

Gems and Jewels: Passing Down Specialized Knowledge and Skills in Pakistan's Mineral-Rich Province of Balochistan

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Abstract: Gemology and jewelry training are at the core of what the Gems and Jewelry Training and Manufacturing Centre in Baluchistan's mineral rich province in the southwest of Pakistan does and stands for. Widespread poverty, illiteracy and resistance against foreign influence set a stark contrast to what is happening within the circuit of artisans whose surface this descriptive social analysis is an attempt to enter more deeply into this world hidden from the outside gaze. For this study, mixed research methods were used like participant observations, focused group discussions and household questionnaires for a tool for data collection. Contradicting, what one may expect the data revealed that the vast majority (95 percent) of this study participant were young and educated. In addition, 55 percent of their income comes from applying the acquired specialized knowledge and skills. On average, they saved Pakistani Rupees 266,311/- a year, which is a commendable amount considering the local circumstances. Nearly all of the respondents had received practice-oriented education from the Gems and Jewelry Training and Manufacturing Centre. Faceting is, besides knowing the qualities of precious and semi-precious stones, a core focus of the training program. The program's alumni had originally learnt of the Centre's existence through sign boards, the Internet, and print media. Their savings, interestingly, are spent on education, with their children going to private schools. About two thirds of the interviewed men and women confirmed that on completion of their training, they purchased raw materials/gems. They also bought mobile phones and motorbikes, which they considered to be part of the 'tool kit' required to be successful in their business. Importantly, about half of the respondents regretted not having been able to set up their own business, partly because they lacked the requisite business skills. Hence, based on this field-based survey, we a comprehensive study program is required at the college-level that combines gemology, gem cutting and faceting and fine and fashion jewelry, with business administration and marketing. Ideally, this would be carried out in collaboration with professional schools and colleges from China, The United Arab Emirates, and Thailand in order to give greater importance to this sector with its high development potential.

Keywords: Gemology, training; gem cutting and faceting, fine jewelry, socio- economic impact.

Introduction

In Pakistan, the gems and jewelry industries are providing traditional and modern products which are helping to improve the socio-economic situation of Pakistan. While the gems and jewelry industries were previously not so developed. This sector is nowadays advancing and emerging as a key part of the economy over time. A strategic working group (SWOG) has been working on developing the gems and jewelry industry in Pakistan for 5 years. In this time, it has already achieved a quantum leap in both exports and the provision of employment opportunities. The SWOG helps to alleviate poverty by providing for the needy. A small-scale industry is classed as one in which less than 100 workers are employed, whereas a medium industry is one that employs up to 500 workers and large-scale industries have more than 500 workers.

The Pakistan Gems and Jewellery Development Company (PGJDC) is working to develop the gems and jewelry sector through different trainings centers in Karachi, Lahore, Peshawar, Gilgit, Muzaffarabad and Quetta. The gems and jewelry value chain in

Pakistan captures both national and international markets, thereby creating job opportunities and reducing poverty. Balochistan has great potential in terms of natural resources, particularly gemstone minerals. Three types of precious stones are found in Balochistan: garnet, which is found in Chagai and Kharan; brookite, which is mostly found in Kharan; and quartz is found in Lasbela. The owners of the raw materials used these gems and jewelry in industries and do not have sufficient resources to invest in the design, manufacture and marketing of the products.

This is why Pakistan's precious and valuable gemstones are sold or exported to other countries for better design and manufacturing. There is a lack of professionalism and planning regarding the gems and jewelry sector, especially in rural areas, which may explain the reduced production in the country's gems and jewelry business as the resources and the miners are often situated in rural areas. To improve the quality issues and overcome the challenges, the industry needs to conduct market research, either independently or by engaging an agency. The major challenges faced by all SMEs are lack of skills, raw materials and advanced technology. This sector remains underdeveloped

mainly due to lack of economic scale the shortage of new technology, the shortage of electricity, irregular taxes, no proper transportation and no access to international and national markets for the owners of small-scale industries.

An economic survey of Pakistan shows that SMEs have developed the socio-economic condition by up to 90 percent and the sector accounts for 20 percent of the employment of the country's labor force, 25 percent of total exports, and more than 30 percent of the GDP of the national economy of Pakistan. People working in cottage industries, including the gems and jewelry industry, predominantly rely on the skills learnt from their forefathers and this may be improved if better training is available. Small-scale industries have a vast importance not only in Pakistan but all over the world.

Especially among countries like Malaysia, Japan and South Korea, the SMEs of these countries produce the best products as they receive the best training and learn the best skills. Hence, we can rationalize that there is a lack of research analyzing the impacts of skilled and well-trained people in the gems and minerals industries, particularly in Balochistan. The gems and jewelry industry provide quality and cultural products sometimes of a very high level. They are produced in the workers' houses as well as in some specific workplaces selected for the establishment of SMEs.

There has been a great change in the economy of the country as a result of such cottage industries. Trainees working in the gems and jewelry industry have improved their socio-economic status, and there is an inverse relationship between health expenditure and poverty levels. When the level of skills and quality of products in cottage industries improve, this leads to an increase in economic growth and an improvement in income distribution. In addition to the economic status of the individual trainees improving, the overall economy of the whole country also benefits.

Gemstones not only have a very strong socio-economic impact but also affect economic, cultural, historical and environmental milieu. The scope of study regarding gems and precious stones is vast. It can be set on a small level as well as on a high level. The gems and jewelry industry has the scope to produce unique products which also reflect the culture of a specific area or country. It helps poor people and provides opportunities for employment. The scientific findings of this study can help the stakeholders to understand the potential and the problems faced in the gemology sector in Quetta, Balochistan. The ideas regarding training and its impacts are vivid around the world. Through training, people have changed their socio-economic status. Both primary and secondary data were collected for this study.

Study Area

Balochistan is rich in various gem-quality minerals and stones, such as garnet, quartz, brookite and marble.

Quetta, the capital of Balochistan, was selected as the study area in order to observe the level of gem- and jewelry-related work being done there. A second reason for this selection was the easy approach it offered to data collection. The specific area under the focus of this research was Jinnah Road, where the Gems and Jewelry Training and Manufacturing Centre (GJTMC) is situated. Additionally, all four of Baluchistan's main ethnic groups as well as many Persians place great importance on this sector and undergo faceting and gemology training at this center.

Materials and Methods

The methods used for the collection of data were both primary and secondary. The sample included 100 trained men and women beneficiaries of training programs at the GJTMC who were selected through the simple random sampling technique. The list of beneficiaries was first collected from the center. Out of the original 1,400 beneficiaries, the 300 most deserving and poorest (men and women) were identified from among those who had completed the training on faceting and gemology. Randomly 100 beneficiaries were selected from this group.

The primary data were collected through different means: a reconnaissance survey was conducted in October 2018 to understand the method of delivering the training at the center as well as to know its objectives, which include productivity growth as well as import and export growth. Firstly, the questionnaire was pretested on 5 participants and then modifications were made. The first batch of the questionnaires was filled in at the center and the remaining questionnaires were filled in by the respondents at an exhibition in Serena Hotel Quetta. Additional information was collected through key informants such as the center's principal.

The principal of the center provided information on various aspects, including the training that was administered and how opportunities for jobs were provided. Observation is one of the most important parts of this research. In this way, information about the on-ground realities can be gathered, such as teachers' training activities, the behavior of the trainees in relation to the teachers, and the facilities provided by the head of the center. The secondary data sources included published books, journals articles, reports and websites. The collected data were analyzed through the Statistical Package for Social Sciences (SPSS). To acquire the results, descriptive statistics were used, namely, frequency distribution and percentages.

Results and Discussion

The findings of the analysis reflected that 4% of the respondents had only completed primary education; 38% had passed matriculation; and 60.8% had studied above matriculation level. Most of the respondents had completed a BA or FA degree, while a few had

completed a masters. Also, 4.9% were illiterate. In terms of gender, 83% were male and 17% were female. Regarding the ethnicity of the respondents, 17% were Baloch, 57% were Pashtun, 4% were Panjabi and 22% were from other cultures.

For the majority of the respondents (59%), gems and jewelry were their primary source of income, while government jobs provided the main income for 18%, followed by 14% from business, 6% from agriculture and 3% from other sources. It was also found that 47% of the respondents had less than one year's experience in the industry against 53% who had more than one year's experience (Table 1).

Table 1 Respondent profiles.

Description	frequency	Percent
Education of respondents		
Primary	4	4.0
Matriculation	30	30.0
Above	61	61.0
Illiterate	5	5.0
Total	100	100.0
Ethnic groups		
Baloch	17	17.0
Pashtun	57	57.0
Panjabi	4	4.0
Another Persian and Kashmiri	22	22.0
Total	100	100.0
Major livelihood		
Gems and jewelry	59	59.0
Business	15	15.0
Government job	19	19.0
Agriculture	7	7.0
Total	100	100.0
Family involved in business		
Yes	28	28.0
No	72	72.0
Total	100	100.0
Experience year		
Less than one year	47	47.0
More than one year	53	53.0
Total	100	100.0

Field survey, 2018

The results of this study's survey showed that 95% of the respondents acquired their industry knowledge through training from the GJTMC in Quetta, while the remaining 5% learned from family and peers. The results of the analysis showed that almost half of the respondents (44%) came to know about the center from friends and relatives, while 36% heard about it from electronic and print media, 15% from social media and 5% from passing the center. At the center, 44% of the respondents learned faceting skills, while 42% learned gemology, and 14% learned both faceting and gemology. In terms of the study periods, 12% of the respondents completed their training in three months and the other 88% completed their training in six months (Table 2).

Table 2 Adaptation sources of faceting and gemology.

Description	Frequency	Percent
Source of Industry Skills and Knowledge		
Gems and Jewellery Centre	95	95.0
Initially learnt from family and peers	5	5.0
Total	100	100.0
Type of training completed in center		
Faceting	44	44.0
Gemology	42	42.0
Both faceting and gemology	14	14.0
Total	100	100.0
Duration of training		
Three months	12	12.0
Six months	88	88.0
Total	100	100.0

Socio-economic impacts of the faceting and gemology training

The results show that 60% of the respondents had their own businesses while the remaining 40% of respondents could not initiate their own business due to a lack of capital. About 46% of the respondents were satisfied with their earnings but the other 54% were not satisfied with their earnings, as they were unable to meet their expenditure requirements (Table 3).

Table 3. Socioeconomic status of the respondents.

Description	Frequency	Percentage
Personal business		
Yes	60	60.0
No	40	40.0
Total	100	100.0
Sufficient earnings		
Yes	46	46.0
No	54	54.0
Total	100	100.0

Field survey, 2018

Socio-economic status of respondents before and after receiving training

Before receiving the training, 81% of the respondents sent their children to government schools and colleges compared to 19% who sent their children to private educational institutions. However, when their socioeconomic status improved after the training, 46% of the respondents sent their children to private schools, although 56% of the respondents still sent their children to government schools. Before they received training, 72% of the respondents did not have many assets, but after the training when their socioeconomic status improved, then 73% of them owned assets, which was the result of a better income and savings. Before training, 42% of the respondents

said that their nutrition came from milk, meat, yoghurt, and fruits, but the other 58% did not receive sufficient nutrition as they could not afford it. After the training, 91% of the respondents had access to good nutrition. After completing the training, 67% of the respondents had acquired the skills and learned all the tactics of business so they could start their own business, while only 33% of the respondents still did not have their own business compared to 64% without their own business before the training.

Table 4 Socio-economic impacts of the faceting and gemology training availed.

Variables	Pearson Correlation	Significance
X1 Marital status	.186	.080
X2 Major livelihood	.439**	.000
X3 Household income	.111	.299
X4 Business link	.318**	.002
X5 Personal business	.381**	.000
X6 Income before	.174	.102
X7 Nutrition before	-.292**	.005

Field survey, 2018

Table 2 Regression coefficients of variables of socio-economic impacts of the faceting and gemology training

Variables	Unstandardized Coefficients	Standardized Coefficients		T	Sig.
	B	Std. Error	Beta		
(Constant)	-510422.925	323643.811		-1.577	.119
X ₁ Age	12013.881	5005.745	.309	2.400	.019
X ₂ Marital status	95778.398	81717.833	.155	1.172	.245
X ₃ Education	-34116.288	49057.644	-.069	-.695	.489
X ₄ Experience year	49311.813	75405.996	.080	.654	.515
X ₅ Major_livelihood	90624.561	40489.169	.324	2.238	.028
X ₆ Income after	.107	.079	.154	1.358	.178
X ₇ Savings after	-.110	.149	-.087	-.741	.461
X ₈ Personal business	244146.933	119284.349	.379	2.047	.044
X ₉ Business link	-74738.399	120321.271	-.117	-.621	.536

Field survey, 2018

The Gems and Jewellery Training and Manufacturing Centre (GJTMC) in Quetta plays a vital role in skill development in Balochistan. Gems and jewelry represent a major livelihood of 55% of the respondents in this study. Most of the trainees who attend this center come from all over Balochistan while some of them even come from different areas of Pakistan. Most of the respondents completed their faceting and gemology training from the GJTMC on Jinnah Road in Quetta. The trainees included both males and females and the majority were highly educated, young and energetic. Many of the respondents had around one or two years of experience in the industry. Faceting trainees accounted for 44% of all of the center's students, while gemology trainees accounted for 42%, with 14% having completed training in both subjects. After learning the skills of faceting and gemology, the respondents had improved their socio-economic status,

such as in relation to education, health-care, nourishment, income, linkages, business, and monthly and annual income. The majority of respondents had started their own gems and jewelry business. In addition, different people from all over Balochistan who were interested in gems and jewelry were coming to have their precious stones identified. In the gems and jewelry sector, trainees who had also completed 14 years of education still faced many challenges such as appropriate job placement, a lack of transportation, a shortage of suitable accommodation in Quetta city, difficulty in acquiring scholarships, and a lack of a market for gems in Balochistan. Also, 45% of the respondents could not start their own business because they did not have enough money to do so.

Conclusion

The key findings of the study show that except for a tiny minority (5%), almost all of the respondents were young and educated. In addition, a similar majority learnt their faceting and gemology skills from the GJTMC. In addition, a significant majority of respondents came to know about the center through the sign-boards of the organization and electronic and print media. More than half (55%) of the respondents adopted the faceting and gemology skills learnt to establish a career in the gems and jewelry industry and this represented their major livelihood. They had on average two years' experience in the sector. The findings show that, on average, each respondent saved 266,311/- Pakistani rupees per year. This has brought about major positive changes to the socio-economic conditions of the respondents in terms of their family lives. It has enabled them to visit private hospitals for effective treatment enroll their family members and children in private schools; and improve their nutritional intake significantly. Moreover, 73% of the graduates stated that after completing training, they had purchased raw materials/gems, mobile phones, bikes and other required tools to improve their skills and business. Such initiatives have to some extent, helped in achieving the sustainable development goals at the gross root level.

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