medium	Homogeneous	Gold Jewellery	1. Barasat 2. Kachrapara

(Contd.)

Table A.I.1.1: Gems & Jewellery Cluster Mapping in East Region Based on Number of Units Engaged in Manufacturing (Contd.)

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
14	West Bengal	Hugli	Mfg. of Jewellery	86.1	Small	Homogeneous	Fashion & Costume Jewellery	1. Singur
15	West Bengal	Purba Medinipur	Mfg. of Jewellery	83.4	Small	Homogeneous	Gold Jewellery	1. Tamluk 2. Kanthi
16	West Bengal	Kolkata	Mfg. of Jewellery	52.3	Micro	Homogeneous	Gold Jewellery	1. Sinthee 2. Garanhata 3. BB Ganguly Street
17	West Bengal	Bardhaman	Mfg. of Jewellery	63.0	Micro	Homogeneous	Gold Jewellery	1. Bardhaman Town
18	West Bengal	Jalpaiguri	Mfg. of Jewellery	88.0	Micro		Small	1. Alipurduar
19	West Bengal	Darjiling	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Gold Jewellery	1. Siliguri
20	West Bengal	Koch Bihar	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Gold Jewellery	1. Dinhata 2. Tufanganj 3. Coochbihar Sadar
21	West Bengal	Maldah	Mfg. of Jewellery	62.3	Micro	Homogeneous	Gold Jewellery	1. Maldah
22	West Bengal	Murshidabad	Mfg. of Jewellery	81.3	Micro	Homogeneous	Nose pin, Gold Jewellery	1. Beldanga 2. Baharampore

Table A.I.1.2: Gems & Jewellery Potential Clusters in East Region Based on Number of Units Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster
1	Assam	Karimganj	Mfg. of Jewellery	100.0	High Potential	Homogeneous
2	Assam	Kamrup	Mfg. of Jewellery	92.3	High Potential	Homogeneous
3	Assam	Jorhat	Mfg. of Jewellery	70.7	Moderate Potential	Homogeneous
4	Assam	Kokrajhar	Mfg. of Jewellery	75.1	Moderate Potential	Homogeneous
5	Assam	Dhemaji	Mfg. of Jewellery	51.0	Moderate Potential	Homogeneous
6	Assam	Golaghat	Mfg. of Jewellery	98.1	Moderate Potential	Homogeneous
7	Assam	Bongaigaon	Mfg. of Jewellery & Imitation	37.9	Moderate Potential	Heterogeneous
8	Assam	Barpeta	Mfg. of Jewellery	87.0	High Potential	Homogeneous
9	Bihar	Darbhanga	Mfg. of Jewellery	98.7	High Potential	Homogeneous
10	Bihar	Samastipur	Mfg. of Jewellery	57.9	High Potential	Homogeneous
11	Bihar	Madhubani	Mfg. of Jewellery	97.3	Moderate Potential	Homogeneous
12	Bihar	Purnia	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous
13	Bihar	Rohtas	Mfg. of Jewellery	73.7	Moderate Potential	Homogeneous
14	Bihar	Buxar**	Mfg. of Jewellery	56.2	Moderate Potential	Homogeneous
15	Jharkhand	Garhwa	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous
16	Jharkhand	Ramgarh**	Mfg. of Jewellery	52.1	Moderate Potential	Homogeneous
17	Jharkhand	Hazaribagh**	Imitation	56.2	Moderate Potential	Homogeneous
18	Jharkhand	Kodarma**	Mfg. of Jewellery	54.3	Moderate Potential	Homogeneous
19	Chhattisgarh	Korba	Mfg. of Jewellery	90.6	High Potential	Homogeneous
20	Chhattisgarh	Mungeli	Mfg. of Jewellery & Articles	49.0	High Potential	Heterogeneous
21	Manipur	Thoubal	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous
22	Odisha	Koraput	Mfg. of Jewellery	54.1	High Potential	Homogeneous
23	Tripura	Dhalai	Mfg. of Jewellery	100.0	High Potential	Homogeneous
24	West Bengal	Birbhum	Mfg. of Jewellery	75.9	High Potential	Homogeneous

Note: **GJEPC identified clusters.

Table A.I.1.3: Gems & Jewellery Cluster Mapping in East Region Based on Number of Units Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Bihar	Siwan	>90.0	Medium	Homogeneous	Gold Jewellery	1. Siwan
2	Bihar	Bhagalpur#	73.5	Micro	Homogeneous	Gold/Silver Jewellery	1. Sonarpatti 2. Baka
3	Bihar	Gaya	>90.0	Micro	Homogeneous	Gold Jewellery	1. Gaya
4	Bihar	Sitamarhi	>90.0	Micro	Homogeneous	Gold Jewellery	1. Sitamarhi
5	Bihar	Munger#	60.7	Micro	Homogeneous	Gold Jewellery	1. MungerSahar
6	Chhattisgarh	Bilaspur#	68.7	Small	Homogeneous	Gold Jewellery	1. Bilaspur
7	Chhattisgarh	Raipur	>90.0	Micro	Homogeneous	Gold Jewellery	1. Raipur 2. Bilashpur
8	Jharkhand	Gumla	79.5	Micro	Homogeneous	Gold/Silver Jewellery	1. Gumla
9	Jharkhand	Dhanbad	>90.0	Micro	Homogeneous	Gold Jewellery	1. Pandyapur 2. Dhanbad
10	Odisha	Baleshwar	>90.0	Small	Homogeneous	Gold Jewellery	1. Baleshwar
11	Odisha	Balangir	>90.0	Micro	Homogeneous	Silver & Gold jewellery	1. Tarava 2. Kantabhanji
12	Odisha	Cuttack	65.3	Micro	Homogeneous	Silver Filigree , Gold Jewellery	1. Cuttack
13	Odisha	Puri	>90.0	Micro	Homogeneous	Silver Jewellery	1. Puri main town
14	Odisha	Khordha	>90.0	Micro	Homogeneous	Silver Jewellery	1. Khordha
15	Odisha	Bhadrak	>90.0	Micro	Homogeneous	Silver Jewellery	1. Bhadrak
16	Tripura	South Tripura#	62.3	Micro	Homogeneous	Gold Jewellery	1. Udaipur 2. Biloniya
17	Tripura	North Tripura#	54.1	Micro	Homogeneous	Gold Jewellery	1. North Tripura

Note: #25 to 50 % units belong to Manufacturing in Trade classified clusters.

Table A.I.1.4: Gems & Jewellery Potential Clusters in East Region Based on Number of Units Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster
1	Assam	Sonitpur	>90.0	High Potential	Homogeneous
2	Assam	Darrang#	71.3	High Potential	Homogeneous
3	Assam	Lakhimpur	>90.0	High Potential	Homogeneous
4	Assam	Dhubri#	51.4	Moderate Potential	Homogeneous
5	Assam	Goalpara#	66.2	Moderate Potential	Homogeneous
6	Bihar	Purba Champaran	>90.0	High Potential	Homogeneous
7	Bihar	Kishanganj	85.3	Moderate Potential	Homogeneous
8	Bihar	Katihar	>90.0	Moderate Potential	Homogeneous
9	Bihar	Khagaria#	55.4	Moderate Potential	Homogeneous
10	Bihar	Arwal	>90.0	Moderate Potential	Homogeneous
11	Chhattisgarh	Durg	79.6	High Potential	Homogeneous
12	Chhattisgarh	Janjgir-Champa	86.8	High Potential	Homogeneous
13	Chhattisgarh	Rajnandgaon#	65.4	High Potential	Homogeneous
14	Chhattisgarh	Mahasamund	>90.0	Moderate Potential	Homogeneous
15	Chhattisgarh	Balodabazar	>90.0	Moderate Potential	Homogeneous
16	Jharkhand	Bokaro	>90.0	High Potential	Homogeneous
17	Jharkhand	Pashchimi Singhbhum	>90.0	Moderate Potential	Homogeneous
18	Jharkhand	Pakur	>90.0	Moderate Potential	Homogeneous
19	Jharkhand	Deoghar	>90.0	Moderate Potential	Homogeneous
20	Jharkhand	PurbiSinghbhum**	>90.0	Moderate Potential	Homogeneous
21	Jharkhand	Ranchi**	60.6	Moderate Potential	Homogeneous
22	Manipur	Imphal West#	67.0	High Potential	Homogeneous
23	Odisha	Nayagarh	>90.0	High Potential	Homogeneous
24	Odisha	Sambalpur	>90.0	High Potential	Homogeneous
25	Odisha	Sundargarh#	68.0	High Potential	Homogeneous
26	Odisha	Ganjam	>90.0	High Potential	Homogeneous
27	Odisha	Kendrapara	>90.0	Moderate Potential	Homogeneous
28	Odisha	Jharsuguda	>90.0	Moderate Potential	Homogeneous
29	Odisha	Jagatsinghapur	>90.0	Moderate Potential	Homogeneous

Note: ** GJEPC identified clusters; #25 to 50 % units belong to Manufacturing in Trade classified clusters.

Annexure : I-A2

Cluster Mapping of Gems and Jewellery Sector (Based on Number of Units)

At 3 Levels

States – Districts – Town/Villages

Gujarat Region

1 State

20 District Clusters

Table A.I.2.1: Gems & Jewellery Cluster Mapping in Gujarat Region Based on Number of Units Engaged in Manufacturing

Sl. No.	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Rajkot	Mfg. of Jewellery & Imitation	86.3	Mega	Heterogeneous	Gold & Imitation Jewellery	1. Jasdan
2	Surat	Diamond	51.7	Small	Homogeneous	Diamond Cutting & Polishing	1. Surat
3	Vadodara	Imitation	50.2	Small	Heterogeneous	Gold & Imitation Jewellery	1. Vadodara
4	Bhavnagar	Diamond	63.9	Micro	Homogeneous	Diamond Cutting & Polishing	1. Gariyadhar
							2. Mahuva
							3. Palitana
							4. Botad
5	Kachchh	Mfg. of Jewellery	82.0	Micro	Homogeneous	Gold Jewellery	1. Kachchh
6	Junagadh	Diamond	83.8	Micro	Homogeneous	Diamond Cutting & Polishing	1. Junagarh

Table A.I.2.2: Gems & Jewellery Potential Clusters in Gujarat Region Based on Number of Units Engaged in Manufacturing

Sl.No.	District	Segment	% Share	Size	Type of Cluster
1	Bharuch	Mfg. of Jewellery	80.2	High Potential	Homogeneous
2	Jamnagar	Mfg. of Jewellery	>90.0	High Potential	Homogeneous
3	Mahesana	Diamond	>90.0	High Potential	Homogeneous
4	Banas Kantha	Diamond	86.0	Moderate Potential	Homogeneous
5	Anand	Imitation	>90.0	Moderate Potential	Homogeneous
6	Tapi	Mfg. of Jewellery	88.5	Moderate Potential	Homogeneous

Table A.I.2.3: Gems & Jewellery Cluster Mapping in Gujarat Region Based on Number of Units Engaged in Trading

Sl. No.	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Ahmadabad	85.8	Large	Homogeneous	Diamond Cutting & Polishing	1. Ahmedabad, 2. Botad
2	Amreli#	50.3	Micro	Homogeneous	Diamond Cutting & Polishing	1. Savarkundla
3	Kheda	>90.0	Micro	Homogeneous	Jewellery	1. Kheda

Table A.I.2.4: Gems & Jewellery Potential Clusters in Gujarat Region Based on Number of Units Engaged in Trading

Sl. No.	District	% Share	Size	Type of Cluster
1	Valsad	>90.0	High Potential	Homogeneous
2	Navsari	88.8	High Potential	Homogeneous
3	Panch Mahals	>90.0	High Potential	Homogeneous
4	Surendranagar**	>90.0	Moderate Potential	Homogeneous
5	Patan#	69.4	Moderate Potential	Homogeneous

Note: **GJEPC identified clusters; # 25 to 50 % units belong to Manufacturing in Trade classified clusters.

Annexure : I-A3

Cluster Mapping of Gems and Jewellery Sector (Based on Number of Units)

At 3 Levels

States – Districts – Town/Villages

North Region

8 States

94 District Clusters

Table A.I.3.1: Gems & Jewellery Cluster Mapping in North Region Based on Number of Units Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Haryana	Sonipat	Mfg. of Jewellery	82.1	Micro	Homogeneous	Jewellery	1. Sonipat
2	Haryana	Panipat	Mfg. of Jewellery	81.3	Micro	Homogeneous	Jewellery	1. Panipat
3	Haryana	Karnal	Mfg. of Jewellery	61.8	Micro	Homogeneous	Jewellery	1. Karnal
4	Jammu & Kashmir	Jammu	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Jewellery	1. Jammu
5	Punjab	Amritsar	Articles	80.9	Mega	Homogeneous	Plain & Studded Gold Jewellery	1. Amritsar
6	Punjab	Bathinda	Mfg. of Jewellery	82.5	Micro	Homogeneous	Jewellery	1. Bathinda
7	Uttar Pradesh	Agra	Mfg. of Jewellery	68.9	Small	Homogeneous	Silver Jewellery	1. Agra
8	Uttar Pradesh	Moradabad	Articles	>90.0	Small	Homogeneous	Jewellery	1. Moradabad
9	Uttar Pradesh	Ghaziabad	Imitation	53.2	Small	Homogeneous	Imitation Jewellery	1. Harsinghpur
10	Uttar Pradesh	Kanpur Nagar	Mfg. of Jewellery & Imitation	87.0	Micro	Homogeneous	Plain & Studded Gold, Imitation Jewellery	1. Kanpur Nagar
11	Uttar Pradesh	Varanasi	Imitation	70.2	Micro	Homogeneous	Jewellery, Beads	1. Harahua, 2. Bhaironath
12	Uttar Pradesh	Aligarh	Mfg. of Jewellery	77.5	Micro	Homogeneous	Plain Gold Jewellery	1. Aligarh
13	Uttar Pradesh	Etawah	Mfg. of Jewellery	81.8	Micro	Homogeneous	Imitation Jewellery	1. Jaswant Nagar
14	Uttar Pradesh	Rae Bareli	Mfg. of Jewellery	50.4	Micro	Homogeneous	Mfg. of Jewellery	1. Rae Bareli
15	Uttar Pradesh	Jhansi	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Gold & Silver Jewellery	1. Jhansi
16	Uttar Pradesh	Saharanpur	Mfg. of Jewellery	50.4	Micro	Homogeneous	Silver Jewellery	1. Saharanpur

Table A.I.3.2: Gems & Jewellery Potential Clusters in North Region Based on Number of Units Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster
1	Delhi	South East Delhi	Mfg. of Jewellery	100.0	High Potential	Homogeneous
2	Delhi	West Delhi	Mfg. of Jewellery	100.0	High Potential	Homogeneous
3	Haryana	Kaithal	Mfg. of Jewellery	56.9	High Potential	Homogeneous
4	Haryana	Rohtak	Mfg. of Jewellery	75.7	High Potential	Homogeneous
5	Haryana	Palwal	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous
6	Haryana	Sirsa	Mfg. of Jewellery	63.1	Moderate Potential	Homogeneous
7	Haryana	Kurukshetra	Mfg. of Jewellery	67.1	Moderate Potential	Homogeneous
8	Haryana	Rewari	Mfg. of Jewellery	88.3	Moderate Potential	Homogeneous
9	Haryana	Faridabad	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous
10	Haryana	Jhajjar	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous
11	Haryana	Gurgaon	Articles	75.3	High Potential	Homogeneous
12	Himachal Pradesh	Kangra	Mfg. of Jewellery	94.1	High Potential	Homogeneous
13	Himachal Pradesh	Mandi	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous
14	Himachal Pradesh	Shimla**	Mfg. of Jewellery & Imitation	78.5	Moderate Potential	Heterogeneous
15	Punjab	Tarn Taran	Articles	82.5	High Potential	Homogeneous
16	Punjab	Fazilka	Mfg. of Jewellery	100.0	High Potential	Homogeneous
17	Uttar Pradesh	Mathura	Imitation	73.5	High Potential	Homogeneous
18	Uttar Pradesh	Pratapgarh	Mfg. of Jewellery	100.0	High Potential	Homogeneous
19	Uttar Pradesh	Mahamaya Nagar	Mfg. of Jewellery	100.0	High Potential	Homogeneous
20	Uttar Pradesh	Kanpur Dehat	Mfg. of Jewellery	78.3	High Potential	Homogeneous
21	Uttar Pradesh	Hardoi	Mfg. of Jewellery	81.6	High Potential	Homogeneous
22	Uttar Pradesh	Fatehpur	Mfg. of Jewellery	100.0	High Potential	Homogeneous
23	Uttar Pradesh	Bara Banki	Mfg. of Jewellery	86.8	High Potential	Homogeneous
24	Uttar Pradesh	Chitrakoot	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous
25	Uttar Pradesh	Auraiya	Mfg. of Jewellery	71.1	Moderate Potential	Homogeneous
26	Uttar Pradesh	Gautam Buddha Nagar**	Imitation	>90.0	Moderate Potential	Homogeneous
27	Uttarakhand	Udham Singh Nagar	Mfg. of Jewellery	67.4	High Potential	Homogeneous
28	Uttarakhand	Pithoragarh	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous

Note: ** GJEPC identified clusters.

Table A.I.3.3: Gems & Jewellery Cluster Mapping in North Region Based on Number of Units Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Delhi	Central Delhi	85	Small	Homogeneous	Plain & Studded Gold Jewellery	1. Karol Bagh
2	Delhi	North Delhi	>90.0	Micro	Homogeneous	Studded Jewellery	1. Chandni Chowk
3	Delhi	North West Delhi	75	Micro	Homogeneous	Jewellery	1. Bawana
4	Delhi	East Delhi#	66.9	Micro	Homogeneous	Lac Jewellery	1. Seemapuri, 2. Madhu Vihar
5	Delhi	New Delhi	>90.0	Micro	Homogeneous	Jewellery	1. Vasant Vihar
6	Punjab	Ludhiana#	55.7	Micro	Homogeneous	Plain & Studded Gold Jewellery	1. Ludhiana
7	Punjab	Ferozpur	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Ferozpur
8	Uttar Pradesh	Azamgarh	89.6	Small	Homogeneous	Silver & Gold Jewellery	1. Azamgarh
9	Uttar Pradesh	Sitapur	>90.0	Small	Homogeneous	Jewellery	1. Sitapur
10	Uttar Pradesh	Gorakhpur#	70.7	Small	Homogeneous	Jewellery	1. Naugarh
11	Uttar Pradesh	Mahrajganj	>90.0	Small	Homogeneous	Silver & Gold Jewellery	1. Mahrajganj
12	Uttar Pradesh	Ambedkar Nagar	>90.0	Small	Homogeneous	Jewellery	1. Ambedkar Nagar
13	Uttar Pradesh	Bareilly#	56	Micro	Homogeneous	Plain & Studded Gold Jewellery	1. Bareilly
14	Uttar Pradesh	Sonbhadra	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Sonbhadra
15	Uttar Pradesh	Ballia#	54.9	Micro	Homogeneous	Silver & Gold Jewellery	1. Ballia

(Contd.)

Table A.I.3.3: Gems & Jewellery Cluster Mapping in North Region Based on Number of Units Engaged in Trading (Contd.)

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
16	Uttar Pradesh	Ghazipur	79.8	Micro	Homogeneous	Silver & Gold Jewellery	1. Ghazipur
17	Uttar Pradesh	Pilibhit	84.7	Micro	Homogeneous	Silver & Gold Jewellery	1. Pilibhit
18	Uttar Pradesh	Deoria	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Deoria
19	Uttar Pradesh	Siddharthnagar	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Siddharthnagar
20	Uttar Pradesh	Budaun	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Budaun
21	Uttar Pradesh	Bulandshahr	71.7	Micro	Homogeneous	Silver & Gold Jewellery	1. Bulandshahr
22	Uttar Pradesh	Jaunpur#	56.7	Micro	Homogeneous	Jewellery	1. Jaunpur
23	Uttar Pradesh	Gonda	89.2	Micro	Homogeneous	Jewellery	1. Gonda
24	Uttar Pradesh	Allahabad	>90.0	Micro	Homogeneous	Plain & Studded Gold Jewellery	1. Allahabad
25	Uttar Pradesh	Shahjahanpur#	55.7	Micro	Homogeneous	Jewellery	1. Shahjahanpur
26	Uttar Pradesh	Bijnor#	57.7	Micro	Homogeneous	Silver & Gold Jewellery	1. Bijnor
27	Uttar Pradesh	Shrawasti	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Shrawasti

Note: # 25 to 50 % units belong to Manufacturing in Trade classified clusters.

Table A.I.3.4: Gems & Jewellery Potential Clusters in North Region Based on Number of Units Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster
1	Chandigarh	Chandigarh	75.9	Moderate Potential	Homogeneous
2	Delhi	North East Delhi#	74.4	High Potential	Homogeneous
3	Delhi	South Delhi	75.2	Moderate Potential	Homogeneous
4	Haryana	Ambala	64.6	High Potential	Homogeneous
5	Haryana	Hisar#	69.7	Moderate Potential	Homogeneous
6	Haryana	Yamunanagar	>90.0	Moderate Potential	Homogeneous
7	Himachal Pradesh	Bilaspur#	52.4	Moderate Potential	Homogeneous
8	Himachal Pradesh	Chamba	75.9	Moderate Potential	Homogeneous
9	Jammu & Kashmir	Srinagar	>90.0	Moderate Potential	Homogeneous
10	Jammu & Kashmir	Udhampur#	52.9	Moderate Potential	Homogeneous
11	Jammu & Kashmir	Badgam	>90.0	Moderate Potential	Homogeneous
12	Punjab	Gurdaspur#	50.5	High Potential	Homogeneous
13	Punjab	Sangrur	>90.0	Moderate Potential	Homogeneous
14	Punjab	Fatehgarh Sahib	87.7	Moderate Potential	Homogeneous
15	Uttar Pradesh	Kaushambi	>90.0	High Potential	Homogeneous
16	Uttar Pradesh	Sultanpur	>90.0	High Potential	Homogeneous
17	Uttar Pradesh	Muzaffarnagar	>90.0	High Potential	Homogeneous
18	Uttar Pradesh	SantKabir Nagar	85.4	High Potential	Homogeneous
19	Uttar Pradesh	Lucknow	>90.0	High Potential	Homogeneous
20	Uttar Pradesh	Meerut	86.6	Moderate Potential	Homogeneous
21	Uttar Pradesh	Rampur	>90.0	Moderate Potential	Homogeneous
22	Uttar Pradesh	Balrampur	>90.0	High Potential	Homogeneous
23	Uttar Pradesh	Mau	>90.0	High Potential	Homogeneous
24	Uttarakhand	Hardwar	>90.0	High Potential	Homogeneous
25	Uttarakhand	Dehradun	>90.0	Moderate Potential	Homogeneous

Note: # 25 to 50 % units belong to Manufacturing in Trade classified clusters.

Annexure : I-A4

Cluster Mapping of Gems and Jewellery Sector (Based on Number of Units)

At 3 Levels

States – Districts – Town/Villages

Rajasthan Region

1 State

26 District Clusters

Table A.I.4.1: Gems & Jewellery Cluster Mapping in Rajasthan Region Based on Number of Units Engaged in Manufacturing

Sl. No.	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Jaipur	Mfg. of Jewellery & Articles	76.0	Mega	Heterogeneous	Kundan Meena Jadau Jewellery, Silver Jewellery, diamond & coloured Gemstone jewellery and Gemstones	1. Jaipur
2	Bikaner	Mfg. of Jewellery	85.3	Small	Homogenous	Kundanmeena Jadau & Polki Jewellery	1. Bikaner
3	Sikar	Mfg. of Jewellery, Imitation & Stone	66.3	Small	Heterogeneous	Plain Gold	1. Sikar
4	Jodhpur	Mfg. of Jewellery	>90.0	Micro	Homogenous	Kundan Meena & gold Jewellery	1. Jodhpur
5	Nagaur	Imitation	53.2	Micro	Homogenous	Gold & Silver Jewellery	1. Nagaur
6	Bharatpur	Articles	78.3	Micro	Homogenous	Plain Gold	1. Bharatpur
7	Churu	Mfg. of Jewellery	>90.0	Micro	Homogenous	Gold & Silver Jewellery	1. Churu
8	Pali	Mfg. of Jewellery	>90.0	Micro	Homogenous	Gold & Silver Jewellery	1. Pali

Table A.I.4.2: Gems & Jewellery Potential Clusters in Rajasthan Region Based on Number of Units Engaged in Manufacturing

Sl. No.	District	Segment	% Share	Size	Type of Cluster
1	Jhunjhunun	Imitation	64.8	High Potential	Homogeneous
2	Alwar	Imitation	87.1	High Potential	Homogeneous
3	Pratapgarh	Imitation	90.2	Moderate Potential	Homogeneous
4	Barmer	Mfg. of Jewellery	100.0	High Potential	Homogeneous
5	Sirohi	Mfg. of Jewellery	97.0	High Potential	Homogeneous
6	Baran	Mfg. of Jewellery	100.0	High Potential	Homogeneous
7	Sawai Madhopur	Mfg. of Jewellery	100.0	High Potential	Homogeneous
8	Chittaurgarh	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous
9	Ganganagar	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous
10	Rajsamand	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous
11	Jalor	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous
12	Ajmer	Mfg. of Jewellery	>90.0	Moderate Potential	Homogenous

Table A.I.4.3: Gems & Jewellery Cluster Mapping in Rajasthan Region Based on Number of Units Engaged in Trading

Sl. No.	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Udaipur#	55.3	Micro	Homogenous	Silver & Gold Jewellery	1. Udaipur 2. Nathdwara
2	Tonk	>90.0	Micro	Homogenous	Gold & Silver Jewellery	1. Tonk
3	Kota	>90.0	Micro	Homogenous	Gold & Silver Jewellery	1. Kota
4	Bhilwara	85.8	Micro	Homogenous	Gold & Silver Jewellery	1. Bhilwara

Table A.I.4.4: Gems & Jewellery Potential Clusters in Rajasthan Region Based on Number of Units Engaged in Trading

Sl.No.	District	% Share	Size	Type of Cluster
1	Dhaulpur	87.8	Moderate Potential	Homogeneous

Annexure : I-A5

Cluster Mapping of Gems and Jewellery Sector (Based on Number of Units)

At 3 Levels

States – Districts – Town/Villages

South Region

6 States

85 District Clusters

Table A.I.5.1: Gems & Jewellery Cluster Mapping in South Region Based on Number of Units Engaged in Manufacturing

Sl. No.	State	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Andhra Pradesh	Chittoor	Mfg. of Jewellery	71.1	Medium	Homogeneous	Plain Gold Jewellery / God Idols made up of Brass	1. Chittoor
								2. Tirupathi
								3. Srikalahasthi
								4. B. Kothakota
								5. Puttur
								6. Bangarupalem
								7. Palamaneru
								8. V.Kota
								9. Kuppam
								10. Madanapalle
2	Andhra Pradesh	Krishna	Imitation	86.4	Small	Homogeneous	Plain & Studed Gold Jewellery	1. Vijayawada
								2. Machilipatnam
								3. Gudivada
								4. Jaggayyapeta
								5. Nuzvid
								6. Ibrahimpatanam
3	Andhra Pradesh	Guntur	Mfg. of Jewellery	71.2	Micro	Homogeneous	Plain Gold Jewellery	1. Guntur City
								2. Chilakaluripet
								3. Amaravathi
								4. Mangalagiri
								5. Tenali
								6. Bapatla
								7. Narasaraopet
4	Andhra Pradesh	West Godavari	Mfg. of Jewellery	57.3	Micro	Homogeneous	Plain Gold Jewellery	1. Eluru
								2. Bhimavaram
								3. Tadepalligudem
								4. Tanuku
								5. Narasapuram
								6. Jangareddigudem
5	Andhra Pradesh	Visakhapatnam	Mfg. of Jewellery	75.3	Micro	Homogeneous	Plain Gold Jewellery	1. Visakhapatnam
								2. Gajuwaka
								3. Anakapalle
								4. Narsipattanam
6	Andhra Pradesh	Vizianagaram	Mfg. of Jewellery	87.2	Micro	Homogeneous	Plain Gold Jewellery	1. Vizianagaram
								2. Bobbili
								3. Parvathipuram

Sl. No.	State	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
7	Karnataka	Davanagere	Mfg. of Jewellery	73.5	Medium	Homogeneous	Plain & Stud-ded Gold Jewellery	1. Davanagere
								2. Harihar
								3. Honnali
								4. Channagiri
								5. Harapanahalli
								6. Jagalur
8	Karnataka	Shimoga	Mfg. of Jewellery	58.9	Small	Homogeneous	Plain Gold Jewellery	1. Soraba
								2. Bhadravathi
								3. Thirthahalli
								4. Sagara
								5. Shikaripura
								6. Shimoga
								7. Hosanagara
9	Karnataka	Bidar	Mfg. of Jewellery	66.0	Small	Homogeneous	Plain Gold Jewellery	1. Bidar
								2. Humnabad
								3. Bhalki
								4. Aurad
								5. Hulsoor
								6. Chitgoppa
								7. Kamalnagar
								8. Basavakalyan.
10	Karnataka	Belgaum	Mfg. of Jewellery	71.8	Micro	Homogeneous	Plain Gold Jewellery	1. Athani
								2. Bailhongal
								3. Belgaum
								4. Chikkodi
								5. Gokak
								6. Hukkeri
								7. Khanapur
								8. Ramdurg
								9. Raybag
								10. Saundatti
11	Karnataka	Bagalkot	Mfg. of Jewellery	60.1	Micro	Homogeneous	Plain Gold Jewellery	1. Badami
								2. Bagalkot
								3. Bagalkot
								4. Bilgi
								5. Hungund
								6. Jamkhandi
								7. Mudhol

Sl. No.	State	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
12	Kerala	Palakkad	Mfg. of Jewellery & Imitation	58.5	Micro	Heterogeneous	Plain & Stud-ded Gold Jewellery	1. Alathur
								2. Chittur
								3. Mannarkkad
								4. Ottappalam
								5. Palakkad
								6. Pattambi
13	Kerala	Kottayam	Mfg. of Jewellery	75.7	Micro	Homogeneous	Plain & Stud-ded Gold Jewellery	1. Kottayam
								2. Meenachil
								3. Changanassery
								4. Vaikom
								5. Kanjirappally
14	Tamil Nadu	Coimbatore	Mfg. of Jewellery	60.3	Medium	Homogeneous	Plain & Stud-ded Gold Jewellery	1. Coimbatore
15	Tamil Nadu	Salem	Mfg. of Jewellery	81.2	Medium	Homogeneous	Plain Gold Jewellery / Silver Jewellery & Filigree	1. Salem
16	Tamil Nadu	Madurai	Mfg. of Jewellery	78.5	Small	Homogeneous	Plain Gold Jewellery	1. Madurai
17	Tamil Nadu	Cuddalore	Imitation	51.8	Micro	Homogeneous	Plain Gold Jewellery	1. Cuddalore
18	Tamil Nadu	Tirunelveli	Mfg. of Jewellery	72.5	Micro	Homogeneous	Plain Gold Jewellery	1. Tirunelveli
19	Tamil Nadu	Thoothukkudi	Articles	58.5	Micro	Homogeneous	Plain Gold Jewellery	1. Thoothukkudi
20	Tamil Nadu	Kanniyakumari	Mfg. of Jewellery	88.1	Micro	Homogeneous	Stud-ded Gold Jewellery	1. Kanniyakumari

Sl. No.	State	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
21	Tamil Nadu	Thiruvallur	Imitation	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Thiruvallur Taluka
								2. Thiruthani
								3. Pallipattu
								4. Uthukottai
								5. Poonamallee
								6. Avadi
								7. Ambattur
								8. Villivakam part
								9. Pooneri
22	Telangana	Mahbubnagar	Mfg. of Jewellery	77.1	Small	Homogeneous	Plain Gold Jewellery	1. Mahbubnagar
23	Telangana	Warangal	Mfg. of Jewellery	84.4	Micro	Homogeneous	Plain Gold Jewellery	1. Hanamkonda
								2. Warangal
								3. Mahabubabad
								4. Jangaon
								5. Ghanpur (Station)
								6. Bhupalpalle
24	Telangana	Karimnagar	Mfg. of Jewellery	83.9	Micro	Homogeneous	Plain Gold Jewellery	1. Karimnagar
								2. Ramagundam
								3. Jagtial
								4. Sircilla
								5. Koratla
25	Telangana	Nizamabad	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Plain Gold Jewellery	5. Nizamabad
								6. Bodhan
								7. Kamareddy
								8. Armur

Table A.I.5.2: Gems & Jewellery Potential Clusters in South Region Based on Number of Units Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster
1	Andhra Pradesh	Kurnool	Mfg. of Jewellery	85.7	High Potential	Homogeneous
2	Andhra Pradesh	East Godavari**	Mfg. of Jewellery	80.6	Moderate Potential	Homogeneous
3	Andhra Pradesh	Srikakulam	Mfg. of Jewellery & Imitation	72.8	Moderate Potential	Heterogeneous
4	Karnataka	Bellary	Imitation	52.1	Moderate Potential	Homogeneous
5	Karnataka	Kolar	Mfg. of Jewellery	62.9	High Potential	Homogeneous
6	Karnataka	Gadag	Mfg. of Jewellery	75.8	High Potential	Homogeneous
7	Karnataka	Gulbarga	Mfg. of Jewellery	83.9	High Potential	Homogeneous
8	Karnataka	Uttara Kannada	Mfg. of Jewellery	>90.0	High Potential	Homogeneous
9	Kerala	Kannur	Mfg. of Jewellery	91.0	Moderate Potential	Homogeneous
10	Tamil Nadu	Sivaganga	Mfg. of Jewellery & Imitation	35.9	High Potential	Heterogeneous
11	Tamil Nadu	Tiruvannamalai**	Mfg. of Jewellery	>90.0	Moderate Potential	Homogeneous

Note: ** GJEPC identified clusters.

Table A.I.5.3: Gems & Jewellery Cluster Mapping in South Region Based on Number of Units Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Andhra Pradesh	Anantapur	>90.0	Small	Homogeneous	Plain Gold Jewellery	1. Anantapur
							2. Hindupur
							3. Tadipatri
							4. Guntakal
							5. Dharmavaram
							6. Kadiri
							7. Rayadurgam
							8. Kalyanadurgam
2	Karnataka	Bangalore	79.5	Medium	Homogeneous	Plain Gold & Studded Jewellery	1. Bangalore North
							2. South & East
							3. Yelahanka
							4. Anekal
3	Karnataka	Dakshina Kannada	>90.0	Small	Homogeneous	Plain Gold & Studded Jewellery	1. Mangalore
							2. Bantwal
							3. Puttur
							4. Sullia
							5. Belthangady
							6. Kadaba
							7. Moodabidri
							8. Udupi
							9. Kundapur
							10. Karkala
							11. Hebri
							12. Brahmavar
							13. Kaup
							14. Byndoor

(Contd.)

Table A.I.5.3: Gems & Jewellery Cluster Mapping in South Region Based on Number of Units Engaged in Trading (Contd.)

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
4	Karnataka	Dharwad#	67.9	Small	Homogeneous	Plain & Studded Gold Jewellery	1. Dharwad
							2. Hubballi Urban
							3. Hubballi Rural
							4. Kalghatgi
							5. Kundgol
							6. Alnavar
5	Karnataka	Haveri	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Rattihalli
							2. Hanagal
							3. Shiggaon
							4. Savanur
							5. Haveri
							6. Byadagi
							7. Hirekerur
							8. Ranebennur
6	Karnataka	Yadgir	78.7	Micro	Homogeneous	Plain Gold & Studded Jewellery	1. Shorapur
							2. Hunasagi
							3. Shahpur
							4. Wadagera
							5. Yadgir
							6. Gurmitkal
7	Karnataka	Bangalore (Rural)#	68.6	Micro	Homogeneous	Plain Gold Jewellery / Silver Jewellery & Filigree	1. Doddaballapur
							2. Devanahalli
							3. Hosakote
							4. Nelamangala
8	Karnataka	Chikkaballapura	87.9	Micro	Homogeneous	Plain Gold Jewellery / Coloured Gemstones	1. Chikkaballapur
							2. Gauribidanur
							3. Bagepalli
							4. Sidlaghatta
							5. Gudibanda
							6. Chintamani

(Contd.)

Table A.I.5.3: Gems & Jewellery Cluster Mapping in South Region Based on Number of Units Engaged in Trading (Contd.)

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
9	Karnataka	Tumkur	81.6	Micro	Homogeneous	Plain Gold Jewellery / Silver Jewellery & Filigree	1. Tumkur
							2. Koratagere
							3. Sira
							4. Gubbi
							5. Pavagada
							6. Turuvakere
							7. Kunigal
							8. Madhugiri
							9. Tiptur
							10. Chikkanayakanahalli
10	Karnataka	Kodagu	>90.0	Micro	Homogeneous	Plain & Studded Gold Jewellery	1. Madikeri
							2. Somwarpet
							3. Virajpet
11	Karnataka	Mandya	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Mandya
							2. Maddur
							3. Malavalli
							4. Pandavapura
							5. Srirangapatna
							6. Nagamangala
							7. Krishnarajpet
12	Kerala	Thrissur#	54	Medium	Homogeneous	Plain & Studded Gold Jewellery	1. Thrissur
							2. Mukundapuram
							3. Talappilly
							4. Chavakkad
							5. Kodungallur
13	Kerala	Malappuram	75.4	Small	Homogeneous	Plain & Studded Gold Jewellery	1. Eranad
							2. Perinthalmanna
							3. Tirur
							4. Ponnani

(Contd.)

Table A.I.5.3: Gems & Jewellery Cluster Mapping in South Region Based on Number of Units Engaged in Trading (Contd.)

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
14	Kerala	Thiruvananthapuram	72.4	Micro	Homogeneous	Plain & Studded Gold Jewellery	1. Neyyattinkara
							2. Thiruvananthapuram
							3. Nedumangad
							4. Chirayinkeezhu
							5. Varkala
							6. Kattakkada
15	Kerala	Ernakulam	87.1	Micro	Homogeneous	Plain & Studded Gold Jewellery	1. Paravur
							2. Aluva
							3. Kunnathunad
							4. Muvattupuzha
							5. Kochi
							6. Kanayannur
							7. Kothamangalam
16	Kerala	Kozhikode#	56.5	Micro	Homogeneous	Plain & Studded Gold Jewellery	1. Kozhikode
							2. Vatakara
							3. Koyilandy
							4. Thamarassery
17	Kerala	Kollam	>90.0	Micro	Homogeneous	Plain & Studded Gold Jewellery	1. Kollam
							2. Karunagappally
							3. Kunnathur
							4. Kottarakkara
							5. Punalur
							6. Pathanapuram
18	Tamil Nadu	Tiruchirappalli	83.1	Small	Homogeneous	Studded Gold Jewellery	1. Trichy
19	Tamil Nadu	Theni	>90.0	Micro	Homogeneous	Plain & Studded Gold Jewellery	1. Theni
20	Tamil Nadu	Krishnagiri	86.1	Micro	Homogeneous	Studded Gold & Silver Jewellery	1. Krishnagiri
							2. Hosur

(Contd.)

Table A.I.5.3: Gems & Jewellery Cluster Mapping in South Region Based on Number of Units Engaged in Trading (Contd.)

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
21	Tamil Nadu	Pudukkottai	62.6	Micro	Homogeneous	Plain Gold Jewellery	1. Aranthagi
22	Tamil Nadu	Karur#	58	Micro	Homogeneous	Plain Gold Jewellery/ Articles of Silver (Plates Payaletc)	1. Karur
23	Tamil Nadu	Nagapattinam#	63	Micro	Homogeneous	Plain Gold Jewellery	1. Nagapattinam 2. Vedaranyam
24	Tamil Nadu	Chennai	>90.0	Micro	Homogeneous	All type of jewellery	1. Chennai
25	Tamil Nadu	Viluppuram	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Viluppuram
26	Tamil Nadu	Thiruvarur	>90.0	Micro	Homogeneous	Plain Gold Jewellery / Silver Jewellery & Filigree	1. Thiruvarur
27	Tamil Nadu	Ramanathapuram#	66.1	Micro	Homogeneous	Plain Gold Jewellery	1. Ramanathapuram
28	Tamil Nadu	Kancheepuram	56.7	Micro	Homogeneous	Plain Gold Jewellery	1. Periyakanchipuram 2. Chinna Kanchipuram
29	Tamil Nadu	Thanjavur	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Thanjavur
30	Telangana	Hyderabad#	50.5	Medium	Homogeneous	All Type of Jewellery	1. Hyderabad Urban & Rural
31	Telangana	Rangareddy#	50	Small	Homogeneous	Plain Gold Jewellery	1. Vikarabad 2. Tandur 3. Shamshabad 4. Serlingampally 5. Chevalla 6. Sangareddy
32	Telangana	Nalgonda#	55.6	Micro	Homogeneous	Plain & Studded Gold Jewellery	1. Nalagonda 2. Devarakonda 3. Nakerakal 4. Vijayapuri 5. Chandur

Note: #25 to 50 % units belong to Manufacturing in Trade classified clusters.

Table A.I.5.4: Gems & Jewellery Potential Clusters in South Region Based on Number of Units Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster
1	Andhra Pradesh	Sri Potti Sriramulu Nellore**#	69.6	High Potential	Homogeneous
2	Karnataka	Hassan	>90.0	High Potential	Homogeneous
3	Karnataka	Ramanagara	>90.0	High Potential	Homogeneous
4	Karnataka	Chitradurga	>90.0	High Potential	Homogeneous
5	Karnataka	Raichur	78.1	High Potential	Homogeneous
6	Karnataka	Udupi#	66.4	High Potential	Homogeneous
7	Karnataka	Mysore	>90.0	Moderate Potential	Homogeneous
8	Kerala	Alappuzha#	50.6	High Potential	Homogeneous
9	Kerala	Kasaragod	76.8	High Potential	Homogeneous
10	Kerala	Wayanad	89.1	Moderate Potential	Homogeneous
11	Puducherry	Puducherry	>90.0	High Potential	Homogeneous
12	Tamil Nadu	Dharmapuri	>90.0	High Potential	Homogeneous
13	Tamil Nadu	Virudhunagar	>90.0	High Potential	Homogeneous
14	Tamil Nadu	Ariyalur	77.7	High Potential	Homogeneous
15	Tamil Nadu	Perambalur	>90.0	Moderate Potential	Homogeneous
16	Tamil Nadu	Vellore#	52.6	High Potential	Homogeneous
17	Tamil Nadu	Erode	>90.0	High Potential	Homogeneous
18	Tamil Nadu	Tiruppur#	73.2	Moderate Potential	Homogeneous
19	Telangana	Khammam#	54.0	High Potential	Homogeneous

Note: ** GJEPC identified clusters; #25 to 50 % units belong to Manufacturing in Trade classified clusters.

Annexure : I-A6

Cluster Mapping of Gems and Jewellery Sector (Based on Number of Units)

At 3 Levels

States – Districts – Town/Villages

West Region

3 States

61 District Clusters

Table A.I.6.1: Gems & Jewellery Cluster Mapping in West Region Based on Number of Units Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Goa	North Goa	Mfg. of Jewellery	88.7	Micro	Homogeneous	Gold plain jewellery/ Finigram work	1. Mapusa
								2. Ponda
2	Madhya Pradesh	Satna	Mfg. of Jewellery	55.8	Micro	Homogeneous	Gold plain oxidized fancy/ jewellery/ geru/Light weight jewellery	1. Satna
3	Madhya Pradesh	Ratlam	Mfg. of Jewellery	53.8	Micro	Homogeneous	Gold plain jewellery	1. Ratlam
4	Madhya Pradesh	Indore	Imitation	80.4	Micro	Homogeneous	Silver/ Gold fancy diamond studded jewellery/ Beeds setting jewellery	1. Indore
5	Madhya Pradesh	Gwalior	Mfg. of Jewellery	76.5	Micro	Homogeneous	Silver/ Gold plain /oxidized fancy/beeds setting/ Jewellery / kundan/ Jadau	1. Gwalior
6	Maharashtra	Kolhapur	Mfg. of Jewellery	77.5	Mega	Homogeneous	Mainly Silver Jewellery/Gold	1. Hupari
								2. Ichalkaranji

(Contd.)

Table A.I.6.1: Gems & Jewellery Cluster Mapping in West Region Based on Number of Units Engaged in Manufacturing (Contd.)

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
7	Maharashtra	Thane	Imitation	66.4	Large	Homogeneous	Stone Jewellery/Karwari work lightweight gold jewellery	1. Bhayendar
								2. Kalwa
8	Maharashtra	Mumbai	Mfg. of Jewellery	52.1	Small	Homogeneous	Gold plain jewellery/ Diamond Jewellery/ Studded Jewellery// Antic/ Hand made chains / Beeds	1. Zaveri bazar
								2. Dadar
								3. Girgaon
								4. Lalbaug
								5. Jogeshwari
9	Maharashtra	Yavatmal	Mfg. of Jewellery	76.6	Micro	Homogeneous	Plain gold jewellery	1. Yavatmal
10	Maharashtra	Aurangabad	Mfg. of Jewellery	54.6	Micro	Homogeneous	Plain gold jewellery/ Handmade Silver	1. Aurangabad
11	Maharashtra	Ahmadnagar	Mfg. of Jewellery	68.0	Micro	Homogeneous	Plain gold jewellery/ Silver	1. Ahmadnagar
12	Maharashtra	Amravati	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Silver/ Plain gold jewellery	1. Amravati
13	Maharashtra	Sangli	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Plain gold jewellery/ Silver	1. Miraj
14	Maharashtra	Nanded	Mfg. of Jewellery	50.7	Micro	Homogeneous	Mainly Silver/Plain gold jewellery	1. Nanded

Table A.I.6.2: Gems & Jewellery Potential Clusters in West Region Based on Number of Units Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster
1	Madhya Pradesh	Khandwa (East Nimar)**	Mfg. of Jewellery	74.5	High Potential	Homogeneous
2	Madhya Pradesh	Neemuch	Mfg. of Jewellery & Imitation	52.0	Moderate Potential	Homogeneous
3	Madhya Pradesh	Alirajpur**	Mfg. of Jewellery	71.4	Moderate Potential	Homogeneous
4	Madhya Pradesh	Bhind	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous
5	Madhya Pradesh	Jhabua	Mfg. of Jewellery	93.2	Moderate Potential	Homogeneous
6	Maharashtra	Bhandara	Mfg. of Jewellery	100.0	High Potential	Homogeneous
7	Maharashtra	Ratnagiri	Mfg. of Jewellery	69.1	High Potential	Homogeneous
8	Maharashtra	Jalgaon	Manufacturing of G&J & Trade	85.4	High Potential	Homogeneous
9	Maharashtra	Dhule	Mfg. of Jewellery	>90.0	Moderate Potential	Homogeneous
10	Maharashtra	Sindhudurg**	Mfg. of Jewellery	>90.0	Moderate Potential	Homogeneous
11	Maharashtra	Parbhani	Mfg. of Jewellery	100.0	Moderate Potential	Homogeneous
12	Maharashtra	Gadchiroli	Mfg. of Jewellery	56.9	Moderate Potential	Homogeneous

Note: ** GJEPC identified clusters.

Table A.I.6.3: Gems & Jewellery Cluster Mapping in West Region Based on Number of Units Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Madhya Pradesh	Shajapur	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Shajapur
2	Madhya Pradesh	Harda	>90.0	Micro	Homogeneous	Plain gold Jewellery	1. Harda
3	Madhya Pradesh	Tikamgarh	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Tikamgarh
4	Madhya Pradesh	Rajgarh	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Rajgarh
5	Madhya Pradesh	Vidisha	>90.0	Micro	Homogeneous	Plain & Fancy Gold Jewellery/ kundan	1. Vidisha
6	Maharashtra	Mumbai Suburban#	55.7	Mega	Homogeneous	Gold plain jewellery/ Diamond	1. Andheri
							2. Malad
7	Maharashtra	Pune#	63.8	Micro	Homogeneous	Gold/Silver/ beeds/Diamond/ Artificial/ Studded gold jewellery	1. Pune
8	Maharashtra	Solapur#	64.5	Micro	Homogeneous	Plain gold jewellery	1. Solapur
9	Maharashtra	Osmanabad	>90.0	Micro	Homogeneous	Plain gold jewellery	1. Osmanabad
10	Maharashtra	Washim	>90.0	Micro	Homogeneous	Plain gold jewellery/Silver	1. Washim
11	Maharashtra	Nashik#	50.8	Micro	Homogeneous	Silver Jewellery / Art / Plain Gold jewellery	1. Nashik
12	Maharashtra	Chandrapur	>90.0	Micro	Homogeneous	Plain gold jewellery	1. Chandrapur
13	Maharashtra	Nagpur	78.7	Micro	Homogeneous	Plain gold jewellery/Silver	1. Nagpur
14	Maharashtra	Raigarh	59.3	Micro	Homogeneous	Plain gold jewellery	1. Mahad

Note: #25 to 50 % units belong to Manufacturing in Trade classified clusters.

Table A.I.6.4: Gems & Jewellery Potential Clusters in West Region Based on Number of Units Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster
1	Goa	South Goa**	88.0	Moderate Potential	Homogeneous
2	Madhya Pradesh	Singrauli	>90.0	High Potential	Homogeneous
3	Madhya Pradesh	Chhindwara	78.8	High Potential	Homogeneous
4	Madhya Pradesh	Khargone (West Nimar)	>90.0	High Potential	Homogeneous
5	Madhya Pradesh	Panna	>90.0	High Potential	Homogeneous
6	Madhya Pradesh	Raisen	>90.0	High Potential	Homogeneous
7	Madhya Pradesh	Ujjain	77.4	High Potential	Homogeneous
8	Madhya Pradesh	Rewa	>90.0	High Potential	Homogeneous
9	Madhya Pradesh	Bhopal	86.6	High Potential	Homogeneous
10	Madhya Pradesh	Sagar#	66.5	Moderate Potential	Homogeneous
11	Madhya Pradesh	Balaghat	>90.0	Moderate Potential	Homogeneous
12	Madhya Pradesh	Dhar	>90.0	Moderate Potential	Homogeneous
13	Madhya Pradesh	Katni**#	69.3	Moderate Potential	Homogeneous
14	Madhya Pradesh	Jabalpur**#	79.7	Moderate Potential	Homogeneous
15	Madhya Pradesh	Betul**	>90.0	Moderate Potential	Homogeneous
16	Madhya Pradesh	Narsimhapur**	>90.0	Moderate Potential	Homogeneous
17	Madhya Pradesh	Barwani	>90.0	Moderate Potential	Homogeneous
18	Madhya Pradesh	Guna	>90.0	Moderate Potential	Homogeneous
19	Madhya Pradesh	Dewas	52.7	Moderate Potential	Homogeneous
20	Madhya Pradesh	Anuppur	>90.0	Moderate Potential	Homogeneous
21	Madhya Pradesh	Shahdol	>90.0	Moderate Potential	Homogeneous
22	Madhya Pradesh	Hoshangabad	>90.0	Moderate Potential	Homogeneous
23	Madhya Pradesh	Mandsaur	>90.0	Moderate Potential	Homogeneous
24	Madhya Pradesh	Sidhi	66.8	Moderate Potential	Homogeneous
25	Maharashtra	Jalna	>90.0	High Potential	Homogeneous
26	Maharashtra	Gondiya	>90.0	Moderate Potential	Homogeneous
27	Maharashtra	Bid	>90.0	Moderate Potential	Homogeneous
28	Maharashtra	Satara	80.6	Moderate Potential	Homogeneous

Note:** GJEPC identified clusters; #25 to 50% units belong to Manufacturing in Trade classified clusters.

Annexure : II-A7

Cluster Mapping of Gems and Jewellery Sector (Based on Number of Workers)

At 3 Levels

States – Districts – Town/Villages

East Region

8 States

65 District Clusters

Table A.II.7.1: Gems & Jewellery Cluster Mapping in East Region Based on Number of Workers Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Assam	Cachar	Mfg. of Jewellery	80.2	Small	Homogeneous	Gold Jewellery	1. Silchar town
2	Assam	Kamrup Metropolitan	Mfg. of Jewellery	54.2	Micro	Homogeneous	Gold Jewellery	1. Guwahati
3	Assam	Tinsukia	Mfg. of Jewellery	76.7	Micro	Homogeneous	Gold Jewellery	1. Tinsukia town
4	Assam	Barpeta	Mfg. of Jewellery	83.4	Micro	Homogeneous	Silver Jewellery	1. Barpeta
5	Bihar	Patna	Mfg. of Jewellery & Imitation	82.2	Medium	Heterogeneous	Gold/Silver Jewellery	1. Patna City, 2. Patna Sadar
6	Bihar	Munger	Mfg. of Jewellery	53.1	Micro	Homogeneous	Gold Jewellery	1. Munger Sahar
7	Bihar	Nalanda	Mfg. of Jewellery	75.7	Micro	Homogeneous	Gold Jewellery	1. Bihar Sharif
8	Jharkhand	Dumka	Mfg. of Jewellery & Imitation	67.9	Micro	Heterogeneous	Gold/Silver Jewellery	1. Dumka
9	Odisha	Kalahandi	Mfg. of Jewellery	>90.0	Medium	Homogeneous	Gold/Silver Jewellery	1. Kalahandi
10	Odisha	Koraput	Mfg. of Jewellery	52.2	Micro	Homogeneous	Silver & Gold Jewellery	1. Koraput
11	Odisha	Sundargarh	Mfg. of Jewellery	61.9	Micro	Homogeneous	Silver & Gold Jewellery	1. Sundargarh
12	Tripura	West Tripura	Mfg. of Jewellery & Articles	63.8	Small	Heterogeneous	Gold Jewellery	1. Agartala 2. Khaowai 3. Sonamora
13	Tripura	North Tripura	Mfg. of Jewellery	61.1	Micro	Homogeneous	Gold Jewellery	1. Dharmanagar
14	West Bengal	Paschim Medinipur	Imitation	67.4	Mega	Homogeneous	Gold & Costume & fashion Jewellery	1. Daspur 2. Ghatal 3. Midnapore town
15	West Bengal	Howrah	Imitation	57.5	Mega	Homogeneous	Diamond & Gold Jewellery	1. Domjur

(Contd.)

Table A.II.7.1: Gems & Jewellery Cluster Mapping in East Region Based on Number of Workers Engaged in Manufacturing (Contd.)

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
16	West Bengal	Nadia	Mfg. of Jewellery	72.3	Mega	Homogeneous	Gold & Silver Jewellery	1. Ranaghat
17	West Bengal	Purba Medinipur	Mfg. of Jewellery	86.3	Large	Homogeneous	Gold Jewellery	1. Tamluk 2. Kanthi
18	West Bengal	North Twenty Four Parganas	Mfg. of Jewellery	73.1	Large	Homogeneous	Gold Jewellery	1. Barasat 2. Kachrapara
19	West Bengal	Hugli	Mfg. of Jewellery	71.6	Large	Homogeneous	Fashion & Costume Jewellery	1. Singur
20	West Bengal	South Twenty Four Parganas	Manufacturing of Imitation Jewellery & Trade	54.2	Large	Heterogeneous	Silver & Gold Jewellery	1. Magrahat 2. Sonarpur 3. Baruipur
21	West Bengal	Kolkata	Mfg. of Jewellery	61.4	Large	Homogeneous	Gold Jewellery	1. Sinthee 2. Garanhata 3. BB Ganguly Street
22	West Bengal	Bardhaman	Mfg. of Jewellery	61.3	Medium	Homogeneous	Gold Jewellery	1. Bardhaman Town
23	West Bengal	Darjiling	Mfg. of Jewellery	>90.0	Medium	Homogeneous	Gold Jewellery	1. Siliguri
24	West Bengal	Jalpaiguri	Mfg. of Jewellery	89.2	Medium	Homogeneous	Gold Jewellery	1. Alipurduar
25	West Bengal	Maldah	Mfg. of Jewellery	69.6	Small	Homogeneous	Gold Jewellery	1. Maldah
26	West Bengal	Murshidabad	Mfg. of Jewellery	65.3	Small	Homogeneous	Nose pin, Gold Jewellery	1. Beldanga 2. Baharampore
27	West Bengal	Koch Bihar	Mfg. of Jewellery	>90.0	Small	Homogeneous	Gold Jewellery	1. Dinhata 2. Tufanganj 3. Coochbihar Sadar
28	West Bengal	Birbhum	Mfg. of Jewellery	85.7	Micro	Homogeneous	Gold Jewellery	1. Birbhum

Table A.II.7.2: Gems & Jewellery Potential Clusters in East Region Based on Number of Workers Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster
1	Assam	Karimganj	Mfg. of Jewellery	>90.0	High Potential	Homogeneous
2	Bihar	Darbhanga	Mfg. of Jewellery	>90.0	High Potential	Homogeneous
3	Bihar	Samastipur	Mfg. of Jewellery & Imitation	44.2	High Potential	Heterogeneous
4	Bihar	Buxar**	Mfg. of Jewellery	55.1	High Potential	Homogeneous
5	Chhattisgarh	Mungeli	Mfg. of Jewellery	54.6	High Potential	Homogeneous
6	Chhattisgarh	Korba	Mfg. of Jewellery	86.4	High Potential	Homogeneous
7	Jharkhand	Garhwa	Mfg. of Jewellery	>90.0	High Potential	Homogeneous
8	Jharkhand	Hazaribagh**	Imitation	>90.0	High Potential	Homogeneous
9	Jharkhand	Ranchi**	Mfg. of Jewellery	56.5	High Potential	Homogeneous
10	Jharkhand	Ramgarh**	Mfg. of Jewellery	>90.0	High Potential	Homogeneous
11	Jharkhand	Kodarma**	Mfg. of Jewellery	55.3	High Potential	Homogeneous
12	Tripura	Dhalai	Mfg. of Jewellery	>90.0	High Potential	Homogeneous
13	West Bengal	Dakshin Dinajpur	Mfg. of Jewellery	>90.0	High Potential	Homogeneous

Note:** GJEPC identified clusters.

Table A.II.7.3: Gems & Jewellery Cluster Mapping in East Region Based on Number of Workers Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Assam	Sonitpur	>90.0	Micro	Homogeneous	Gold/Silver Jewellery	1. Sonitpur
2	Bihar	Siwan	>90.0	Large	Homogeneous	Gold Jewellery	1. Siwan
3	Bihar	Bhagalpur#	70.3	Small	Homogeneous	Gold/Silver Jewellery	1. Sonarpatti
4							2. Baka
5	Bihar	Sitamarhi	>90.0	Small	Homogeneous	Gold Jewellery	1. Sitamarhi
6	Bihar	Gaya	88.7	Micro	Homogeneous	Gold Jewellery	1. Gaya
7	Chhattisgarh	Bilaspur#	63.9	Medium	Homogeneous	Gold Jewellery	1. Bilaspur
8	Chhattisgarh	Raipur	78.4	Micro	Homogeneous	Gold Jewellery	1. Raipur 2. Bilashpur
9	Jharkhand	Gumla	88.4	Small	Homogeneous	Gold/Silver Jewellery	1. Gumla
10	Jharkhand	Dhanbad	>90.0	Micro	Homogeneous	Gold Jewellery	1. Pandyapur 2. Dhanbad
11	Odisha	Baleshwar	>90.0	Small	Homogeneous	Gold Jewellery	1. Baleshwar
12	Odisha	Puri	>90.0	Small	Homogeneous	Silver Jewellery	1. Puri main town
13	Odisha	Balangir	>90.0	Small	Homogeneous	Silver & Gold Jewellery	1. Tarava 2. Kantabhanji
14	Odisha	Cuttack	56.3	Micro	Homogeneous	Silver Filigree, Gold Jewellery	1. Cuttack
15	Odisha	Bhadrak	>90.0	Micro	Homogeneous	Silver Jewellery	1. Bhadrak
16	Odisha	Khordha	>90.0	Micro	Homogeneous	Silver Jewellery	1. Khordha
17	Tripura	South Tripura#	54.2	Micro	Homogeneous	Gold Jewellery	1. Udaipur 2. Biloniya

Note: #25 to 50 % workers belong to Manufacturing in Trade classified clusters.

Table A.II.7.4: Gems & Jewellery Potential Clusters in East Region Based on Number of Workers Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster
1	Assam	Darrang#	67.2	High Potential	Homogeneous
2	Assam	Lakhimpur	>90.0	High Potential	Homogeneous
3	Bihar	Purba Champaran	>90.0	High Potential	Homogeneous
4	Bihar	Katihar	>90.0	High Potential	Homogeneous
5	Chhattisgarh	Rajnandgaon#	68.0	High Potential	Homogeneous
6	Chhattisgarh	Durg	84.2	High Potential	Homogeneous
7	Jharkhand	Bokaro	>90.0	High Potential	Homogeneous
8	Jharkhand	Pashchimi Singhbhum	>90.0	High Potential	Homogeneous
9	Jharkhand	Deoghar**	>90.0	High Potential	Homogeneous
10	Jharkhand	Purbi Singhbhum**	>90.0	High Potential	Homogeneous
11	Manipur	Imphal West#	60.7	High Potential	Homogeneous
12	Odisha	Ganjam	86.2	High Potential	Homogeneous
13	Odisha	Kendrapara	>90.0	High Potential	Homogeneous
14	Odisha	Jagatsinghapur	>90.0	High Potential	Homogeneous
15	West Bengal	Puruliya#	74.8	High Potential	Homogeneous

Note: **GJEPC identified clusters; #25 to 50 % workers belong to Manufacturing in Trade classified clusters.

Annexure : II-A8

Cluster Mapping of Gems and Jewellery Sector (Based on Number of Workers)

At 3 Levels

States – Districts – Town/Villages

Gujarat Region

1 State

20 District Clusters

Table A.II.8.1: Gems& Jewellery Cluster Mapping in Gujarat Region Based on Number of Workers Engaged in Manufacturing

Sl. No	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Ahmadabad	Diamond	76.3	Mega	Homogeneous	Diamond Cutting & Polishing	1. Ahmedabad 2. Botad
2	Bhavnagar	Diamond	>90.0	Mega	Homogeneous	Diamond Cutting & Polishing	1. Gariyadhar, 2. Mahuva, 3. Palitana, 4. Botad
3	Rajkot	Mfg. of Jewellery & Imitation	88.1	Mega	Heterogeneous	Gold & Imitation Jewellery	1. Jasdan
4	Surat	Diamond	81.3	Mega	Homogeneous	Diamond Cutting & Polishing	1. Surat
5	Amreli	Diamond	>90.0	Mega	Homogeneous	Diamond Cutting & Polishing	1. Savarkundla
6	Mahesana	Diamond	>90.0	Large	Homogeneous	Diamond Cutting & Polishing	1. Visnagar
7	Vadodara	Mfg. of Jewellery & Imitation	71.8	Large	Heterogeneous	Gold & Imitation Jewellery	1. Vadodra
8	Junagadh	Diamond	83.1	Large	Homogeneous	Diamond Cutting & Polishing	1. Junagarh
9	Banas Kantha	Diamond	>90.0	Medium	Homogeneous	Diamond Cutting & Polishing	1. Deesa, 2. Palanpur
10	Kachchh	Mfg. of Jewellery	84.8	Small	Homogeneous	Gold Jewellery	1. Kuchchh
11	Bharuch	Mfg. of Jewellery	79.7	Small	Homogeneous	Gold Jewellery	1. Bharuch
12	Jamnagar	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Gold Jewellery	1. Jamnagar

Table A.II.8.2: Gems& Jewellery Potential Clusters in Gujarat Region Based on Number of Workers Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster
1	Gujarat	Anand	Imitation	>90.0	High Potential	Homogeneous
2	Gujarat	Dohad	Mfg. of Jewellery	>90.0	High Potential	Homogeneous

Table A.II.8.3: Gems& Jewellery Cluster Mapping in Gujarat Region Based on Number of Workers Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Gujarat	Navsari#	66.3	Small	Homogeneous	Jewellery	1. Navsari
2	Gujarat	Kheda	>90.0	Small	Homogeneous	Jewellery	1. Kheda
3	Gujarat	Panch Mahals	>90.0	Micro	Homogeneous	Jewellery	1. Panch Mahals
4	Gujarat	Valsad	>90.0	Micro	Homogeneous	Jewellery	1. Valsad

Note: # 25 to 50 % workers belong to Manufacturing in Trade classified clusters.

Table A.II.8.4: Gems& Jewellery Potential Clusters in Gujarat Region Based on Number of Workers Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster
1	Gujarat	Gandhinagar	>90.0	Medium	Homogeneous
2	Gujarat	Patan**#	69.4	High Potential	Homogeneous
3	Gujarat	Surendranagar**	>90.0	High Potential	Homogeneous

Note: # workers belong to Manufacturing in Trade classified clusters.

Annexure : II-A9

Cluster Mapping of Gems and Jewellery Sector (Based on Number of Workers)

At 3 Levels

States – Districts – Town/Villages

North Region

8 States

74 District Clusters

Table A.II.9.1: Gems & Jewellery Cluster Mapping in North Region Based on Number of Workers Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Delhi	West Delhi	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Jewellery	1. Nangloi
2	Delhi	South East Delhi	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Jewellery	1. Taimoor Nagar
3	Haryana	Panipat	Mfg. of Jewellery	60.4	Small	Homogeneous	Jewellery	1. Trade
4	Haryana	Sonipat	Mfg. of Jewellery	76.0	Small	Homogeneous	Jewellery	1. Sonipat
5	Haryana	Karnal	Mfg. of Jewellery	69.9	Micro	Homogeneous	Jewellery	1. Karnal
6	Punjab	Amritsar	Articles	80.6	Mega	Homogeneous	Plain & Studded Gold Jewellery	1. Amritsar
7	Punjab	Ludhiana	Mfg. of Jewellery	51.0	Small	Homogeneous	Plain & Studded Gold Jewellery	1. Ludhiana
8	Punjab	Fazilka	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Jewellery	1. Fazilka
9	Punjab	Bathinda	Mfg. of Jewellery	87.3	Micro	Homogeneous	Jewellery	1. Bhatinda
10	Uttar Pradesh	Moradabad	Articles	>90.0	Large	Homogeneous	Jewellery	1. Moradabad
11	Uttar Pradesh	Agra	Mfg. of Jewellery	67.3	Large	Homogeneous	Silver Jewellery	1. Agra
12	Uttar Pradesh	Kanpur Nagar	Imitation	51.6	Large	Homogeneous	Plain & Studded Gold, Imitation Jewellery	1. Kanpur Nagar
13	Uttar Pradesh	Ghaziabad	Imitation	65.2	Large	Homogeneous	Imitation Jewellery	1. Harsinghpur
14	Uttar Pradesh	Varanasi	Imitation	63.2	Medium	Homogeneous	Jewellery, Beads	1. Harahua, 2. Bhaironath

(Contd.)

Table A.II.9.1: Gems & Jewellery Cluster Mapping in North Region Based on Number of Workers Engaged in Manufacturing (Contd.)

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
15	Uttar Pradesh	Saharanpur	Mfg. of Jewellery	68.7	Small	Homogeneous	Silver Jewellery	1. Saharanpur
16	Uttar Pradesh	Rae Bareli	Mfg. of Jewellery & Diamond	50.0	Small	Heterogeneous	Mfg. of Jewellery & Diamond	1. Rae Bareli
17	Uttar Pradesh	Etawah	Mfg. of Jewellery	89.4	Small	Homogeneous	Imitation Jewellery	1. Jaswant Nagar
18	Uttar Pradesh	Jaunpur	Mfg. of Jewellery	63.0	Small	Homogeneous	Jewellery	1. Jaunpur
19	Uttar Pradesh	Aligarh	Mfg. of Jewellery	66.9	Small	Homogeneous	Plain Gold Jewellery	1. Aligarh
20	Uttar Pradesh	Jhansi	Mfg. of Jewellery	89.7	Micro	Homogeneous	Gold & Silver Jewellery	1. Jhansi
21	Uttar Pradesh	Fatehpur	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Jewellery	1. Fatehpur
22	Uttar Pradesh	Pratapgarh	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Jewellery	1. Pratapgarh
23	Uttar Pradesh	Shahjahanpur	Mfg. of Jewellery	61.4	Micro	Homogeneous	Jewellery	1. Shahjahanpur
24	Uttar Pradesh	Bara Banki	Mfg. of Jewellery	86.8	Micro	Homogeneous	Jewellery	1. Bara Banki
25	Uttar Pradesh	Chitrakoot	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Chitrakoot
26	Uttar Pradesh	Mahamaya Nagar	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Mahamaya Nagar

Table A.II.9.2: Gems & Jewellery Potential Clusters in North Region Based on Number of Workers Engaged in Manufacturing

Sl.No.	State/UT	District	Segment	% Share	Size	Type of Cluster
1	Haryana	Sirsa	Mfg. of Jewellery	76.9	High Potential	Homogeneous
2	Haryana	Rohtak	Mfg. of Jewellery	68.7	High Potential	Homogeneous
3	Haryana	Kaithal	Mfg. of Jewellery	65.3	High Potential	Homogeneous
4	Haryana	Gurgaon**	Articles	68.8	High Potential	Homogeneous
5	Himachal Pradesh	Shimla**	Mfg. of Jewellery & Imitation	78.5	High Potential	Heterogeneous
6	Himachal Pradesh	Kangra	Mfg. of Jewellery	>90.0	High Potential	Homogeneous
7	Jammu & Kashmir	Jammu	Mfg. of Jewellery	>90.0	High Potential	Homogeneous
8	Punjab	Tarn Taran	Articles	85.9	High Potential	Homogeneous
9	Uttar Pradesh	Mathura	Imitation	81.7	High Potential	Homogeneous
10	Uttar Pradesh	Hardoi	Mfg. of Jewellery	69.0	High Potential	Homogeneous
11	Uttar Pradesh	Kanpur Dehat	Mfg. of Jewellery	80.0	High Potential	Homogeneous
12	Uttar Pradesh	Gautam Buddha Nagar**	Imitation	>90.0	High Potential	Homogeneous
13	Uttarakhand	Udham Singh Nagar	Mfg. of Jewellery	66.7	High Potential	Homogeneous

Note: **GJEPC identified clusters.

Table A.II.9.3: Gems & Jewellery Cluster Mapping in North Region Based on Number of Workers Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Delhi	Central Delhi	71.9	Large	Homogeneous	Plain & Stud-ded Gold Jewellery	1. Karol Bagh
2	Delhi	North Delhi	>90.0	Small	Homogeneous	Studded Jewellery	1. Chandni Chowk
3	Delhi	East Delhi#	57.6	Small	Homogeneous	Lac Jewellery	1. Seema puri, 2. Madhu Vihar
4	Delhi	North East Delhi	80.3	Micro	Homogeneous	Jewellery	1. Kingsway Camp
5	Delhi	New Delhi	>90.0	Micro	Homogeneous	Jewellery	1. Vasant Vihar
6	Delhi	North West Delhi	75.8	Micro	Homogeneous	Jewellery	1. Bawana
7	Punjab	Gurdaspur#	63.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Gurdaspur
8	Punjab	Ferozpur	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Ferozpur
9	Uttar Pradesh	Bulandshahr	63.6	Micro	Homogeneous	Silver & Gold Jewellery	1. Bulandshahr
10	Uttar Pradesh	Azamgarh#	73.6	Large	Homogeneous	Silver & Gold Jewellery	1. Azamgarh
11	Uttar Pradesh	Ballia#	61.4	Large	Homogeneous	Silver & Gold Jewellery	1. Balia
12	Uttar Pradesh	Sitapur	>90.0	Large	Homogeneous	Jewellery	1. Sitapur
13	Uttar Pradesh	Mahrajganj	>90.0	Large	Homogeneous	Silver & Gold Jewellery	1. Maharajganj
14	Uttar Pradesh	Gorakhpur#	72.6	Large	Homogeneous	Jewellery	1. Naugarh
15	Uttar Pradesh	Bareilly#	66.8	Medium	Homogeneous	Plain & Stud-ded Gold Jewellery	1. Bareilly

(Contd.)

Table A.II.9.3: Gems & Jewellery Cluster Mapping in North Region Based on Number of Workers Engaged in Trading (Contd.)

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
16	Uttar Pradesh	A m b e d k a r Nagar	>90.0	Me- dium	Homogeneous	Jewellery	1. Ambedkar Nagar
17	Uttar Pradesh	Sonbhadra	>90.0	Small	Homogeneous	Silver & Gold Jewellery	1. Sonbhadra
18	Uttar Pradesh	Pilibhit	83.1	Small	Homogeneous	Silver & Gold Jewellery	1. Pilibhit
19	Uttar Pradesh	Siddharthnagar	>90.0	Small	Homogeneous	Silver & Gold Jewellery	1. Siddharthnagar
20	Uttar Pradesh	Ghazipur	79.8	Small	Homogeneous	Silver & Gold Jewellery	1. Ghazipur
21	Uttar Pradesh	Allahabad	>90.0	Micro	Homogeneous	Plain & Stud- ded Gold Jewellery	1. Allahabad
22	Uttar Pradesh	Mau	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Mau
23	Uttar Pradesh	Gonda	79.1	Micro	Homogeneous	Jewellery	1. Gonda
24	Uttar Pradesh	Deoria	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Deoria
25	Uttar Pradesh	Budaun	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Budaun
26	Uttar Pradesh	Lucknow	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Lucknow
27	Uttar Pradesh	Kaushambi	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Kaushambi
28	Uttar Pradesh	Sultanpur	>90.0	Micro	Homogeneous	Jewellery	1. Sultanpur
29	Uttar Pradesh	Balrampur	81.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Balrampur
30	Uttar Pradesh	Bijnor#	59.9	Micro	Homogeneous	Silver & Gold Jewellery	1. Bijnor
31	Uttar Pradesh	Shrawasti	>90.0	Micro	Homogeneous	Silver & Gold Jewellery	1. Shrawasti

Note: # 25 to 50 % workers belong to Manufacturing in Trade classified clusters.

Table A.II.9.4: Gems & Jewellery Potential Clusters in North Region Based on Number of Workers Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster
1	Chandigarh	Chandigarh**#	69.4	High Potential	Homogeneous
2	Delhi	South Delhi#	69.4	High Potential	Homogeneous
3	Haryana	Ambala#	51.7	High Potential	Homogeneous
4	Haryana	Yamunanagar	>90.0	High Potential	Homogeneous
5	Uttar Pradesh	Meerut**#	68.4	High Potential	Homogeneous
6	Uttar Pradesh	Muzaffarnagar	>90.0	High Potential	Homogeneous
7	Uttar Pradesh	Sant Kabir Nagar#	74.6	High Potential	Homogeneous
8	Uttarakhand	Hardwar#	89.9	High Potential	Homogeneous
9	Uttarakhand	Dehradun**	>90.0	High Potential	Homogeneous

Note: **GJEPC identified clusters; #25 to 50 % workers belong to Manufacturing in Trade classified clusters.

Annexure : II-A10

Cluster Mapping of Gems and Jewellery Sector (Based on Number of Workers)

At 3 Levels

States – Districts – Town/Villages

Rajasthan Region

1 State

27 District Clusters

Table A.II.10.1: Gems & Jewellery Cluster Mapping in Rajasthan Region Based on Number of Workers Engaged in Manufacturing

Sl. No	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Jaipur	Mfg. of Jewellery	51.7	Mega	Homogenous	Kundan Meena Jadau Jewellery, Silver Jewellery, diamond & coloured Gemstone jewellery and Gemstones	1. Jaipur
2	Bikaner	Mfg. of Jewellery	>90.0	Mega	Homogenous	Kundan meena Jadau & Polki Jewellery	1. Bikaner
3	Bharatpur	Articles	87.6	Large	Homogenous	Plain Gold	1. Bharatpur
4	Sikar	Mfg. of Jewellery & Imitation	63.6	Large	Heterogeneous	Plain Gold	1. Sikar
5	Jodhpur	Mfg. of Jewellery	>90.0	Large	Homogenous	Kundan Meena & gold Jewellery	1. Jodhpur
8	Nagaur	Imitation	69.4	Medium	Homogenous	Gold & Silver Jewellery	1. Nagaur
10	Churu	Mfg. of Jewellery	>90.0	Medium	Homogenous	Gold & Silver Jewellery	1. Churu
11	Pali	Mfg. of Jewellery	>90.0	Small	Homogenous	Gold & Silver Jewellery	1. Pali
12	Baran	Mfg. of Jewellery	>90.0	Small	Homogenous	Gold & Silver Jewellery	1. Baran
14	Barmer	Mfg. of Jewellery	>90.0	Micro	Homogenous	Gold Jewellery	1. Barmer
15	Sirohi	Mfg. of Jewellery	>90.0	Micro	Homogenous	Gold Jewellery	1. Sirohi
16	Chittaurgarh	Mfg. of Jewellery	>90.0	Micro	Homogenous	Gold & Silver Jewellery	1. Chittaurgarh
17	Sawai Madhopur	Mfg. of Jewellery	>90.0	Micro	Homogenous	Gold & Silver Jewellery	1. Sawai Madhopur
18	Pratapgarh	Imitation	>90.0	Micro	Homogenous	Thewa jewellery	1. Pratapgarh
19	Ganganagar	Mfg. of Jewellery	>90.0	Micro	Homogenous	Gold & Silver Jewellery	1. Ganganagar
20	Alwar	Imitation	76.2	Micro	Homogenous	Gold & Silver Jewellery	1. Alwar
21	Jhunjhunun	Imitation	67,3	Micro	Homogenous	Gold & Silver Jewellery	1. Jhunjhunun
22	Rajsamand	Mfg. of Jewellery	>90.0	Micro	Homogenous	Gold & Silver Jewellery	1. Rajsamand

Table A.II.10.2: Gems & Jewellery Potential Clusters in Rajasthan Region Based on Number of Workers Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster
1	Rajasthan	Hanumangarh	Mfg. of Jewellery	>90.0	High Potential	Homogeneous
2	Rajasthan	Jalor	Mfg. of Jewellery	>90.0	High Potential	Homogeneous
3	Rajasthan	Ajmer	Mfg. of Jewellery	>90.0	High Potential	Homogenous

Table A.II.10.3: Gems & Jewellery Cluster Mapping in Rajasthan Region Based on Number of Workers Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Rajasthan	Udaipur#	61.4	Large	Homogenous	Silver & Gold Jewellery	1. Udaipur, 2. Nathdwara
2	Rajasthan	Kota	>90.0	Medium	Homogenous	Gold & Silver Jewellery	1. Kota
3	Rajasthan	Tonk	>90.0	Medium	Homogenous	Gold & Silver Jewellery	1. Tonk
4	Rajasthan	Bhilwara	82.7	Small	Homogenous	Gold & Silver Jewellery	1. Bhilwara

Note: # 25 to 50 % workers belong to Manufacturing in Trade classified clusters.

Table A.II.10.4: Gems & Jewellery Potential Clusters in Rajasthan Region Based on Number of Workers Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster
1	Rajasthan	Dhaulpur	87.8	High Potential	Homogeneous

Annexure : II-A11

Cluster Mapping of Gems and Jewellery Sector (Based on Number of Workers)

At 3 Levels

States – Districts – Town/Villages

South Region

6 States

82 District Clusters

Table A.II.11.1: Gems & Jewellery Cluster Mapping in South Region Based on Number of Workers Engaged in Manufacturing

Sl. No.	State	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Andhra Pradesh	Chittoor	Mfg. of Jewellery	52.3	Large	Homogeneous	Plain Gold Jewellery / God Idols made up of Brass	1. Chittoor
								2. Tirupathi
								3. Srikalahasthi
								4. B. Kothakota
								5. Puttur
								6. Bangarupalem
								7. Palamaneru
								8. V.Kota
								9. Kuppam
								10. Madanapalle
2	Andhra Pradesh	Krishna	Imitation	82.8	Medium	Homogeneous	Plain & Studded Gold Jewellery	1. Vijayawada
								2. Machilipatnam
								3. Gudivada
								4. Jaggayyapeta
								5. Nuzvid
								6. Ibrahimpattanam
3	Andhra Pradesh	Guntur	Mfg. of Jewellery	72.0	Small	Homogeneous	Plain Gold Jewellery	1. Guntur City
								2. Chilakaluripet
								3. Amara-vathi
								4. Mangalagiri
								5. Tenali
								6. Bapatla
								7. Narasaraopet

(Contd.)

Table A.II.11.1: Gems & Jewellery Cluster Mapping in South Region Based on Number of Workers Engaged in Manufacturing (Contd.)

Sl. No.	State	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
4	Andhra Pradesh	West Godavari	Mfg. of Jewellery & Articles	61.2	Small	Heterogeneous	Plain Gold Jewellery	1. Eluru
								2. Bhimavaram
								3. Tadepaligudem
								4. Tanuku
								5. Narasapuram
								6. Jangaredigudem
5	Andhra Pradesh	Vizianagaram	Mfg. of Jewellery	86.3	Micro	Homogeneous	Plain Gold Jewellery	1. Vizianagaram
								2. Bobbili
								3. Parvathipuram
6	Andhra Pradesh	Visakhapatnam	Mfg. of Jewellery	73.2	Micro	Homogeneous	Plain Gold Jewellery	1. Visakhapatnam
								2. Gajuwaka
								3. Anakapalle
								4. Narsipattanam
7	Andhra Pradesh	Kurnool	Mfg. of Jewellery	87.0	Micro	Homogeneous	Plain Gold Jewellery & Silver Articles	1. Kurnool Rural & Urban
								2. Atmakur
								3. Nandyal
								4. Adoni
8	Karnataka	Davangere	Mfg. of Jewellery	78.6	Large	Homogeneous	Plain & Studded Gold Jewellery	1. Davangere
								2. Harihar
								3. Honnali
								4. Channagiri
								5. Harapanahalli
								6. Jagalur

(Contd.)

Table A.II.11.1: Gems & Jewellery Cluster Mapping in South Region Based on Number of Workers Engaged in Manufacturing (Contd.)

Sl. No.	State	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
9	Karnataka	Bidar	Mfg. of Jewellery	60.7	Large	Homogeneous	Plain Gold Jewellery	1. Bidar
								2. Humnabad
								3. Bhalki
								4. Aurad
								5. Hulsoor
								6. Chitgoppa
								7. Kamalnagar
								8. Basavakalyan.
10	Karnataka	Belgaum	Mfg. of Jewellery	73.2	Small	Homogeneous	Plain Gold Jewellery	1. Athani
								2. Bailhongal
								3. Belgaum
								4. Chikkodi
								5. Gokak
								6. Hukkeri
								7. Khanapur
								8. Ramdurg
								9. Raybag
								10. Saundatti
11	Karnataka	Chikkaballapura	Imitation & Trade	52.7	Small	Heterogeneous	Plain Gold Jewellery / Coloured Gemstones	1. Chikkaballapur
								2. Gauribidanur
								3. Bagepalli
								4. Sidlaghatta
								5. Gudibanda
								6. Chintamani

(Contd.)

Table A.II.11.1: Gems & Jewellery Cluster Mapping in South Region Based on Number of Workers Engaged in Manufacturing (Contd.)

Sl. No.	State	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
12	Karnataka	Bagalkot	Mfg. of Jewellery	71.7	Micro	Homogeneous	Plain Gold Jewellery	1. Badami
								2. Bagalkot
								3. Bagalkot
								4. Bilgi
								5. Hungund
								6. Jamkhandi
								7. Mudhol
13	Karnataka	Uttara Kannada	Mfg. of Jewellery	82.1	Micro	Homogeneous	Plain Gold Jewellery	1. Karwar
14	Kerala	Thrissur	Mfg. of Jewellery & Imitation	52.6	Mega	Heterogeneous	Plain & Studded Gold Jewellery	1. Thrissur
								2. Mukundapuram
								3. Talappilly
								4. Chavakkad
								5. Kodungallur
15	Kerala	Kottayam	Mfg. of Jewellery	54.9	Micro	Homogeneous	Plain & Studded Gold Jewellery	1. Kottayam
								2. Meenachil
								3. Changanassery
								4. Vaikom
								5. Kanjirappally
16	Tamil Nadu	Salem	Mfg. of Jewellery	79.7	Mega	Homogeneous	Plain Gold Jewellery / Silver Jewellery & Filigree	1. Salem
17	Tamil Nadu	Coimbatore	Mfg. of Jewellery	71.9	Large	Homogeneous	Plain & Studded Gold Jewellery	2. Coimbatore
18	Tamil Nadu	Madurai	Mfg. of Jewellery	73.2	Medium	Homogeneous	Plain Gold Jewellery	1. Madurai
19	Tamil Nadu	Cuddalore	Imitation	73.3	Medium	Homogeneous	Plain Gold Jewellery	1. Cuddalore

(Contd.)

Table A.II.11.1: Gems & Jewellery Cluster Mapping in South Region Based on Number of Workers Engaged in Manufacturing (Contd.)

Sl. No.	State	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
20	Tamil Nadu	Pudukkottai	Mfg. of Jewellery & Trade	54.3	Medium	Heterogeneous	Plain Gold Jewellery	1. Aranthagi
21	Tamil Nadu	Tirunelveli	Mfg. of Jewellery	55.5	Small	Homogeneous	Plain Gold Jewellery	1. Tirunelveli
22	Tamil Nadu	Thoothukudi	Mfg. of Jewellery & Articles	76.2	Small	Heterogeneous	Plain Gold Jewellery	1. Thoothukudi
23	Tamil Nadu	Kanniyakumari	Mfg. of Jewellery	61.9	Small	Homogeneous	Studded Gold Jewellery	1. Kanniyakumari
24	Tamil Nadu	Thiruvallur	Imitation	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Thiruvallur Taluka 2. Thiruthani 3. Pallipattu 4. Uthukottai 5. Poona-mallee 6. Avadi 7. Ambattur 8. Villivakam part 9. Pooneri
25	Telangana	Mahbubnagar	Mfg. of Jewellery	64.3	Large	Homogeneous		1. Mahbubnagar
26	Telangana	Rangareddy	Mfg. of Jewellery	61.6	Medium	Homogeneous	Plain Gold Jewellery	1. Vikarabad 2. Tandur 3. Shamshabad 4. Serlingampally 5. Chevalla. 6. Sangareddy

(Contd.)

Table A.II.11.1: Gems & Jewellery Cluster Mapping in South Region Based on Number of Workers Engaged in Manufacturing (Contd.)

Sl. No.	State	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
27	Telangana	Nalgonda	Mfg. of Jewellery	52.8	Medium	Homogeneous	Plain & Studded Gold Jewellery	1. Nalagonda
								2. Devarakonda
								3. Nakerakal
								4. Vijayapuri
								5. Chandur
28	Telangana	Warangal	Mfg. of Jewellery	83.7	Small	Homogeneous		1. Hanamkonda
								2. Warangal
								3. Mahabubabad
								4. Jangaon
								5. Ghanpur (Station)
								6. Bhupalpalle
29	Telangana	Nizamabad	Mfg. of Jewellery	>90.0	Small	Homogeneous		1. Nizamabad
								2. Bodhan
								3. Kamareddy
								4. Armur
30	Telangana	Karimnagar	Mfg. of Jewellery	83.4	Small	Homogeneous	Plain Gold Jewellery	1. Karimnagar
								2. Ramagundam
								3. Jagtial
								4. Sircilla
								5. Koratla

Table A.II.11.2: Gems & Jewellery Potential Clusters in South Region Based on Number of Workers Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster
1	Andhra Pradesh	Srikakulam	Mfg. of Jewellery & Imitation	58.7	High Potential	Heterogeneous
2	Andhra Pradesh	East Godavari**	Mfg. of Jewellery	51.7	High Potential	Homogeneous
3	Karnataka	Gulbarga	Mfg. of Jewellery	82.5	High Potential	Homogeneous
4	Karnataka	Gadag	Mfg. of Jewellery	75.8	High Potential	Homogeneous
5	Tamil Nadu	Tiruvannamalai**	Mfg. of Jewellery	>90.0	High Potential	High Potential

Note: **GJEPC identified clusters.

Table A.II.11.3: Gems & Jewellery Cluster Mapping in South Region Based on Number of Workers Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Andhra Pradesh	Anantapur	>90.0	Large	Homogeneous	Plain Gold Jewellery	1. Anantapur
							2. Hindupur
							3. Tadipatri
							4. Guntakal
							5. Dharmavaram
							6. Kadiri
							7. Rayadurgam
							8. Kalyanadurgam
2	Andhra Pradesh	Sri Potti Sriramulu Nellore	74.4	Micro	Homogeneous	Plain Gold Jewellery	1. Nellore
							2. Kavali
							3. Naidupet Gudur
							4. Sulpurpet
							5. Udayagiri
							6. Athmakur

(Contd.)

Table A.II.11.3: Gems & Jewellery Cluster Mapping in South Region Based on Number of Workers Engaged in Trading (Contd.)

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
3	Karnataka	Dharwad#	68.3	Large	Homogeneous	Plain & Stud-ded Gold Jewellery	1. Dharwad
							2. Hubballi Urban
							3. Hubballi Rural
							4. Kalghatgi
							5. Kundgol
							6. Alnavar
							7. Navalgund
							8. Annigeri.
4	Karnataka	Bangalore#	67.7	Large	Homogeneous	Plain Gold & Studded Jewellery	1. Bangalore North
							2. South & East
							3. Yelahanka
							4. Anekal
5	Karnataka	Dakshina Kannada	>90.0	Large	Homogeneous	Plain Gold & Studded Jewellery	1. Mangalore
							2. Bantwal
							3. Puttur
							4. Sullia
							5. Belthangady
							6. Kadaba
							7. Moodabidri.
							8. Udupi
							9. Kundapur
							10. Karkala
							11. Hebri
							12. Brahmavar
							13. Kaup
							14. Byndoor

(Contd.)

Table A.II.11.3: Gems & Jewellery Cluster Mapping in South Region Based on Number of Workers Engaged in Trading (Contd.)

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
6	Karnataka	Shimoga#	52.6	Large	Homogeneous	Plain Gold Jewellery	1. Soraba
							2. Bhadravathi
							3. Thirthahalli
							4. Sagara
							5. Shikaripura
							6. Shimoga
							7. Hosanagara
7	Karnataka	Yadgir	86.7	Medium	Homogeneous	Plain Gold & Studded Jewellery	1. Shorapur
							2. Hunasagi
							3. Shahpur
							4. Wadagera
							5. Yadgir
							6. Gurmitkal
8	Karnataka	Haveri	>90.0	Small	Homogeneous	Plain Gold Jewellery	1. Rattihalli
							2. Hanagal
							3. Shiggaon
							4. Savanur
							5. Haveri
							6. Byadagi
							7. Hirekerur
							8. Ranebennur.
9	Karnataka	Tumkur	75.5	Micro	Homogeneous	Plain Gold Jewellery	1. Tumkur
							2. Koratagere
							3. Sira
							4. Gubbi
							5. Pavagada
							6. Turuvakere
							7. Kunigal
							8. Madhugiri
							9. Tiptur
							10. Chikkanayakanahalli

(Contd.)

Table A.II.11.3: Gems & Jewellery Cluster Mapping in South Region Based on Number of Workers Engaged in Trading (Contd.)

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
10	Karnataka	Bangalore (Rural)#	68.6	Micro	Homogeneous	Plain Gold Jewellery / Silver Jewellery & Filigree	1. Doddaballapur
							2. Devanahalli
							3. Hosakote
							4. Nelamangala
11	Karnataka	Kodagu	>90.0	Micro	Homogeneous	Plain & Stud-ded Gold Jewellery	1. Madikeri
							2. Somwarpet
							3. Virajpet
12	Karnataka	Mandya	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Mandya
							2. Maddur
							3. Malavalli
							4. Pandavapura
							5. Srirangapatna
							6. Nagamangala
							7. Krishnarajpet
13	Karnataka	Ramanagara	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Ramanagar
14	Karnataka	Kolar#	63.9	Micro	Homogeneous	Plain Gold Jewellery	1. Kolar
15	Karnataka	Raichur	87.3	Micro	Homogeneous	Plain Gold Jewellery	1. Raichur
16	Karnataka	Udupi	80.7	Micro	Homogeneous	Plain & Stud-ded Gold Jewellery	1. Udupi
17	Kerala	Malappuram#	73.3	Large	Homogeneous	Plain & Stud-ded Gold Jewellery	1. Eranad
							2. Perinthalmanna
							3. Tirur
							4. Ponnani
18	Kerala	Thiruvananthapuram	74.1	Medium	Homogeneous	Plain & Stud-ded Gold Jewellery	1. Neyyattinkara
							2. Thiruvananthapuram
							3. Nedumangad
							4. Chirayinkeezhu
							5. Varkala
							6. Kattakkada

(Contd.)

Table A.II.11.3: Gems & Jewellery Cluster Mapping in South Region Based on Number of Workers Engaged in Trading (Contd.)

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
19	Kerala	Palakkad#	58.1	Medium	Homogeneous	Plain & Studded Gold Jewellery	1. Alathur
							2. Chittur
							3. Mannarkkad
							4. Ottappalam
							5. Palakkad
							6. Pattambi
20	Kerala	Alappuzha	79.1	Small	Homogeneous	Plain & Studded Gold Jewellery	1. Alappuzah
21	Kerala	Kozhikode#	57.8	Small	Homogeneous	Plain & Studded Gold Jewellery	1. Kozhikode
							2. Vatakara
							3. Koyilandy
							4. Thamarassery
22	Kerala	Ernakulam	85.5	Small	Homogeneous	Plain & Studded Gold Jewellery	2. Paravur
							3. Aluva
							4. Kunnathunad
							5. Muvattupuzha
							6. Kochi
							7. Kanayannur
							8. Kothamangalam
							23
2. Karunagappally							
3. Kunnathur							
4. Kottarakkara							
5. Punalur							
6. Pathanapuram							
24	Kerala	Kasaragod#	68.4	Micro	Homogeneous	Plain & Studded Gold Jewellery	1. Kasaragod

(Contd.)

Table A.II.11.3: Gems & Jewellery Cluster Mapping in South Region Based on Number of Workers Engaged in Trading (Contd.)

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
25	Tamil Nadu	Tiruchirappalli	82.9	Large	Homogeneous	Studded Gold Jewellery	1. Trichy
26	Tamil Nadu	Krishnagiri	76.9	Medium	Homogeneous	Studded Gold & Silver Jewellery	1. Krishnagiri 2. Hosur
27	Tamil Nadu	Chennai	>90.0	Small	Homogeneous	All types of Jewellery	1. Chennai
28	Tamil Nadu	Theni	>90.0	Small	Homogeneous	Plain & Studded Gold Jewellery	1. Theni
29	Tamil Nadu	Karur#	64.8	Small	Homogeneous	Plain Gold Jewellery/ Articles of Silver (Plates Payaletc)	1. Karur
30	Tamil Nadu	Nagapattinam#	70.1	Micro	Homogeneous	Plain Gold Jewellery	1. Nagapattinam 2. Vedaranyam
31	Tamil Nadu	Thanjavur	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Thanjavur
32	Tamil Nadu	Ramanathapuram#	70.0	Micro	Homogeneous	Plain Gold Jewellery	1. Ramanathapuram
33	Tamil Nadu	Sivaganga#	51.2	Micro	Homogeneous	Plain Gold Jewellery	1. Sivaganga
34	Tamil Nadu	Virudhunagar	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Virudhunagar
35	Tamil Nadu	Thiruvarur	>90.0	Micro	Homogeneous	Plain Gold Jewellery/ Silver Jewellery & Filigree	1. Thiruvarur
36	Tamil Nadu	Viluppuram	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Viluppuram
37	Tamil Nadu	Erode	>90.0	Micro	Homogeneous	Plain Gold Jewellery/ Silver Jewellery & Filigree	1. Erode

(Contd.)

Table A.II.11.3: Gems & Jewellery Cluster Mapping in South Region Based on Number of Workers Engaged in Trading (Contd.)

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
38	Tamil Nadu	Kancheepuram	62.3	Micro	Homogeneous	Plain Gold Jewellery	1. Periyakanchipuram 2. Chinna Kanchipuram
39	Tamil Nadu	Ariyalur	89.0	Micro	Homogeneous	Plain Gold Jewellery	1. Ariyalur
40	Telangana	Hyderabad#	57.2	Large	Homogeneous	All types of Jewellery	1. Hyderabad Urban & Rural

Note: # 25 to 50 % workers belong to Manufacturing in Trade classified clusters.

Table A.II.11.4: Gems & Jewellery Potential Clusters in South Region Based on Number of Workers Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster
1	Karnataka	Mysore	>90.0	High Potential	Homogeneous
2	Karnataka	Chitradurga	>90.0	High Potential	Homogeneous
3	Karnataka	Hassan	>90.0	High Potential	Homogeneous
4	Karnataka	Chikmagalur	84.5	High Potential	Homogeneous
5	Kerala	Wayanad	84.6	High Potential	Homogeneous
6	Puducherry	Puducherry	77.4	High Potential	Homogeneous
7	Tamil Nadu	Dharmapuri	>90.0	High Potential	Homogeneous
8	Telangana	Khammam#	55.6	High Potential	Homogeneous
9	Tamil Nadu	Vellore#	56.0	High Potential	High Potential
10	Tamil Nadu	Tiruppur**#	58.3	High Potential	High Potential

Note:** GJEPC identified clusters; # 25 to 50 % workers belong to Manufacturing in Trade classified clusters.

Annexure : II-A12

Cluster Mapping of Gems and Jewellery Sector (Based on Number of Workers)

At 3 Levels

States – Districts – Town/Villages

West Region

3 States

46 District Clusters

Table A.II.12.1: Gems & Jewellery Cluster Mapping in West Region Based on Number of Workers Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Madhya Pradesh	Satna	Mfg. of Jewellery	56.0	Small	Homogeneous	Gold plain oxidized fancy/jewellery/geru/Light weight jewellery	1. Satna
2	Madhya Pradesh	Gwalior	Mfg. of Jewellery	>90.0	Small	Homogeneous	Silver/Gold plain /oxidized fancy/beeds setting/Jewellery /kundan/Jadau	1. Gwalior
3	Madhya Pradesh	Indore	Imitation	83.3	Small	Homogeneous	Silver/ Gold fancy diamond studded jewellery/Beeds setting jewellery	1. Indore
4	Madhya Pradesh	Khandwa (East Nimar)	Mfg. of Jewellery	73.7	Micro	Homogeneous	Plain Gold Jewellery	1. Khandwa (East Nimar)
5	Maharashtra	Kolhapur	Mfg. of Jewellery	73.8	Mega	Homogeneous	Gold plain jewellery/Diamond Jewellery/Studded Jewellery//Antic/Hand made chains /Beeds	1. Hupari 2. Ichalkaranji
6	Maharashtra	Thane	Imitation	50.3	Large	Homogeneous	Stone Jewellery/Karwari work light-weight gold jewellery	1. Bhayandar 2. Kalwa
7	Maharashtra	Pune	Mfg. of Jewellery	54.2	Large	Homogeneous	Gold/Silver/beeds/Diamond/Artificial/Studded gold jewellery	1. Pune

(Contd.)

Table A.II.12.1: Gems & Jewellery Cluster Mapping in West Region Based on Number of Workers Engaged in Manufacturing (Contd.)

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
8	Maharashtra	Yavatmal	Mfg. of Jewellery	78.2	Small	Homogeneous	Plain gold jewellery	1. Yavatmal
9	Maharashtra	Ahmadnagar	Mfg. of Jewellery	81.6	Small	Homogeneous	Plain gold jewellery/Silver	1. Ahmadnagar
10	Maharashtra	Sangli	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Plain gold jewellery/Silver	1. Miraj
11	Maharashtra	Ratnagiri	Mfg. of Jewellery	65.3	Micro	Homogeneous	Plain gold jewellery	1. Chiplun
12	Maharashtra	Amravati	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Silver/ Plain gold jewellery	1. Amravati
13	Maharashtra	Nanded	Mfg. of Jewellery	59	Micro	Homogeneous	Mainly Silver/ Plain gold jewellery	1. Nanded
14	Maharashtra	Jalgaon	Mfg. of Jewellery	64.3	Micro	Homogeneous	Plain gold jewellery	1. Jalgaon
15	Maharashtra	Parbhani	Mfg. of Jewellery	>90.0	Micro	Homogeneous	Silver/Gold Jewellery	1. Parbhani

Table A.II.12.2: Gems & Jewellery Potential Clusters in West Region Based on Number of Workers Engaged in Manufacturing

Sl. No.	State/UT	District	Segment	% Share	Size	Type of Cluster
1	Goa	North Goa	Mfg. of Jewellery	86.1	High Potential	Homogeneous
2	Madhya Pradesh	Bhind	Mfg. of Jewellery	>90.0	High Potential	Homogeneous
3	Madhya Pradesh	Neemuch**	Mfg. of Jewellery & Imitation	68.4	High Potential	Homogeneous
4	Madhya Pradesh	Alirajpur**	Mfg. of Jewellery	71.4	High Potential	Homogeneous
5	Maharashtra	Bhandara	Mfg. of Jewellery	>90.0	High Potential	Homogeneous
6	Maharashtra	Gadchiroli	Mfg. of Jewellery	55.9	High Potential	Homogeneous
7	Maharashtra	Dhule	Mfg. of Jewellery	>90.0	High Potential	Homogeneous
8	Maharashtra	Sindhudurg**	Mfg. of Jewellery	>90.0	High Potential	Homogeneous

Note: **GJEPC identified clusters.

Table A.II.12.3: Gems & Jewellery Cluster Mapping in West Region Based on Number of Workers Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster	Major Products	Major Concentration (Town/Village)*
1	Madhya Pradesh	Shajapur	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Shajapur
3	Madhya Pradesh	Harda	>90.0	Micro	Homogeneous	Plain gold Jewellery	1. Harda
4	Madhya Pradesh	Tikamgarh	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Tikamgarh
5	Madhya Pradesh	Rajgarh	>90.0	Micro	Homogeneous	Plain Gold Jewellery	1. Rajgarh
6	Madhya Pradesh	Vidisha	>90.0	Micro	Homogeneous	Plain & Fancy Gold Jewellery/ kundan	1. Vidisha
7	Maharashtra	Mumbai Suburban#	55.7	Mega	Homogeneous	Gold plain jewellery/ Diamond	1. Andheri 2. Malad
8	Maharashtra	Pune#	63.8	Micro	Homogeneous	Gold/Silver/ beeds/ Diamond/ Artificial/ Studded gold jewellery	1. Pune
9	Maharashtra	Solapur#	64.5	Micro	Homogeneous	Plain gold jewellery	1. Solapur
10	Maharashtra	Osmanabad	>90.0	Micro	Homogeneous	Plain gold jewellery	1. Osmanabad
11	Maharashtra	Washim	>90.0	Micro	Homogeneous	Plain gold jewellery/Silver	1. Washim
12	Maharashtra	Nashik#	50.8	Micro	Homogeneous	Silver Jewellery /Art / Plain Gold jewellery	1. Nashik
13	Maharashtra	Chandrapur	>90.0	Micro	Homogeneous	Plain gold jewellery	1. Chandrapur
14	Maharashtra	Nagpur	78.7	Micro	Homogeneous	Plain gold jewellery/Silver	1. Nagpur
15	Maharashtra	Raigarh	59.3	Micro	Homogeneous	Plain gold jewellery	1. Mahad

Note: #25 to 50 % workers belong to Manufacturing in Trade classified clusters.

Table A.II.12.4: Gems & Jewellery Potential Clusters in West Region Based on Number of Workers Engaged in Trading

Sl. No.	State/UT	District	% Share	Size	Type of Cluster
1	Goa	South Goa**	88.0	Moderate Potential	Homogeneous
2	Madhya Pradesh	Singrauli	>90.0	High Potential	Homogeneous
3	Madhya Pradesh	Chhindwara	78.8	High Potential	Homogeneous
4	Madhya Pradesh	Khargone (West Nimar)	>90.0	High Potential	Homogeneous
5	Madhya Pradesh	Panna	>90.0	High Potential	Homogeneous
6	Madhya Pradesh	Raisen	>90.0	High Potential	Homogeneous
7	Madhya Pradesh	Ujjain	77.4	High Potential	Homogeneous
8	Madhya Pradesh	Rewa	>90.0	High Potential	Homogeneous
9	Madhya Pradesh	Bhopal	86.6	High Potential	Homogeneous
10	Madhya Pradesh	Sagar#	66.5	Moderate Potential	Homogeneous
11	Madhya Pradesh	Balaghat	>90.0	Moderate Potential	Homogeneous
12	Madhya Pradesh	Dhar	>90.0	Moderate Potential	Homogeneous
13	Madhya Pradesh	Katni**#	69.3	Moderate Potential	Homogeneous
14	Madhya Pradesh	Jabalpur**#	79.7	Moderate Potential	Homogeneous
15	Madhya Pradesh	Betul**	>90.0	Moderate Potential	Homogeneous
16	Madhya Pradesh	Narsimhapur**	>90.0	Moderate Potential	Homogeneous
17	Madhya Pradesh	Barwani	>90.0	Moderate Potential	Homogeneous
18	Madhya Pradesh	Guna	>90.0	Moderate Potential	Homogeneous
19	Madhya Pradesh	Dewas	52.7	Moderate Potential	Homogeneous
20	Madhya Pradesh	Anuppur	>90.0	Moderate Potential	Homogeneous
21	Madhya Pradesh	Shahdol	>90.0	Moderate Potential	Homogeneous
22	Madhya Pradesh	Hoshangabad	>90.0	Moderate Potential	Homogeneous
23	Madhya Pradesh	Mandsaur	>90.0	Moderate Potential	Homogeneous
24	Madhya Pradesh	Sidhi	66.8	Moderate Potential	Homogeneous
25	Maharashtra	Jalna	>90.0	High Potential	Homogeneous
26	Maharashtra	Gondiya	>90.0	Moderate Potential	Homogeneous
27	Maharashtra	Bid	>90.0	Moderate Potential	Homogeneous
28	Maharashtra	Satara	80.6	Moderate Potential	Homogeneous

Note: **GJEPC identified clusters; #25 to 50 % workers belong to Manufacturing in Trade classified clusters.

Annexure : III

**Cluster Mapping of Gems and Jewellery Sector
(Based on Number of Units and Workers)
At the State Level**

Table A.III: Number of Gems & Jewellery Units and Workers by State

Sl. No.	State	Units			Workers		
		Manufacturing	Trade	Total	Manufacturing	Trade	Total
1	Assam	12481	445	12927	29279	1180	30459
2	Bihar	6256	32152	38408	12378	59441	71818
3	Jharkhand	2109	7418	9527	3581	18135	21716
4	Orissa	20024	4853	24877	42602	17237	59839
5	Tripura	6698	1223	7921	9076	5759	14835
6	West Bengal	109064	23514	132578	435967	157633	593599
7	East	156632	69604	226237	532882	259385	792266
8	Delhi	1139	13488	14627	3042	67474	70516
9	Haryana	6875	6074	12950	11926	17066	28992
10	Punjab	3051	28070	31120	6867	71416	78283
11	Uttar Pradesh	40237	73015	113253	197677	216474	414151
12	North	51302	120647	171949	219512	372430	591942
13	Andhra Pradesh	30936	4885	35821	77991	11789	89780
14	Karnataka	15012	65405	80417	18365	269798	288163
15	Kerala	12820	20815	33635	35468	97544	133012
16	Tamil Nadu	45402	30474	75876	106199	145383	251582
17	Telangana	27446	18490	45935	54621	47674	102295
18	South	131616	140068	271684	292643	572188	864831
19	Madhya Pradesh	11062	23474	34536	21359	64399	85758
20	Maharashtra	53373	74942	128315	219176	276518	495694
21	West	64435	98416	162851	240534	340917	581452
22	Gujarat	29192	45716	74908	849878	110076	959954
23	Rajasthan	44215	37528	81743	401969	96510	498479
	Total	477393	511979	989372	2537419	1751507	4288926

Annexure : IV

**Cluster Mapping of Gems and Jewellery Sector
(Based on Number of Units and Workers)
At the District Cluster Level**

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters

Sl. No.	State	District	No. of Units	No. of Workers
1	Andhra Pradesh	Chittoor	11351	26703
		Anantapur	7206	21064
		Krishna	6105	11798
		Guntur	3379	8689
		West Godavari	1950	5409
		Visakhapatnam	1853	4163
		Vizianagaram	1518	4459
		Kurnool	851	3178
		Nellore	771	2182
		Srikakulam	427	1252
		East Godavari	178	436
2	Assam	Cachar	2348	7036
		Tinsukia	1531	2687
		Kamrup Metropolitan	1069	3194
		Barpeta	992	2256
		Karimganj	899	1278
		Sonitpur	839	2061
		Darrang	695	1844
		Lakhimpur	520	1125
		Kamrup	501	858
		Dhubri	400	687
		Jorhat	382	642
		Goalpara	356	759

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
		Kokrajhar	350	638
		Bongaigaon	308	857
		Dhemaji	282	814
		Golaghat	271	778
3	Bihar	Siwan	14864	21236
		Bhagalpur	4999	7522
		Patna	4167	11479
		Gaya	2413	3693
		Sitamarhi	2263	6467
		Nalanda	1537	2830
		Munger	1297	3067
		Purba Champaran	955	1949
		Darbhanga	846	1549
		Samastipur	719	1346
		Kishanganj	475	679
		Madhubani	468	883
		Katihar	397	1703
		Purnia	375	781
		Khagaria	366	933
		Rohtas	271	700
		Jehanabad	264	654
Buxar	-	-		
4	Chandigarh	Chandigarh	484	1040

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
5	Chhattisgarh	Bilaspur	6835	13493
		Raipur	1916	2239
		Durg	822	1065
		Mungeli	815	1953
		Janjgir Champa	638	875
		Korba	592	1234
		Rajnandgaon	517	1203
		Mahasamund	332	651
		Balodabazar	330	358
6	Delhi	Central Delhi	5979	39197
		North Delhi	2752	7219
		North West Delhi	1148	2842
		East Delhi	1079	7081
		New Delhi	1057	3115
		North East Delhi	692	4311
		South East Delhi	680	2454
		West Delhi	633	2682
		South Delhi	421	1095
7	Goa	North Goa	1233	1357
		South Goa	129	161
8	Gujarat	Rajkot	20576	136252
		Ahmadabad	19037	259971
		Surat	9105	134577
		Vadodara	5967	28980

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
		Bhavnagar	4878	199027
		Gandhinagar	3807	15204
		Kachchh	1583	8918
		Amreli	1521	73310
		Junagadh	1453	20930
		Kheda	1388	5393
		Valsad	937	2731
		Bharuch	726	8504
		Jamnagar	624	4300
		Navsari	595	6298
		Panch Mahals	586	3755
		Mahesana	535	35305
		Banas Kantha	400	11173
		Patan	391	1139
		Tapi	274	798
		Anand	261	1522
		Surendranagar	153	608
		Dohad	78	1111
9	Haryana	Sonipat	2543	5335
		Panipat	2255	6000
		Karnal	2114	4173
		Kaithal	740	1480
		Rohtak	577	1260
		Ambala	575	1009

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
		Gurgaon	528	812
		Palwal	412	579
		Sirsa	401	1299
		Kurukshetra	394	686
		Rewari	357	931
		Hisar	338	991
		Faridabad	327	729
		Yamunanagar	273	1131
		Jhajjar	252	374
10	Himachal Pradesh	Kangra	765	1398
		Mandi	422	841
		Bilaspur	390	907
		Chamba	286	321
		Shimla	57	165
11	Jammu & Kashmir	Jammu	1012	1937
		Srinagar	442	522
		Udhampur	440	852
		Badgam	308	308
12	Jharkhand	Gumla	3211	9340
		Dumka	1952	3317
		Dhanbad	1590	2928
		Bokaro	572	1273
		Deochar	443	746
		Pashchimi Singhbhum	352	1015

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
		Garhwa	330	1079
		Pakaur	267	468
		Purbi Singhbhum	195	456
		Ranchi	144	349
		Ramgarh	32	54
		Hazaribagh	15	24
		Kodarma	-	-
13	Karnataka	Danangere	12963	36439
		Bangalore	11810	40582
		Dakshina Kannada	9261	36301
		Dharwad	8691	41433
		Shimoga	7726	29105
		Bidar	7515	27212
		Haveri	2568	5605
		Yadgir	2052	10284
		Bangalore Rural	1795	3750
		Chikkaballapura	1595	8436
		Tumkur	1583	4956
		Belgaum	1537	9533
		Kodagu	1497	3266
		Mandya	1105	3134
		Bagalkot	1036	3047
		Hassan	848	1772
Ramanagara	789	2750		

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
		Chitradurga	789	1792
		Kolar	744	2710
		Uttara Kannada	719	2800
		Raichur	708	2646
		Gadag	698	1458
		Gulbarga	688	1478
		Udupi	607	2452
		Mysore	407	1701
		Bellary	310	958
		Chikmagalur	156	1657
14	Kerala	Thrissur	11044	54394
		Malappuram	6803	20419
		Palakkad	3725	11508
		Thiruvananthapuram	2541	12182
		Ernakulam	2504	5875
		Kozhikode	1536	6292
		Kottayam	1442	4233
		Kollam	1316	5088
		Alappuzha	967	6876
		Kasaragod	583	2767
		Wayanad	477	1469
		Kannur	408	901

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
	Madhya Pradesh	Satna	3828	9911
		Ratlam	3713	15369
		Shajapur	3011	4010
		Indore	2231	6018
		Harda	2107	8153
		Tikamgarh	1562	2187
		Rajgarh	1471	3621
		Gwalior	1445	6064
		Vidisha	1098	2870
		Singrauli	937	1212
		Rewa	917	1807
		East Nimar	898	2248
		Chhindwara	889	1555
		West Nimar	752	1187
		Bhopal	746	1378
		Panna	703	907
		Raisen	635	2459
		Ujjain	633	1076
		Neemuch	495	970
		Barwani	494	720
	Guna	441	575	
	Sagar	428	703	
	Dewas	423	545	
	Bhind	383	1635	

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
		Anuppur	381	955
		Balaghat	377	621
		Dhar	346	893
		Shahdol	343	442
		Hoshangabad	314	796
		Mandsaur	271	588
		Sidhi	265	376
		Jhabua	263	623
		Alirajpur	240	618
		Katni	140	216
		Jabalpur	83	199
		Betul	67	86
		Narsimhapur	16	21
15	Maharashtra	Mumbai (Suburban)	44818	196281
		Kolhapur	20261	63093
		Thane	16923	42238
		Mumbai	9495	65347
		Pune	4224	22831
		Solapur	3949	12365
		Osmanabad	3277	14473
		Washim	3235	11486
		Yavatmal	2367	9016
		Nashik	1950	4187
		Chandrapur	1843	5428

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
		Aurangabad	1826	5230
		Nagpur	1504	4657
		Ahmadnagar	1492	5598
		Amravati	1436	2549
		Sangli	1424	4900
		Raigarh	1216	4451
		Nanded	1134	2422
		Jalna	843	2572
		Bhandara	768	1783
		Ratnagiri	765	3086
		Jalgaon	724	2248
		Satara	477	1160
		Gondiya	417	1013
		Bid	401	712
		Parbhani	381	2053
		Dhule	302	1643
		Gadchiroli	296	1010
		Sindhudurg	40	181
16	Manipur	Imphal West	664	1789
		Thoubal	332	356
17	Odisha	Baleshwar	5548	9751
		Kalahandi	4508	10133

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
		Balangir	3032	5478
		Cuttack	1992	4225
		Puri	1561	7233
		Khordha	1426	2670
		Bhadrak	1088	3816
		Koraput	907	2987
		Ganjam	734	1732
		Nayagarh	557	955
		Sambalpur	537	920
		Sundargarh	525	2560
		Kendrapara	376	1287
		Jharsuguda	367	994
		Jagatsinghpur	336	1151
18	Puducherry	Pondicherry	979	1274
19	Punjab	Amritsar	21590	53449
		Ludhiana	3199	6658
		Firozpur	1585	2807
		Bathinda	1218	3281
		Fazilka	741	3668
		Gurdaspur	712	3864
		Tarn Taran	644	1198
		Sangrur	302	706
		Fatehgarh Sahib	271	455

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
20	Rajasthan	Jaipur	33651	190628
		Bikaner	7953	53860
		Sikar	5419	33204
		Jodhpur	4939	32578
		Udaipur	3874	20182
		Tonk	3520	12497
		Nagaur	2968	16141
		Bharatpur	2449	40653
		Churu	2390	12455
		Kota	2296	16376
		Karauli	1826	18814
		Pali	1788	7273
		Bhilwara	1374	5058
		Barmer	930	3779
		Sirohi	688	3558
		Baran	659	5524
		Sawai Madhopur	652	3426
		Jhunjhunun	560	2140
		Alwar	553	2246
		Dhaulpur	498	1767
Chittaurgarh	483	3430		
Ganganagar	402	2290		
Pratapgarh	345	2332		
Rajsamand	326	2083		

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
		Jalor	315	1120
		Ajmer	313	1628
		Hanumangarh	179	1908
21	Tamil Nadu	Coimbatore	12789	41721
		Salem	10500	52777
		Tiruchirappalli	9047	20897
		Madurai	6425	14025
		Cuddalore	3026	11717
		Tirunelveli	2982	7304
		Theni	2700	7802
		Krishnagiri	2522	13072
		Thoothukkudi	2461	7115
		Pudukkottai	2240	11240
		Kanniyakumari	2059	5573
		Karur	2008	6213
		Nagapattinam	1893	4814
		Thiruvallur	1629	2815
		Chennai	1460	8302
		Viluppuram	1432	3274
		Thanjavur	1371	4503
		Ramanathapuram	1219	4360
		Kancheepuram	1145	2276
		Thiruvarur	1092	3296
		Dharmapuri	935	1877

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
		Virudhunagar	908	3359
		Sivaganga	891	3781
		Vellore	747	1391
		Erode	735	3178
		Ariyalur	577	2017
		Tiruppur	304	657
		Perambalur	294	508
		Tiruvannamalai	198	342
22	Telangana	Hyderabad	11373	30216
		Mahbubnagar	9736	20453
		Rangareddi	8758	19710
		Nalgonda	4465	10685
		Warangal	3924	7062
		Karimnagar	3477	5242
		Nizamabad	3034	6033
		Khammam	761	1820
23	Tripura	West Tripura	4052	7624
		South Tripura	1969	3220
		North Tripura	1010	2213
		Dhalai	890	1778
24	Uttar Pradesh	Agra	9842	37415
		Azamgarh	6694	22865
		Moradabad	6660	38658
		Ghaziabad	5626	24311
		Sitapur	5622	21853

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
		Gorakhpur	5519	20145
		Maharajganj	5397	20377
		Ambedkar Nagar	5173	12137
		Bareilly	4151	14193
		Sonbhadra	3883	8518
		Kanpur Nagar	3836	30238
		Ballia	3470	22510
		Varanasi	3231	10374
		Saharanpur	2969	9982
		Ghazipur	2687	5406
		Pilibhit	2410	7476
		Aligarh	2217	5488
		Deoria	2027	4078
		Siddharthnagar	1997	6550
		Budaun	1971	3966
		Etawah	1810	6257
		Rae Bareli	1764	6916
		Bulandshahr	1456	3306
		Jaunpur	1397	5532
		Jhansi	1363	4239
		Gonda	1334	4177
		Allahabad	1290	4302
		Shahjahanpur	1043	3026
		Bijnor	1041	2209

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
		Shrawasti	1025	2063
		Lucknow	1000	3504
		Balrampur	984	2265
		Mau	960	4273
		Pratapgarh	950	3382
		Hathras	928	2015
		Kanpur Dehat	831	1816
		Hardoi	814	1939
		Kaushambi	752	2861
		Sultanpur	748	2731
		Fatehpur	743	3389
		Muzaffarnagar	698	1853
		Barabanki	632	2543
		Sant Kabir Nagar	588	1356
		Mathura	567	1654
		Chitrakoot	498	2074
		Rampur	419	844
		Auraiya	365	946
		Meerut	353	899
		Gautam Buddha Nagar	32	130
25	Uttarakhand	Hardwar	590	1230
		Udham Singh Nagar	546	1584
		Dehradun	457	947
		Pithoragarh	264	601

(Contd.)

Table A.IV: Number of Gems & Jewellery Units and Workers by District Clusters (Contd.)

Sl. No.	State	District	No. of Units	No. of Workers
26	West Bengal	Paschim Medinipur	36068	148438
		Haora	20280	112680
		Nadia	18968	64996
		South Twenty Four Parganas	11344	35319
		North Twenty Four Parganas	10787	42638
		Hugli	9826	40410
		Mednipur	6556	46392
		Kolkata	4482	27496
		Barddhaman	3404	17509
		Jalpaiguri	2818	13965
		Darjiling	2636	15384
		Koch Bihar	1571	6733
		Maldah	1354	8114
		Murshidabad	1321	7599
		Birbhum	659	3229
		Puruliya	130	1080
Dakshin Dinajpur	242	1063		



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