

Exploring the Dynamics of Metal Craft Artisans: Challenges, Opportunities, and Future Directions

Basu Vansit^{1*}, Dr. Monika Sheoran², Dr. Ruchir Saxena³, Dr. Abhishek Choudhary⁴

¹Research Scholar, ²Assistant Professor, ³Associate Professor, ⁴Assistant Professor

¹Affiliation Address: Amity University, Jaipur, Rajasthan

²Affiliation Address: NIT, Kurukshetra, Haryana

³Affiliation Address: Poddar Management & Technical Campus, Jaipur

⁴Affiliation Address: Indian Institute of Crafts and Design, Jaipur

¹Email: basuvansit@gmail.com, ²Email: monika.dba@nitkkr.ac.in, ³Email: ruchirblues@gmail.com,

⁴Email: abhishek@iicd.ac.in

*Corresponding mail:

Email ID : basuvansit@gmail.com

ABSTRACT

Metal craft artisans hold a significant place in preserving cultural heritage and contributing to the creative economy. Through an analysis of the difficulties faced by craftsmen, including limited market access, competition from mass production, and resource scarcity, this research explores the complex dynamics of the metal craft business. Opportunities such as worldwide market integration, technology improvements, and the rising demand for handmade and sustainable goods are also examined. The paper uses a thorough review to show how the trade is shaped by socioeconomic, cultural, and technical influences. The results highlight the necessity of cooperation between governments, non-governmental organisations, and private businesses to promote craftspeople through funding, training, and policy. In light of current issues, this research provides actionable insights into ensuring the sustainability and growth of metal craft artisans in the face of modern challenges.

Keywords: Metal craft artisans, cultural heritage, challenges, opportunities, sustainability, handmade products, global market, creative economy, technological integration

1. INTRODUCTION:

Metal craft artisans have been an integral part of cultural heritage, creating timeless works that blend artistic ingenuity with functional utility. From intricate jewellery to elaborate sculptures and utilitarian tools, metal craft reflects the creative essence of societies across centuries. This traditional craft holds not only artistic value but also economic importance, as it contributes to local livelihoods and promotes the identity of communities (Yang et al., 2018). Despite its historical significance, the metal craft industry faces several challenges in the modern era, threatening its sustainability and continued relevance. This paper seeks to explore the dynamics of metal craft artisans, shedding light on the challenges they face, the opportunities available to them, and the pathways toward a sustainable future (Armbruster, 2011; Lopez, 2009).

1.1 The Role of Metal Craft Artisans in Cultural Heritage

Metalworking is one of the oldest crafts known to humanity, with a rich history dating back to ancient civilisations. Metalcraft artisans often inherit their skills through generations, preserving techniques that are deeply rooted in tradition. These artisans are not just creators of objects but also custodians of intangible cultural heritage, passing down stories, symbols, and methods through their creations. Whether in the form of ceremonial artifacts, religious icons, or decorative items, metal crafts have

played an essential role in shaping cultural identities (Armbruster, 2011; Lopez, 2009; Valiulis, 2014).

1.2 Challenges Facing Metal Craft Artisans

In the modern era, metal craft artisans face numerous obstacles that threaten their survival. One significant challenge is the declining demand for traditional handmade crafts. Mass production and industrialisation have flooded markets with cheaper, machine-made alternatives, making it difficult for artisans to compete. Additionally, limited access to raw materials, rising costs, and inadequate infrastructure further hinder their ability to sustain their craft (Hu et al., 2024; Shafi et al., 2021; Tung, 2012).

Another critical issue is the lack of formal education and training among artisans. Many rely on traditional methods (Oyekunle & Sirayi, 2018; Yadav et al., 2023), and that may not align with current market demands or technological advancements. This gap limits their ability to innovate and adapt to changing consumer preferences. Moreover, the absence of robust marketing strategies and access to global markets restricts artisans from reaching a wider audience (Crafting Success, 2024; Valiulis, 2014; Yadav et al., 2023).

Social and economic factors also play a role in the struggles faced by metal craft artisans. Many artisans work in informal settings with little financial security or

social protection. Younger generations often shy away from pursuing metalworking careers due to the perception of limited growth opportunities and the physically demanding nature of the craft (Deshmukh et al., 2024; Ferreira et al., 2019; West, 2020).

1.3 Opportunities for Growth and Revitalisation

Despite these challenges, the metal craft industry holds significant opportunities for revitalisation. The growing appreciation for sustainable and handmade products offers a unique niche for artisans. As consumers become more environmentally conscious, there is a rising demand for ethically sourced and crafted goods. Metalcraft artisans can leverage this trend by promoting their work as eco-friendly and culturally authentic (Dalal et al., 2024).

Technological advancements also present a pathway for innovation. Access to modern tools, digital platforms, and online marketplaces can enable artisans to streamline their production processes and reach global customers. Social media and e-commerce platforms provide artisans with opportunities to showcase their work, tell their stories, and connect with buyers directly, bypassing traditional intermediaries.

Furthermore, collaborations with designers, businesses, and non-governmental organisations can help artisans integrate contemporary designs with traditional techniques, catering to modern tastes while preserving cultural authenticity. Policymakers and governments can also play a crucial role by providing financial support, skill development programs, and infrastructure improvements to empower artisans (Brown, 2014; Ferreira et al., 2018; Yadav et al., 2023).

1.4 The Need for Collaborative Efforts

The future of metal craft artisans depends on a collective effort to address the challenges they face and unlock the potential of their craft. Stakeholders, including artisans themselves, governments, cultural organisations, and private enterprises, must work together to create an ecosystem that supports innovation, sustainability, and cultural preservation. This involves fostering education and training, improving access to resources, and building networks that connect artisans with global markets.

1.5 Scope of the Paper

This paper explores the dynamics of the metal craft industry by analysing the challenges faced by artisans and the opportunities for growth and revitalisation. It highlights the socio-economic, cultural, and technological factors influencing the industry and offers actionable recommendations to ensure its sustainability. By examining both the obstacles and prospects, this study aims to contribute to a deeper understanding of the evolving landscape of metal craft artisans and provide insights for their empowerment in a rapidly changing world.

In the sections that follow, the paper will delve deeper into the specific challenges, opportunities, and strategic directions for the future, with a focus on fostering innovation, resilience, and cultural preservation in the metal craft industry.

1.6 Objective of the study

In terms of its contribution to the national economy, the essay aims to highlight the importance of the Rajasthani handicrafts sector in India. The principal aim of this research is to investigate the changing terrain of metal craft artisans by examining the obstacles they face, spotting new prospects, and suggesting future paths for long-term, sustainable development. The precise goals of the study are as follows:

To look into the growth of Rajasthan's handicraft sector and assess the several factors influencing the workers' well-being at work.

To evaluate the market's present situation, prospects, and potential risks.

To outline the problems the handicraft sector is having and provide answers

To investigate the financial limitations, market accessibility, and shifting consumer preferences that metal craft producers face.

To pinpoint the technological obstacles that metalworkers face in their traditional craft and investigate viable ways to update manufacturing methods.

To evaluate how institutions, policies, and organisations of the government help or impede the expansion of the metal craft industries.

To investigate potential markets for artisans, including those brought about by globalisation, internet platforms, and the desire for sustainable products.

To assess the effect that historical conservation and cultural preservation have on the long-term viability of metalworking traditions.

To offer tactics and policy suggestions for improving the competitiveness, skill development, and economic viability of metal crafters in the contemporary economy.

2. Review of literature

Metalcraft artisans play a pivotal role in preserving cultural heritage and contributing to economic development through their unique creations. However, they face numerous challenges that threaten the sustainability of their crafts. This literature review delves into the dynamics of metal craft artisans, examining the challenges they encounter, the opportunities available, and potential future directions for the sector.

Crafting Success, 2024, states that the "handicrafts sector comprises enterprises engaged in such manufacturing of items or products in which products are produced predominantly by hand with or without mechanical or electrical or other assistance and graced with visual appeal in the form of ornamentation or in-lay work or some other work lending it an element of artistic improvement." Such adornment cannot be only pretence; it must be genuine.

Table 1: - Review of literature

Author(s)	Title	Key Findings
Hasanah et al. (2023)	Fifty Years of Artisan Entrepreneurship	Identified key success factors for artisans, including environmental and organisational influences on sustainability.
Chutia&Sarma (2021)	Native Tradition and Changing Market Dynamics	Explored how traditional metal craft adapts to modern markets while maintaining cultural identity.
Anon. (2023)	Value-Creating Practices & Barriers in Artisan-Designer Collaboration	Analysed barriers such as misalignment in artistic vision and market expectations.
Birbhum Study (2022)	Traditional Brass & Bell Metal Crafts of West Bengal	Highlighted declining demand, lack of financial support, and competition from factory-made goods.
Varanasi Artisans Report (2021)	Impact of Geographical Indication (GI) Status	Explored how GI status affects marketability and access to premium markets.

The state includes a diverse array of handcrafted items dispersed throughout different geographic areas, as the map below illustrates

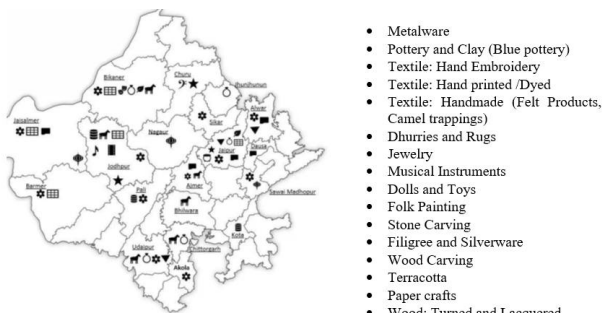


Fig 1: - Map showing the various Handicraft products of Rajasthan | Source: Mosp

2.1. Challenges Faced by Metal Craft Artisans

Limited access to markets is one of the main obstacles. The inability of craftsmen to access wider markets limits their ability to sell and make money (Dalal et al., 2024). The decreasing market for traditional metal crafts due to consumers' growing preference for contemporary, mass-produced alternatives makes this restriction worse. As a result of technological developments, handcrafted goods are now competitive with machine-made goods, significantly reducing the market share of craftsmen. Another factor lowering demand is customers' ignorance of the artistic and cultural significance of metal crafts. According to Day (2013), a lack of knowledge among consumers about the artistry and tradition of these products results in their undervaluation and neglect (K. R. Chakraborty, 2022; Ferreira et al., 2019).

Another important factor is economic difficulties. The socioeconomic circumstances of metal craftspeople in Birbhum District are examined by Ghosh & Bhattacharya (2023), who point out that irregular income and unstable finances are frequent problems. It is challenging for craftsmen to make a living because of the high cost of raw materials and the volatile market prices. Additionally, artists' inability to manage their finances successfully, sell their goods, and adjust to shifting market trends is hampered by their lack of formal education and commercial operations acumen.

There are opportunities and challenges associated with globalisation. It creates fierce competition from mass-produced items while opening up global marketplaces. Malhotra & Saravanan(2025) investigate how globalisation has affected Varanasi's metal repoussé craft, pointing out that it is difficult for craftspeople to stay competitive and keep their individuality in the global market. The rise of less expensive, machine-made goods frequently eclipses handcrafted goods, making it challenging for craftspeople to compete on price without sacrificing quality (Deshmukh et al., 2024).

Table 2: Key Challenges Faced by Metal Craft Artisans

Challenge Category	Description	Example
Economic	Limited access to capital and unstable income	Difficulty in securing loans
Technological	Lack of modern tools and skills	Minimal adoption of digital fabrication techniques
Market Access	Limited exposure to global markets	Dependence on local buyers

Market Access	Limited exposure to global markets	Dependence on local buyers
Environmental	Rising cost of raw materials	Scarcity of sustainable metals
Social & Cultural	Declining interest among younger generations	Shift towards mass-produced alternatives

2.2. Opportunities for Metal Craft Artisans

There are a number of chances for metal craft workers in spite of these obstacles. Traditional crafts are gaining popularity as customers want more genuine, handcrafted goods. This movement gives craftspeople the opportunity to reach specialised customers who appreciate cultural heritage and craftsmanship. Development of the tourism industry also offers a big chance. By incorporating metal crafts into tourism-related events, craftspeople can display their abilities and offer goods to travellers directly, increasing their clientele. Support from the government is essential in this situation. Metal crafts can be made more sustainable by policies that offer funding, skill-building opportunities, and connections to markets. For example, programs that promote traditional crafts through fairs, exhibitions, and internet platforms can expand their market reach and visibility(Ferreira et al., 2018, 2019; Srivani & Amsamani, 2024).

Working together, designers and artisans can also advance their careers. According to Mukherjee & Ghosh, design interventions can revive traditional crafts. In order to satisfy modern consumer expectations while maintaining traditional aesthetics, craftspeople might innovate their product lines by collaborating with designers. The creation of new goods that appeal to contemporary consumers may result from such partnerships, boosting sales and guaranteeing the continued relevance of traditional crafts in the marketplace(P. Chakraborty et al., 2022; Mukherjee & Ghosh, 2019).

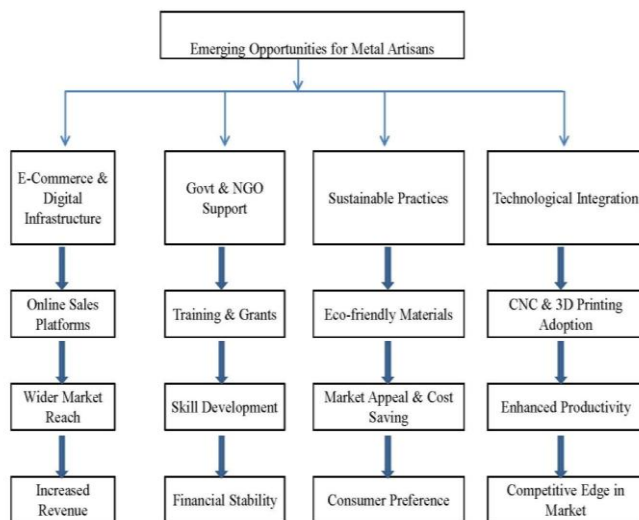


Figure 2: Emerging Opportunities for Metal Artisans

Table 3: Emerging Opportunities for Metal Craft Artisans

Opportunity Area	Description	Potential Benefit
E-commerce and Digital Infrastructure	Selling crafts online through marketplaces	Wider customer reach
Government & NGO Support	Funding and skill development programs	Financial and training aid
Sustainable Practices	Use of recycled metals and eco-friendly production	Cost reduction and market appeal
Technological Integration	Adoption of CNC, 3D printing, and automation	Increased efficiency
Tourism & Cultural Heritage Promotion	Showcasing craftsmanship in exhibitions	Attracting global buyers

3. Research Method

This study utilises a qualitative exploratory research design with a case study approach to examine the challenges and opportunities faced by metal craft artisans. This design is suited for understanding the complex, context-specific dynamics of the craft sector, focusing on socio-economic, cultural, and technological influences. A qualitative approach allows for deeper insights into these issues, which are not easily captured through quantitative methods.

Data collection involved semi-structured interviews, focus group discussions (FGDs), and ethnographic fieldwork. These techniques provided rich, detailed narratives from artisans about their experiences. A purposive sample of 30 artisans was selected from different regions and craft types to ensure a diverse representation of perspectives. FGDs helped explore shared challenges, such as competition from mass production and limited market access.

Field observations were conducted in artisans' workshops, allowing the researcher to observe the crafting process, tools, and artisans' work environments. This provided a practical understanding of their work and the cultural significance of metal crafting. For data analysis, thematic analysis was used to identify recurring patterns from the interview transcripts and field notes. A comparative study was conducted to examine regional and sectoral differences, offering insights into how these factors influence the artisans' practices. This methodology provides a comprehensive view of the dynamics shaping the metal craft industry and the experiences of those within it.

4. Results & Discussion

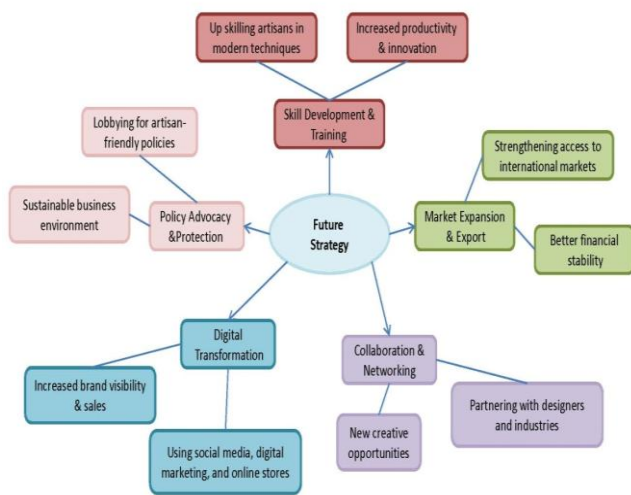


Figure 03: Future Directions for the Metal Craft Industry

Based on personal interviews and visits, the findings derived from these objectives will provide a comprehensive understanding of the key challenges and opportunities within the metal craft industry. By addressing financial, technological, institutional, and cultural factors, this study aims to contribute to the sustainable development and long-term viability of metal craft artisans.

Table 4: Future Directions for the Metal Craft Industry

Future Strategy	Description	Expected Impact
Skill Development & Training	Upskilling artisans in modern techniques	Increased productivity & innovation
Market Expansion & Export	Strengthening access to international markets	Better financial stability
Collaboration & Networking	Partnering with designers and industries	New creative opportunities
Policy Advocacy & Protection	Lobbying for artisan-friendly policies	Sustainable business environment
Digital Transformation	Using social media, digital marketing, and online stores	Increased brand visibility & sales

4.1 SWOT Analysis

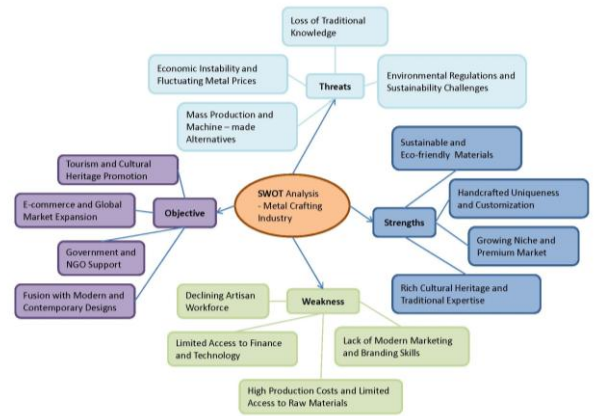


Figure 4: Swot Analysis of the Metal Crafting Industry

Table 5: Swot Analysis for the Metal Craft Industry

Strength	Weakness	Opportunities	Threats
Rich Cultural Heritage & Traditional Expertise – Numerous metal workers acquire and perfect centuries-old methods, which give their creations a distinctive and priceless quality.	High Production Costs & Limited Access to Raw Materials – The shortage of high-quality raw materials and rising metal prices raise production costs.	E-commerce & Global Market Expansion – Platforms like Etsy, Amazon Handmade, Shopify and other Govt policies provide access to international buyers.	Mass Production & Machine-made Alternatives – Strong competition comes from cheaper, mass-produced metal goods from manufacturers.
Handcrafted Uniqueness & Customization – Among the specialised niches that handmade metal crafts frequently appeal to are	Lack of Modern Marketing & Branding Skills – Many craftspeople have trouble with branding, internet sales, and digital marketing	Government & NGO Support – In order to conserve traditional crafts, numerous governments and non-governmental organisations	Economic Instability & Fluctuating Metal Prices – The state of the world economy has an impact on consumer expenditure on

luxury consumers and collectors.	g, which limits their market reach.	provide grants, training, and subsidies.	high-end crafts.
Sustainable & Eco-friendly Materials – In keeping with the increasing need for sustainable products, many artisans utilise recycled metals.	Limited Access to Finance & Technology – Most craftspeople don't have the money to buy new equipment or try out new methods.	Fusion with Modern & Contemporary Designs – Modern aesthetics combined with old craftsmanship can draw in new clients.	Environmental Regulations & Sustainability Challenges – Production prices may rise as a result of stricter laws governing the mining and use of metal.
Growing Niche & Premium Market – A competitive edge is offered by the growing demand for genuine, artistic, and handcrafted metal crafts around the world.	Declining Artisan Workforce – Metalworking may not be appealing to younger generations because of its reduced profitability and unstable employment.	Tourism & Cultural Heritage Promotion – Direct sales with buying agencies and partnerships with historical places can increase sales.	Loss of Traditional Knowledge – Modernisation could lead to the extinction of traditional crafting methods if they are not maintained.

5. Conclusion

To ensure long-term sustainability, the metal craft industry must adapt to technological changes, secure financial support, and implement policies that protect artisans and cultural heritage. Governments, NGOs, and private investors should focus on capacity-building, infrastructure development, and digital integration to enhance global competitiveness. To comprehend the marketing methods used in the handicraft industry, this research study uses secondary data drawn from a variety of research papers, journals, and government publications. It is both descriptive and investigative. The handicraft industry is a notable associated sector of agriculture and a significant source of employment in India. It ranks as the

second most important source of employment in the majority of developing and underdeveloped nations.

"Handicraft" refers to a broad category of artefacts. The International Labour Organisation (ILO) has defined the informal sector, which includes handicrafts, as a segment of economic activity that is distinguished by a number of characteristics, including family ownership, small-scale operations, labour intensity, traditional technology, reliance on locally available resources and skills, unregulated and competitive markets, and skills typically acquired outside of the formal school system.

The majority of artisans are employed in the traditional, unorganised sector, where they are susceptible to low pay and exploitation. Both socially and economically, they are at the bottom of the ladder. Most of these people work hard in domestic or cottage enterprises, but their pay is insufficient to support a minimal level of living. The intermediaries in this transaction are a big issue since they keep a large portion of the profits, leaving the craftspeople with relatively little. Despite being the backbone of Indian society historically, craftsmen are now the most essential contributors to its advancement. Thus, an attempt has been made to examine the shortcomings and difficulties that handicraft workers encounter in this paper.

Classification of Handicrafts: Two categories are used to classify handicrafts: Items for daily usage and ornamental objects. The artisans display their inventiveness using a range of media. The variety of materials used to demonstrate handicrafts includes Metal goods, wood, precious and semiprecious metals, jewellery, textiles, and valuable and semiprecious stones. Rajasthan has been singled out for study because of its rich history and culture, and because it is one of the most attractive states for historical tourism.

It is possible to conclude that Jaipur's ancient community of artisans and craftsmen is going through an existential problem. The Indian administration is funding and operating promotional activities for these small-scale handicraft companies, but they also require help in other areas if they are to survive. Due to the increasing production costs, fewer handicrafts are produced in total. The traditional touch of the handicrafts is lost if products are produced on a huge scale to compete in the open market. In the small-scale handicraft industry, local workers and company owners are exploited by middlemen and entire sellers who keep the majority of the profits. In order to give Indian design a clear edge in the global market, craft needs to lead the way in both industrial and communication design. Large and vital to the country's economy is the handicrafts sector. A buyer may be prepared to spend significantly more than the item's typical price if he appreciates a handmade product. Rajasthan's exquisite arts and crafts are well-known. In Rajasthan, each city has something unique to offer. A pillar of the Indian economy, the handicraft sector provides craftsmen in rural and disadvantaged areas with numerous employment opportunities.

6. Future Directions

It takes a diverse approach to guarantee the growth and sustainability of metal crafts. To improve artisans'

technical and business skills, skill development programs are crucial. Training in areas like digital marketing, quality assurance, and design innovation can enable craftsmen to reach a larger audience and run their enterprises more efficiently. Financial assistance programs like grants and microloans can give craftsmen the money they need to buy equipment, supplies, and advertising campaigns. By highlighting their distinct value proposition, marketing strategies like branding and storytelling can assist in setting handcrafted goods apart from mass-produced goods.

Furthermore, traditional cultural and creative industries are facing a variety of challenges in this dynamic environment due to fierce competition, but they also face great opportunities as a result of regulatory changes and increased attention brought about by international market liberalisation.

Cultural and creative firms are late entrants into the tourism industry. To stay competitive, they must not only expand and enhance their current capabilities through internal and external learning to become more sensitive to environmental changes, but also develop new knowledge sources and enhance their competencies.

To inform consumers about the cultural value and workmanship of metal crafts, awareness campaigns are essential. By showcasing the products' back stories and the craftspeople that make them, buyers may grow to value them more, which would raise demand. Traditional designs can be protected from illegal duplication by intellectual property laws, guaranteeing that craftspeople profit from their work. Research and development can be facilitated by working with educational institutions, which can result in creative designs and procedures that improve the efficiency and appeal of metal crafts.

In order to attract environmentally sensitive customers, production processes should incorporate sustainability measures. Using environmentally friendly products, cutting back on waste, and implementing energy-saving techniques are all part of this. Access to funding is still a crucial component. Creating financial products specifically designed to meet the needs of artists can help them expand their businesses and make the investments they need to make changes. Frequent procedures for monitoring and evaluation can assist in determining the efficacy of different interventions and guide policy changes.

The burgeoning craft markets indicate that traditional crafts have a bright future as vocations in the contemporary world. However, there is still a long way to go, and a number of problems must be resolved before handicraft can be considered a feasible career choice in the modern era. The acknowledgement of various production methods, the modernisation of craftspeople, and the blending of craft and design.

Modern technologies and industrial production may give crafters the chance to manufacture enough goods to meet sustainable practice norms while also having the opportunity to create one-of-a-kind, handcrafted items. Craftspeople have noticed a growing partnership between technology and crafts. In-depth knowledge of the elements influencing the future of metal crafters is sought after,

along with useful suggestions for their advancement and sustainability.

REFERENCES

1. Armbruster, B. (2011). Approaches to metal work—The role of technology in tradition, innovation and cultural change. *Atlantic Europe in the First Millennium BC: Crossing the Divide*, 417–438.
2. Brown, J. (2014). Making It Local : what does this mean in the context of contemporary craft? 28.
3. Chakraborty, K. R. (2022). *Craft Stories*. March.
4. Chakraborty, P., Dasgupta, S., & Bhattacharya, A. (2022). Vernacular Architecture of Weaver's Settlement—A Case for Creating Resilient and Sustainable Environments for Handloom Cluster at Bargarh, Odisha. *International Conference on Variability of the Sun and Sun-like Stars: From Asteroseismology to Space Weather*, 1069–1081.
5. *Crafting success : a Strategic Roadmap to Tripling Rajasthan ' s Handicraft*. (2024).
6. Dalal, A., Bhattacharya, S., & Chattopadhyay, S. (2024). Hurdles to handicraft marketing for artisan entrepreneurs in an emerging economy. *Journal of Small Business and Enterprise Development*, 31(1), 74–94. <https://doi.org/10.1108/JSBED-04-2023-0155>
7. Day, G. (2013). Explaining the Art Market's Thefts, Frauds, and Forgeries (and Why the Art Market Does Not Seem to Care). *Vand. J. Ent. & Tech. L.*, 16, 457.
8. Deshmukh, D., Rajput, C. S., Das, S., & Alam, M. M. (2024). Sustainability and livelihood of small-scale handicraft producers in India: A SWOT analysis of Dhokra artisans. *Social Sciences and Humanities Open*, 10(July), 101160. <https://doi.org/10.1016/j.ssaho.2024.101160>
9. Ferreira, J., Sousa, B., & Gonçalves, F. (2018). Encouraging the subsistence artisan entrepreneurship in handicraft and creative contexts. *Journal of Enterprising Communities People and Places in the Global Economy*. <https://doi.org/10.1108/JEC-09-2018-0068>
10. Ferreira, J., Sousa, B. M., & Gonçalves, F. (2019). Encouraging the subsistence artisan entrepreneurship in handicraft and creative contexts. *Journal of Enterprising Communities: People and Places in the Global Economy*, 13(1/2), 64–83.
11. Ghosh, A., & Bhattacharya, T. (2023). Assessment of the Issues and Opportunities of the Traditional Brass and Bell Metal Crafts of Birbhum District, West Bengal. *ShodhKosh: Journal of Visual and Performing Arts*, 4(2CDSAD), 107–118. <https://doi.org/10.29121/shodhkosh.v4.i2cdsdad.2023.572>
12. Hasanah, U., Sukoco, B., Supriharyanti, E., & Wu, W.-Y. (2023). Fifty Years of Artisan Entrepreneurship: A Systematic Literature Review. *Journal of Innovation and Entrepreneurship*, 12, 1–25. <https://doi.org/10.1186/s13731-023-00308-w>
13. Hu, J., Hur, E., & Thomas, B. (2024). Value-creating practices and barriers for collaboration between designers and artisans: a systematic literature review. *International Journal of Fashion Design*,

- Technology and Education, 17(1), 25–36. <https://doi.org/10.1080/17543266.2023.2228337>
14. Lopez, A. M. (2009). Metalworking through history.
 15. Malhotra, N., & Saravanan, P. (2025). Changing the Paradigm of Handicrafts Using Geographic Indicators to Enhance Sustainability: Case of Nagercoil. In *In Pursuit of the Sustainable Development Goals: Success Stories of Women Entrepreneurs in Emerging Economies* (pp. 69–119). Emerald Publishing Limited. <https://doi.org/10.1108/978-1-83608-532-420251005>
 16. Mukherjee, J., & Ghosh, M. (2019). Sustainable transformation of a vernacular habitat through the revival of crafts: Naya village in West Bengal, India. *ISVS EJ*, 6, 1–16.
 17. Oyekunle, O. A., & Sirayi, M. (2018). The role of design in sustainable development of handicraft industries. *African Journal of Science, Technology, Innovation and Development*, 10(4), 381–388. <https://doi.org/10.1080/20421338.2018.1461968>
 18. Shafi, M., Junrong, L., Yang, Y., Jian, D., Rahman, I. U. R., & Moudi, M. (2021). Factors Influencing the Consumer Acceptance of Innovation in Handicraft Products. *SAGE Open*, 11(4). <https://doi.org/10.1177/21582440211061528>
 19. Srivani, T., & Amsamani, S. (2024). Ergonomic interventions in Kalamkari block printing: addressing challenges and preserving tradition. *Ergonomics*, 1–23.
 20. Tung, F. W. (2012). Weaving with rush: Exploring craft-design collaborations in revitalizing a local craft. *International Journal of Design*, 6(3), 71–84.
 21. Valiulis, A. V. (2014). A History of Materials and Technologies Development. In *A History of Materials and Technologies Development*. <https://doi.org/10.3846/1502-s>
 22. West, M. (2020). *Craft and The Corporation* By.
 23. Yadav, U. S., Tripathi, R., Tripathi, M. A., Ghosal, I., Kumar, A., Mandal, M., & Singh, A. (2023). Digital and innovative entrepreneurship in the Indian handicraft sector after the COVID-19 pandemic: challenges and opportunities. *Journal of Innovation and Entrepreneurship*, 12(1). <https://doi.org/10.1186/s13731-023-00337-5>
 24. Yang, Y., Shafi, M., Song, X., & Yang, R. (2018). Preservation of cultural heritage embodied in traditional crafts in the developing countries. A case study of Pakistani handicraft industry. *Sustainability (Switzerland)*, 10(5). <https://doi.org/10.3390/su10051336>.