



Knots of concern: A case study on the carpet city of India and its challenges

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Abstract

This study delves into the intricate tapestry of India's handwoven carpet industry, with a specific focus on Bhadohi, popularly known as the Carpet City of India. Renowned globally for its rich heritage of carpet weaving and craftsmanship, Bhadohi serves as a central hub for India's export-driven carpet economy. However, beneath the colourful patterns and skilled artistry lies a complex web of challenges that threaten the sustainability of this traditional sector. It explores multiple dimensions and current state of industry including economic pressures from global competition, declining artisan participation due to generational shifts, inadequate technological integration, and persistent issues related to labour rights and fair wages. Environmental concerns, such as the use of chemical dyes and non-eco-friendly production practices, also add to the list of pressing issues. It further examines the role of government initiatives, NGOs, and private stakeholders in attempting to revive and modernize the sector while preserving its cultural legacy. Through qualitative interviews, field observations, and data analysis, the research provides insights into the struggles and resilience of the carpet-weaving community, ultimately emphasizing the need for sustainable development models that protect both the craft and the craftsmen. The "knots of concern" metaphorically represent the tangled issues facing the industry problems that, if addressed thoughtfully, can pave the way for a stronger, fairer, and more vibrant future for Bhadohi's carpet sector.

This study also concludes that preserving the identity and sustainability of carpet industry of Bhadohi requires a synergistic effort between government bodies, private stakeholders, non-governmental organizations, and the artisan communities themselves. Through strategic intervention, the cultural heritage of India's carpet weaving industry can be safeguarded while ensuring equitable growth for its stakeholders.

Keywords: Artisans, handwoven, craftsmanship, labor-rights, carpets

Introduction

The carpet business in Bhadohi has its origins in the Mughal Empire and has grown over the centuries to become a major centre for handwoven rugs worldwide. In 2010, Bhadohi carpets were granted a Geographical Indication (GI) marking for its exquisite knot-by-knot artistry, solidifying their distinct brand in the global marketplace^[1]. This art form has its roots in the Mughal era, when carpet weaving in the Persian style was brought to India and adapted for these areas. The distinctiveness and allure of Indian carpets in global markets were enhanced by the local artists' gradual improvement of their methods, which included the use of natural colors and traditional designs. In addition to promoting economic growth, the Bhadohi carpet business was a sociocultural pillar that employed whole families and woven communities. In the area, where craftsmanship was handed down through the generations as both art and a means of subsistence, it became a source of pride and identity. Cities like Bhadohi and Mirzapur are the hubs of India's carpet industry, which is well-known throughout the world for its exquisite craftsmanship and artistic legacy. These areas, which employ thousands of artisans, many of whom come from minorities, have been the backbone of India's exports of handwoven carpets. The weavers suffer ongoing socioeconomic issues that are mostly ignored, despite their expertise and commitment to this high-value industry^[2, 3].

Generations of carpet weavers have been trapped in cycles of poverty and marginalization due to low pay, irregular work, a lack of formal education, and limited access to

social security and healthcare. Furthermore, weavers are frequently left voiceless and exposed to exploitation due to the traditional structure of the weaving business, which is primarily unregulated and controlled by intermediaries. Their social life is also significantly impacted since economic stress and excessive work hours lead to strained family relationships, low community involvement, and intergenerational stagnation. The purpose of this case study is to examine the extent of these social life difficulties faced by weavers in India's Carpet City, illuminating the human complexities of the craft and encouraging stakeholders to resolve them via systemic change, empowerment, and policy^[4].

Role of carpet industry of bhadohi in economic growth of India

In terms of employment, the Bhadohi carpet industry supports over 2.2 million artisans, many of whom come from rural and economically backward communities. It provides opportunities for both skilled and semi-skilled workers, including weavers, dyers, designers, and traders, thus playing a vital role in reducing rural unemployment and promoting inclusive growth. The industry also stimulates allied sectors such as wool, dye, and transport, creating a broader economic impact^[5].

Furthermore, by creating the Carpet Export Promotion Council (CEPC) and offering a number of programs under the MSME sector to encourage skill development, update machinery, and enhance market access, the government has acknowledged the significance of this traditional business.

The goal of infrastructure initiatives like the Bhadohi Mega Carpet Cluster Scheme is to guarantee global competitiveness and improve production ^[6].

Overall, the Bhadohi carpet industry is not just a hub of artistic heritage but also a cornerstone of regional and national economic development, reflecting how traditional industries can drive sustainable growth in modern India.

Year-wise carpet export data from Bhadohi

The following table presents the year-wise export figures of Bhadohi's carpet industry, reflecting its economic trajectory:

Fiscal Year	Bhadohi Carpet Exports (₹ Crores)
2006-07	2,829.64
2010-11	525.87
2014-15	~11,000
2020-21	13,810
2021-22	16,640
2022-23	14,700
2023-24	11,389

Note: The 2010-11 figure represents the share of Uttar Pradesh, with Bhadohi being a significant contributor ^[7].

Key challenges faced by the carpet industry in India

Despite the long-standing tradition of carpet weaving in India, the industry faces several challenges:

Rising raw material costs

Wool, silk, and dyes are important raw resources required to make carpet, and their prices have been steadily rising. The foundation of premium carpets, wool, has suffered price increases as a result of shifting agricultural yields and interruptions in the worldwide supply chain. Similar to this, silk, which is used to make high-end carpets, frequently experiences shortages as demand for it rises in a number of industries. The problem has been made worse by the growing price of both natural and synthetic dyes, as well as the growing impact of environmental rules on the supply of specific colors. For small-scale carpet manufacturers with tight profit margins, these cost hikes are especially difficult. Due to their inability to invest in long-term supply contracts or make large purchases of raw materials, many of these manufacturers are prone to fluctuations in the market. These small firms struggle to absorb the additional costs as raw material prices rise, which drives up production costs ^[8].

The rising costs also affect the industry's long-term sustainability. With small manufacturers already struggling to keep up with inflationary pressures, there is a growing concern about their ability to maintain quality and scale. As a result, some are forced to either reduce the quality of their products or exit the market entirely, further shrinking the workforce that relies on carpet weaving as their livelihood. This has long-term socio-economic implications for the region, where carpet weaving has been a tradition for generations.

Environmental and sustainability issue

The extensive use of chemicals and synthetic dyes in carpet dyeing and finishing raises serious concerns. These methods, which frequently lack adequate environmental protections, cause dangerous chemical effluents to leak into nearby water bodies, severely polluting the water. The situation is made worse by the lack of sophisticated waste treatment facilities, which contaminates sources of drinking water and has a negative impact on nearby ecosystems.

Sustainable and environmentally friendly production is becoming more and more important to both customers and regulatory agencies as environmental conservation gains worldwide attention. Because of this change, traditional carpet-making techniques are now under more scrutiny, which forces manufacturers to rethink their approaches. The environmental impact not only jeopardizes the ecological balance but also threatens the export potential of Indian carpets, as environmentally conscious markets may impose stricter import regulations. Thus, while the carpet industry remains a vital source of employment and cultural heritage, it must urgently address its environmental footprint to align with global sustainability goals and maintain its competitive edge in international markets ^[9].

Working conditions and labor rights

A significant number of carpet weavers continue to operate in small, poorly maintained workshops with limited ventilation and minimal access to basic amenities. These conditions not only make for a harsh working environment but also pose serious health risks due to constant exposure to dust and repetitive physical strain. Compounding this is the issue of long working hours paired with meager wages, which discourages many skilled artisans from remaining in the profession. Even more concerning is the continued presence of child labor in some sectors of the industry, a problem driven by poverty, lack of education, and inadequate enforcement of labor laws. These exploitative conditions lead to low worker morale, frequent health issues, and stunted personal and professional development, ultimately reducing the overall productivity and quality of the carpets produced. If left unaddressed, these systemic challenges threaten not only the wellbeing of the artisans but also the sustainability and global reputation of India's handwoven carpet industry ^[10].

Labor shortage and migration

Artisans often earn between ₹200–₹350 for a full day's work, which is below the state's prescribed wage for semi-skilled labor. Many people have given up traditional weaving as a result of this financial burden in favour of higher-paying jobs in cities or through government programs like the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS). The number of skilled artisans has significantly decreased as a result of the migration or movement of about 50% of male weavers to alternative work routes, such as the MGNREGS. A significant percentage of the workforce that was previously employed in carpet weaving has been drawn to the area by the MGNREGS, which provides rural employment for unskilled people. The number of trained artisans needed to produce high-quality handwoven carpets has rapidly decreased as a result of this change in labor dynamics. Historically, the craft of carpet weaving has been passed down through generations, with a small community of artisans possessing the expertise to craft intricate patterns and designs. However, as more weavers opt for alternative, less labor-intensive work under MGNREGS, the availability of skilled workers for the carpet industry has sharply decreased. Consequently, there is a growing challenge to maintain both the quality and quantity of carpet production in the region. This migration trend poses a serious threat to the survival of the traditional carpet weaving industry, potentially leading to the loss of both economic livelihood and cultural heritage in the region ^[11, 12].

Government apathy

A significant issue is the increasing government apathy, which has had detrimental effects on the profitability of stakeholders within the industry. One of the most concerning developments is the reduction in export incentives, particularly the decrease in the import drawback from 9.2% to 3%. This reduction means that exporters, who rely heavily on these incentives to remain competitive in international markets, face higher costs, reducing their profit margins. The elimination of the 7.5% subsidy further compounds the situation, as this subsidy played a crucial role in making Indian carpets more affordable and attractive to global buyers. Because of this, domestic carpet producers are having a harder time holding onto their market share versus foreign rivals who continue to enjoy more advantageous government assistance. Many stakeholders are experiencing significant distress as a result of these issues, which have been made worse by the government's tardiness in intervening or providing support. They fear that if these issues are not resolved, the industry's historical significance as a significant contributor to the local and national economies may be diminished ^[13].

Infrastructure deficiencies

Despite its prominence in the global carpet industry, the city faces several critical challenges that hinder its growth and potential. One of the key issues is infrastructure deficiencies. The absence of modern logistics facilities, such as container yards and dry ports, severely hampers the efficiency of the supply chain. These limitations cause delays in the transportation of goods, affecting both domestic and international shipments. This is particularly problematic for an industry like carpet weaving, where timely deliveries are essential to maintain business relationships and meet market demands. Furthermore, the lack of quality accommodations and amenities in Bhadohi discourages foreign buyers from visiting the city. As international trade relies heavily on face-to-face interactions and trust-building, this absence of proper infrastructure directly impacts Bhadohi's ability to attract and retain global buyers. The lack of direct international connectivity, particularly through air travel, exacerbates this issue, making it difficult for potential buyers and investors to engage with the carpet industry in Bhadohi. Without the necessary infrastructure improvements, potential of Bhadohi to expand and maintain its global presence in the carpet industry remains limited ^[14, 15].

Technological disruption

The industry has encountered several difficulties recently, especially as a result of technological innovations brought forth by machine-made carpets. By providing quicker production periods and lower manufacturing costs, these machine-made carpets have significantly changed the carpet industry's landscape and made them more accessible and inexpensive in both home and foreign markets. These contemporary carpets can replicate the fine details and artistry of handwoven items, but they lack the original handwoven carpets artisanal touch, craftsmanship, and cultural significance ^[16].

The widespread utilization of carpets manufactured by machines has increased competitiveness in the handwoven market, placing tremendous strain on the craftspeople who have long used age-old techniques. The main issue facing

the Bhadohi handwoven carpet industry is not just the cost, but also the belief that traditional workmanship is less effective and more costly than modern methods. As a result, the market for handwoven carpets is being weakened as many customers, both domestically and internationally, are choosing the more reasonably priced, mass-produced machine-made alternatives ^[16].

Furthermore, livelihoods and skill sets of the local artisans, which they have developed over many years, are in danger of being undermined by the trend towards mechanization. The younger generation is also abandoning handweaving because they are drawn to the quicker and less labor-intensive tasks that robots can do. The preservation of traditional weaving processes is seriously threatened by this generational change, which complicates the sector's problems. In this regard, it is essential that the government, industry participants, and craftspeople work together to identify solutions that can support the revival of the handwoven carpet sector, emphasizing the preservation of traditional knowledge while incorporating contemporary technologies to improve productivity and competitiveness in the market ^[16, 17].

Reputational damage

Carpet City has faced several challenges over the years, one of the most significant being the issue of child labor. In the 1990s, several allegations surfaced regarding the widespread use of child labor in the production of carpets, which brought severe international scrutiny. Many human rights organizations and international buyers raised concerns about the exploitation of young children in the carpet weaving process, often under hazardous and inhumane working conditions. The Indian carpet business suffered as a result, particularly in international markets as customers and advocacy organizations started to call for fair labor standards and ethical sourcing. Due to their fear of being associated with a sector that was associated with immoral methods, overseas purchasers significantly reduced their demand. The negative publicity not only reduced sales but also hindered the growth of the industry in the global marketplace, as many international retailers sought to distance themselves from Indian carpets, opting for products from countries with more stringent labour laws and better working conditions. This challenge created a need for reform and advocacy for better labour practices within the Indian carpet industry, with an emphasis on improving transparency and ensuring that carpets produced in India met global ethical standards ^[18, 19].

Lack of access to global markets

Despite the high quality and intricate craftsmanship of Indian carpets, many artisans remain at the mercy of middlemen who serve as intermediaries between them and the end consumer. This dependence on middlemen significantly reduces the profit margins of the artisans, as the middlemen often mark up the prices, leaving the artisans with a fraction of the true value of their products.

Additionally, many craftsmen don't participate as much in digital platforms or foreign trade shows, which are essential for reaching buyers throughout the world. International trade shows are crucial locations for craftspeople to meet with buyers face-to-face, exhibit their creations, and connect with influential people in the field. Unfortunately, many artisans from India's carpet-making regions miss out on

these chances because of logistical difficulties, lack of awareness, or financial limitations. Additionally, although digital platforms offer a priceless chance to connect with a worldwide audience, artisans' capacity to fully benefit from online marketing and e-commerce is sometimes constrained by a lack of digital literacy, infrastructure, and resources. Because there is no direct connection between the artisans and international markets, their ability to flourish is limited, and they become dependent on middlemen who manage the dynamics of commerce. As a result, there is less chance that these carpets will be able to sell to consumers around the world at a reasonable price, and craftspeople are stuck in a cycle of poor pay and few prospects for growth ^[20].

Efforts to address these challenges

Several initiatives are being implemented to tackle the challenges faced by the carpet industry.

Skill development and artisan welfare

Both governmental and non-governmental organizations have launched numerous initiatives to revive the carpet industry and improve the lives of the craftspeople in recognition of these pressing problems. The welfare of artisans and skill development have received a lot of attention. In order to maintain this historic art form and make it economically viable, a number of training programs are being introduced to teach the next generation how to weave carpets. These programs encourage young people to be creative and entrepreneurial in addition to promoting craftsmanship. Additionally, schemes are being implemented to improve the overall welfare of artisans. This includes providing better wages, introducing healthcare schemes, ensuring access to education for artisan families, and formalizing workspaces to bring them under labor laws and social security benefits. Collectively, these measures are aimed at creating a more inclusive and sustainable ecosystem for the carpet industry, ensuring that the cultural heritage of the Carpet City continues to thrive in the face of modern challenges ^[21].

Promotion of eco-friendly practices

Various stakeholders, including governmental organizations, non-governmental organizations, and private businesses, have started initiatives to modernize the sector while maintaining its traditional craftsmanship in order to address these problems. These initiatives include infrastructure upgrades like the construction of carpet design and research facilities, financial plans to assist small weavers, and skill development programs to train the younger labor. In order to support design innovation, quality assurance, and effective production processes, technological interventions are being adopted. To increase market access for Bhadohi's carpets, export promotion initiatives and attendance at international trade shows are also being promoted ^[22].

Bhadohi carpet business is progressively adopting eco-friendly procedures in light of the growing worldwide consciousness of environmental sustainability. The use of natural dyes made from plants and minerals is one significant change that lessens the environmental impact of colouring with chemicals. To reduce pollution and water waste, dyeing facilities are implementing water recycling technologies. Additionally, the creation of carpets is increasingly using biodegradable and renewable raw

materials like jute and organic wool. These materials support India's larger objectives of sustainable development in addition to appealing to consumers who care about the environment. By these efforts, Bhadohi hopes to uphold its carpet weaving heritage while adapting to contemporary ethical and environmental standards ^[22].

Technology adoption

Adoption of technology is the main area of intervention. There has been an effort to incorporate contemporary weaving methods in recognition of the need for increased production and consistency in quality. In certain units, labor-intensive manual looms are starting to give way to electronic looms, which greatly increase production speeds and lower human error. In addition, new dyeing methods are being developed that provide improved colourfastness and environmental sustainability by using fewer chemicals and water. Additionally, some manufacturers are collaborating closely with design professionals and institutions to develop novel and modern patterns in order to satisfy changing worldwide aesthetic preferences. This strategic collaboration helps local artisans align their creations with modern interior design trends while retaining the authenticity of Indian craftsmanship. These combined efforts aim not only to revitalize the traditional carpet industry but also to make it more competitive and sustainable in the long run ^[23].

Export promotion initiatives

Indian government has started a number of export promotion programs to help the carpet industry in response to these worries. To promote Indian carpets to buyers around the world, they include planning and taking part in international trade shows and exhibitions. To draw attention to the artistry and cultural diversity found in Indian carpets, targeted marketing efforts have been implemented. Additionally, establishing stronger market ties and ensuring steady demand are the goals of strategic alliances and partnerships with global stakeholders. The introduction of certifications such as the "Handloom Mark" plays a crucial role in ensuring the authenticity and quality of Indian handmade carpets. This mark acts as a seal of trust, distinguishing genuine handwoven carpets from imitations and enhancing their appeal in premium international markets. Such measures are not only vital for improving exports but also for sustaining traditional artisans by securing better prices and recognition for their craftsmanship ^[24].

Shifting focus to women artisans

The carpet industry has started to deliberately refocus its attention on empowering and training female craftspeople in response to the labor crisis, especially the decline in the number of male weavers. In addition to addressing the labor deficit, this shift unlocks the potential of rural women who have hitherto been shut out of formal industrial sectors. Women provide a more steady and dependable labor base since they are thought to be more inclined to stay in their local communities. In order to facilitate this shift, a large number of NGOs and government-sponsored projects have stepped in and established self-help groups (SHGs), offered financial support, and offered skill development programs. This empowerment of women not only revitalizes the weaving sector but also fosters community development by

creating economic opportunities, enhancing family incomes, and improving social status. Moreover, the aesthetic sensibilities and attention to detail exhibited by women have brought fresh perspectives to carpet designs, making this shift not just a necessity but an innovation in the evolution of the industry [25].

Conclusion

The study underscores that sustainable revival is not achievable through isolated efforts but through an integrated model of development. It advocates for a multi-stakeholder approach where government policy reforms, private sector investments, NGO interventions, and active involvement from the artisan communities converge. Such collaboration must prioritize fair wages, skill development, eco-friendly production practices, and inclusive growth strategies. Only through such a holistic and inclusive framework can the legacy of Bhadohi's carpets be preserved not just as a symbol of cultural pride, but as a thriving, sustainable industry that continues to support the livelihoods of thousands while adapting to the demands of a modern, responsible marketplace.

Conflict of interest

The authors have no conflicts of interest regarding this investigation/study.

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