

HANDICRAFTS MARKET OF RAJASTHAN

Rukaiya*

ABSTRACT

Previously the term 'handicrafts' was confined to taking into account only those products that were being manufactured mainly by hand. Handicrafts market used to be a small one, confining to local as well as very small, and underdeveloped geographical areas. But, with the advent of technology and development machines Handicrafts market grew bigger and gained global recognition. In countries such as India, handicraft was apparent to rise. Major contributors to the victory being, availability of resources and in expensive labour. Rajasthan being the largest and richest in the culture and heritage, state offers more variety than its counterparts. The governments at both levels have been contributing to its development too.

Keywords: *Handicrafts, Machines, Geographical Areas, Expensive Labour, Natural Stone.*

Introduction

The economical growth based on export of natural stone of India and Rajasthan in particular, have been discussed in detail. Rajasthan's marble has been thoroughly characterized and its machinability has been analyzed. The problems of poverty and others that are faced by artisans of Rajasthan have specially been addressed and ways to eradicate the same have been proposed. Portrayal of Jaisalmer's Limestone and Jodhpur's Sandstone as global resource providers has been exhaustively discussed.

Handicrafts Market in India

Handicraft is a concept where decorative items used for domestic purposes are made by hand. The Nodal agency of Government of India for handicrafts is Office of Development Commissioner for activities and artisan crafts. The cottage sector and small scale sector help to enhance lives of artisans by providing them employment. The weaker sections in society as well as women are among most benefited. Another benefit of the same other than employment it is less capital investment and high value addition. It provides huge potential for export and earning of the country through foreign exchanges. The industry is high labour intensive. It works in decentralized way, since it is spread in urban and rural areas. India is among prominent suppliers of handicrafts in the world. Due to the existence of huge craftsmanship and production base, India has ample opportunities than it is actually claiming. In India there is so much scope for exploration and search of hidden crafts. In the present scenario, the handicrafts exported to different countries make part of the products in lifestyle category in the international market. Skill, craftsmanship and technique in India have been seen existing inherently (Handicrafts, 2022).

Types of Handicrafts

Out of Bamboo articles, items of daily use are made, like containers, boxes, baskets, trays, etc. Pottery has been existing in India since the time of Indus Valley Civilization. Artist associated with this are

* Research Scholar, Department of Commerce, Tanta University, Sri Ganganar, Rajasthan, India.

called 'Kumbhars'. Jute is eco-friendly and inexpensive golden thread of India, which is the center for Jute handicrafts in the world. Bone and Horns of dead animals can too be used for decorating various items. Metal is known to be providing durability and strength so various items are made of it. Shells are used to decorate the items commonly used in homes, like mirror, furniture, etc. Jewellery and crockery are also made out of it. India since ages has been having some fascination with stones. Wood pieces are shaped to make homes, furniture, temples, chariots, etc. They have been hallmark of India's culture. Leather and clay are also well known handicraft segments. Stones have been representative of royalty and this is reflected through the amazing artwork or engravings and carvings at the palaces and forts. India has been accommodating wooden handicrafts since some 5000 years (Bora, 2020).

Handicraft's Market in Rajasthan

Granite Articles

Word 'Granite' has been taken from Latin word 'Granum' means 'grain'. Granite is generally used type igneous rock that is felsic intrusive. It is phaneritic textured and is granular. It is available in various colors like grey, pink and white. It's constitution includes 65% of alkali felspar and 20% quartz by volume. The melting point range of granite is 1215 to 1250 °C. Its reduction takes place by water at 650°C pressure. Secondary permeability of Granite is strong but it doesn't go well with its primary permeability.

Marble Handicrafts

Jaipur is known for arts and crafts. Decorative item are produced by skilled craftsmen, such as handicrafts made by by hand carving or by simple tools on Makrana Marbles with Kundan and Meenakari work. These are used for decorating, homes and offices, as these stones give them traditional and unique look, which makes them stand out. The commonly produced items with marble include matkas, flower vases, surahis, etc. Apart from this, marble painting is very popular handicrafts in this category, where one finds paintings of God, animals, birds, lady, instruments, village and many more. These items enhance the interiors of buildings. Other utility items of marble are, tumblers, Chaukis, lamps, trays, key and napkin holders, jewellery and kumkum boxes, pen and mobile holders, plates, wall clocks, etc.

Stone Carving

Pieces of natural stone are given shapes by fine cutting of them with tools. It dates back to paleolithic era. This process is used in sculpture making by scratching and or hitting done by a harder stone on a softer stone, such as Tufa, pumice, soapstone and chalk, etc. Rubbing by sandpaper is done to remove unwanted area. Previously bronze was used to make tools used for the purpose until steel was made. Hammer and chisel have been the main tools. Eastern part of Rajasthan includes, bordering districts with Haryana and Uttar Pradesh states, such as Baran, Banswara, Ajmer, Alwar, etc. Stone industry makes the backbone of Rajasthan's economy, where granite turns out to be the major contributor having twenty percent share.

Stone Craft

The traditional use of hard rocks like, quartzite, marbles, granites, slates and other metamorphic rocks has been mainly due to, ready availability of the same in high quality and quantity as well. In those days the people didn't know using bricks. So this may have contributed to all the more usage of these stones, as is evident through the beautiful temples, forts and palaces. The Jali work on the doors and windows of ancient buildings in Rajasthan is prominent example of stone handicraft all over the world.

Development of Handicraft Market in Rajasthan

Even the waste of stones is useful, and it can be made out as in case of granite industry in Rajasthan. The procedure produces, large amount of grit, slurry and cutting waste, which puts Industrialists and environmentalists to find best ways to dispose such waste. Cutting waste of granite stone increases the viscosity of mix. This property of granite can be used wherever required. The compressive strength of concrete enhances with addition of granite. Granite is also known to add to flexural strength of concrete. Water penetrates less upon addition of granite waste and this characteristic can be best utilized for making pavement, paving blocks and even tiles. The process of processing and cutting of granite generates more the waste than the usable material itself, amounting to around 65%. Some commonly seen uses of this waste are in land filling and in construction industry. According to an investigation, economic gain has been established while using granite fines in place of sand in making of concrete (Singh, et., al., 2015) .

Since 3200, the most used industry material has been stone and marble. These two have contributed a lot in the architecture of the country; this is mostly evident in the palaces, forts, temples and other prominent architectural creations. Rajasthan has given these wonderful stones for the construction of Supreme Court, parliamentary house and even the presidential house. The fame of these stones reached to various countries of the world and demand of France, Germany and USA was fulfilled as well. The extraction of these valuable stones leads to deposition of tons of waste material. The mismanagement of waste so generated led to the environmental hazards in the state itself and the areas nearby. The situation became so intense that the Supreme Court had to intervene and completely ban the mining of marble in the year 2002, upon demand of some Non Government Organizations being worried of the negative environmental repercussions. Despite the intensity the ban couldn't last much longer taking into account the fall of employment the waste management of these wondrous stones used to provide to the underprivileged people who lived around. Other important reasons of removing the ban were, the government also feared that the development activities may stop or decline to huge extent. And they had to bring changes to the policies and permissions. This resulted to quick restoration of the functioning of the mining processes. Due to media being active in this Government had to assign the task of exploring best method to lessen the hazardousness of the waste disposal to a prominent institute in Rajasthan. The Government had also set up a research and development center and testing laboratories for these stones (Prajwal, et. al., 2016).

Marble from Rajanagar and Kankroli in Rajasthan has sustained many natural calamities, being part of ancient and prominent historical monuments such as, Nau Chauki which is carved pavilions of lake Rajsamand, Moti Mahal, Jagdish Temple, etc. Rajanagar marble gained its highest till now popularity in late twentieth century and has been exporting to countries like Japan (Garg, et., al., 2022).

Sustainable Processing Methods of Rajasthan's Marble Stone

For sustainable processing of marble stones of Rajasthan, it is necessary to study the morphology of different marble stones using petrographic analysis. Then to characterize them physically, mechanically as well as thermally in order to find out the various properties which influence the wear of the tool finally optimize the machining parameters such as feed, speed and depth of cut in order to find out the best possible combination to increase the efficiency of the machining as well as the tool life (Gautam, 2017).

An Index of sustainability or Environment Sustainability Index (ESI) has been proposed. Further, a case study was conducted in several industries to identify different cutters that are currently used in the Rajasthan region. Various facts and statistics like number of working hours and life of the tools were also estimated after the case study. The collected inserts of the tools from industries were characterized to find the composition. An energy audit was also conducted in all these industries to find the energy consumption, and waste disposal methods that these industries currently carry out. The powder extracted from the machining process is characterized rheologically with different coolants in order to find the behavior of viscosity with respect to temperature and time. A low cost 3-axis strain gauge milling tool dynamometer setup was designed and fabricated to record the forces generated while performing milling operations on marble samples, a multiphase digital energy meter is attached to the Bridge port milling machine to find the energy consumption. The machining parameters like cutting force, speed, feed, amount of coolant supplied and depth of cut are optimized to increase the energy efficiency.

Diamond tool wear is affected by the mineral composition of the stones to be cut, different segment wear states that can be found, depending on the type of segments as well as the machining parameters. This wear was calculated radically by measuring the heights of all individual segments of the saw blade. A regression and correlation analysis was established between marble properties and specific wear rate. Significance of the relations was checked statistically and validity of the relations was also evaluated by using some statistical tests. The R-squared value which is also termed as the coefficient of determination, it's the segment of variance of dependent parameter which could be predicted by any independent parameter. Rheological investigations of several mixtures were prepared using marble powder and different coolants with different ratios were mixed and tested using Bingham flow model to plot mean values of yield stresses on different samples plotted as a function of time showed highest value of yield stress for marble/water ratio of 0.5. xi

Specific energy consumption while performing milling operations on marble was calculated. It is a key parameter to be reviewed in the natural stone industry which directly influences the scrutiny and fabrication scheduling. To know the effect of the parameters experiments were performed using Taguchi L16 orthogonal array to find the most significant parameters which help in minimizing the specific cutting

energy Bridgeport Interact 1 MK-II 3-axis CNC milling machine having a maximum RPM of 4000. Diamond coated end mill cutters of Diameter 10 and 12 mm were used for the experimentation. A three phase digital energy meter is used to constantly record the power consumption. Artificial neural networks are finally used to predict the specific energy (SE) and found that the results are in close agreement with the actual experiments (Pathri, 2018).

Revival of Natural Stone Export Economy of India

India has been one of the leading stone exporters in the world of various kinds of stones ranging from granite, marble, sandstone and limestone. These stones are used in various construction works and monuments across the world. With the world seeing tremendous economic and population growth across the past many decades, the demand for these stones has been on the rise but with many countries coming in competition specially China and Italy over the past decades, the exports of these stones from India are on the decline and have become stagnant. Major decline came post recession in 2007-08 due to creasing housing prices and construction activities all over the world. One of the major reasons why other countries are succeeding in exports is due to liberal foreign policies of these countries. China, for example, exports stones from India and re-exports them after value addition in other markets due to heavy incentives to these industries by the Chinese government. Whereas, in India import of granite is not allowed. If the government is progressive then it would be very easy to take on China.

To boost this industry in India, there are multiple measures that can be taken. First, the government can incentivize production and exports and introduce simpler taxation norms. From a market viability point of view, this would make a very strong case for many new and existing entrepreneurs to enter. Also the industry should standardize itself and bring more global expert knowledge into play both in terms of production practices and customer taste. Networking and participation through global events will further help in bringing more business. India should also work on pricing and start pricing their products at a better price. Currently we are under pricing unique high quality materials and China has taken a huge advantage in better pricing their products. Though Indian exporters provide comprehensive solutions to clients but still need to work hard in global quality standards. For this reason, they have to strive hard to bring that expertise through modern tools and techniques.

Though, it is not confirmed if global stone exports will continue to grow as per projections but the markets offer huge growth potential. Therefore, these export companies need to raise awareness and promote more stone qualities to stand out to compete in global markets. With strong Euro and rising freight costs, the task is further challenging but with low cost customization of materials and right pricing strategies this can be achieved. The Department of Commerce has decided to strategically hold exhibition and give India the focus which is very urgent which will help in maintaining the distinct and unique image of Indian natural stones and to reinforce the dominant position of India as the main supplier of highest quality of granite and other natural stones in the world market (Agrawal, 2013).

State of Economy of Export of Sandstone from India

India for decades has been the major exporter of natural stones in global markets which is the second largest foreign exchange earner besides iron ore. It is their unique properties specially of Indian stones which make them very attractive among natural stone lovers across the world. Indian exporters have done a good job in tapping the market. The UK is one of the largest importers of Indian natural stone. Global imports of these stones of many countries are on rise but there have been some ups and downs though in demand from few countries. Apart from aesthetic beauty, there are other specific qualities of these stones which make them more useful like their comprehensive strength. The Indian stone industry has greatly evolved and produces a vast variety of finished products. This phenomenon has greatly contributed to exports and increase in revenue. As per predicted future trend, exports of sandstone will increase in almost all countries along with some new countries so it becomes necessary that all stakeholders in this industry including government must gear up to explore more deposits and quality of finished product must also be improved. Also the government should organize various initiatives, trade fairs to revive this industry with new age technology and generate awareness of global modern business practices and price trends (Charan, et. al., 2018).

River sand is known to be used since ages for construction work. But now due to its scarcity, it has to be manufactured artificially. Sand from crushed stone can be used to serve the purpose. The waste of the stone hence becomes useful. This sand so formed is also known to keep ecological balance and has more strength (Singh, 2021).

Empowerment of Artisans to Trade Handicrafts in Urban Haats

A large population in India depends upon craftworks for their livelihood and it's the second largest sector of employment in India. Rajasthan is the major hub of these artisans and a lot of artisans there depend on handicrafts items for their livelihood. There are many problems due to which this sector is affected. Major trend is that the demand for hand-crafted products has globally declined as more and more consumers are becoming inclined towards western goods and style. These goods can be produced with low cost, and in varieties due to scale thus giving customers more choice whereas artisans on the other hand are not able to meet competition and bring new products and designs due to lack of access to capital and customer preferences. Also if deploy technology to produce items at scale the handcrafted products will lose their originality for which they are known for.

Artisans also face challenges in reaching out to urban customers due to state tariffs, transportation costs, lack of quality raw materials, marketing and merchandising skills, production and management skills. Though these artisans are well versed in this art and produce different hand crafted products but are unable to meet urban demands due to above challenges which prevents them from making good revenue. The planning commission of India has a major role to play in reviving the state of this industry and lives of craftsmen. It acknowledges that this sector is currently highly unorganized and needs a lot of structure in place in terms of vocational training for upgrading of their skills, access to high quality raw materials and government support in terms of subsidies in tariffs, transport, purchasing of raw materials, power and financial support. Also arts should be included in mainstream education which will further help in generating awareness and further reviving this industry (Garg and Walia, 2018).

Proposal of Global Heritage Stone Resource (GHSR) Title for Jaisalmer Golden Limestone

Jaisalmer limestone commonly known as Yellow stone is well exposed around jaisalmer city. It belongs to the jaisalmer formation around the Jurassic age. It is hard and compact with low porosity. Even Jaisalmer is often called The Golden City due to wide use of this stone in the buildings and monuments in the city. The famous Jaisalmer fort built around the twelfth century which is a Unesco world heritage site has heavily used this stone in its formation. This stone is sought after by builders for decades due to it's pleasing color, aesthetics and texture. It's primary use is as dimension stone and extensively in making wall clads, floor tiles, counter tops, garden furniture, sculptures, tombstone, etc.

The yellow stone is exported to the Middle East, Morocco, Taiwan, theUSA, Europe, the UK, Australia, New Zealand and Africa. The wide use of yellow stone in many architectural heritage built across India in the past has prompted some researchers to nominate the golden limestone of Jaisalmer for designation of "Global Heritage Stone Resource." There are around 22 stones around the world which have achieved this designation. This will help in making it more popular and promoting the further use and export of this stone around the world (Kaur, et. al., 2020).

Alleviating poverty in Western Rajasthan through Revival of Handicrafts Economy

Many craft artisans in Rajasthan having unique skills in hand crafting like embroidery, handloom weaving, appliqué /cutwork earn their livelihood using these skills. These craft artisans live in poor conditions and in interiors having limited access to electricity and other amenities. They do not get a fair share of their time devoted to their work; many have migrated from their work to other jobs due to low wages. To revive the current state of this industry and uplift the artisans, the government should provide technical support and knowledge through workshops and other programs to these artisans. Almost all artisans work for local agents or other market players and do not get fair share of their work. They purchase raw materials not directly from the market. They do not have any idea of production cost and pricing structure and hence fall prey to agents. They are not able to met their household expenditures and have to borrow money from lenders hence falling further prey to vicious circle of poverty.

Major problems faced by these artisans are global demand due to ever changing consumer needs and aspirations, migration of traditional work, lack of technology/ infrastructure, inability to access information and restricted mobility. Sahaj crafts mainly led by women is a social entrepreneurship initiative to help women and poverty alleviation of micro enterprises. It collaborated with NGOs to help in bridging the gap between primary producers and mainstream market adopting an energy efficient and sustainable approach. With various such local and government initiatives, it would become possible to definitely alleviate poverty and at the same time keeping cultural heritage intact (Mehra, et. al., 2019).

Proposal of Global Heritage Stone Resource (GHSR) Title for Jodhpur Sandstone

The Ediacaran age, sandstone of Jodhpur of the supergroup of Marwar, has been used extensively in many architectural heritage regional buildings in north-western India. Sandstone from

several horizons of the supergroup of Marwar is known; however, Jodhpur Group repository is the main with its middle horizon sandstone being the most preferred dimension stone. Jodhpur Sandstone is also classified as 'quartz arenite'. Relative abundance of iron-oxide content gives different color variations. The Sandstone of Jodhpur has been used from ancient times in various masonry structures, forts, monuments, and palaces, etc. The region has a > 1500-year old history of quarrying of sandstone which is evident from architectural heritage. Several buildings of the region of modern day, such as government buildings, educational institutes, hospitals, up-market residential complexes, luxury hotels, etc. exemplify stone processing, a flourishing quarrying and dimension/masonry stone industry in Marwar region. Jodhpur City and in the Nagaur-Khatu region is filled with most of Jodhpur sandstone quarries. The Karachi Chamber of Commerce, Karachi Municipal Corporation Building and Industry Building (Pakistan) are some examples of international use of Jodhpur Sandstone. Hence as elaborated, Jodhpur Sandstone sufficiently fulfills the requisite criteria and norms defined by the Heritage Stone Sub-commission (HSS) for designation as a Global Heritage Stone Resource (GHSR). Hence 'Jodhpur Sandstone should be proposed as a suitable candidate for Global Heritage Stone Resource status (Kaur, et. al., 2020).

Conclusion

India has manifested exponential growth curve for the exports where Rajasthan stands firm as a prominent contributor. Rajasthan is house to various forms of stones that serve different purposes. The architectural and monumental beauty and richness of Rajasthan is due to the availability and usage of the various forms of stones. Despite the existence of various conventional methods, some sustainable methods have been devised for the wholesome benefit in the processing of marble. Promotion by governments in the enlargement of handicrafts industry and market is sure to be a savior for the underprivileged population in Rajasthan. Also, the idea of 'urban hats' should be seen as appropriate approach and platform for the artisans of Rajasthan for their fastest growth. Jodhpur and Jaisalmer are all set to become world providers of the astounding stones that each of them has to offer.

Although, many attempts have been made by various local, national and self inspired bodies and even the governments have taken the concern seriously; to lessen the pollution that the stone handicraft industry causes yet there seems to be a long way to go. Similarly, the challenges faced by handcrafters in carrying on the extraction, construction, and transaction of the handicrafts are to be more closely addressed.

References

Journals

1. Agrawal, K., 2013. A Study on Trend of Export of Natural Stones from India to Various Countries. *International Journal of Advancements in Research & Technology*, 2(7), pp.360-378.
2. Charan, S.S., Randhawa, D. and Sharma, R., 2018. Export of Sandstone from India to Global Countries :-An Empirical Study of Economic Aspect. *PalArch's Journal of Archaeology of Egypt/ Egyptology*, 17(9), pp.1006 to 1022.
3. Garg, P. and Walia, A., 2018. Impediments faced by artisans of Rajasthan in trading handicrafts in urban haats. *International Journal of Applied Home Science*, 5(2), pp.327-333.
4. Garg, S., Agarwal, P., Ranawat, P.S., Kaur, P., Singh, A., Saini, J., Pandit, M.K., Acharya, K. and Kaur, G., 2022. Rajnagar Marble: a Prominent Heritage Stone from Rajasthan, NW India. *Geoheritage*, 14(1), pp.1-20.
5. Gautam, P.K., Kalla, P., Jethoo, A.S. and Harshwardhan, S.C., 2017. Dimensional stone waste characterization in Rajasthan and suggesting their possible remedies. *International Journal on Emerging Technologies*, 8(1), pp.40-42.
6. Kaur, G., Ahuja, A., Thakur, S.N., Pandit, M., Duraiswami, R., Singh, A., Kaur, P., Saini, J., Goswami, R.G., Prakash, J. and Acharya, K., 2020. Jodhpur Sandstone: an architectonic heritage stone from India. *Geoheritage*, 12(1), pp.1-17.
7. Kaur, G., Kaur, P., Ahuja, A., Singh, A., Saini, J., Agarwal, P., Bhargava, O.N., Pandit, M., Goswami, R.G., Acharya, K. and Garg, S., 2020. Jaisalmer golden limestone: a heritage stone resource from the desert of Western India. *Geoheritage*, 12(3), pp.1-16.
8. Mehra, A., Mathur, N. and Tripathi, V., 2019. Sahaj crafts: the challenge of alleviating poverty in Western Rajasthan. *Emerald Emerging Markets Case Studies*.
9. Pathri, B.P., 2018. *Characterization And Machinability Study Of Rajasthan's Marble Stone For Sustainable Processing..* (Doctoral dissertation, MNIT, Jaipur).

10. Prajwal, B., Chauhan, P., Mali, H.S. and Nagar, R., 2016, December. Sustainability Study and Energy Audit of Marble Industry of Rajasthan. In *Proceedings of the 6th International & 27th All India Manufacturing Technology, Design and Research Conference, Pune, India* (pp. 594-599).
11. Singh, S., 2021. Natural Sand Vs. Crushed Stone Sand: A Comparative Analysis. *SGVU J CLIM CHANGE WATER*, 8, pp.73-80.
12. Singh, S., Nagar, R., Agrawal, V., Rana, A. and Tiwari, A., 2015. Utilization of granite cutting waste in concrete as partial replacement of sand. In *Conference paper: UKIERI Concrete Congress–Concrete Research Driving Profit and Sustainability, Jalandhar, India*.

Websites

13. Bora, K., 2020. *Handicrafts in India - Different types of handicrafts in India*. [online] Yeh Hai India. Available at: <<https://yehaindia.com/handicrafts-in-india-you-sure-would-want-to-own-one-of-those-pieces/>> [Accessed 24 February 2022].
14. Handicrafts.nic.in. 2022. *About Us | Official website of Development Commissioner (Handicrafts), Ministry of Textiles, Government of India*. [online] Available at: <<http://www.handicrafts.nic.in/Page.aspx?MID=BOI15FUynjpl5RZJJ8nW1g==>> [Accessed 24 February 2022].
15. 2022. [online] Available at: <<https://industries.rajasthan.gov.in/content/industries/handmadeinrajasthandepartment/artandcraft/stonecarving/marblehandicrafts.html>> [Accessed 24 February 2022].

