



Craftsmanship And Technology: A New Dialogue In Fashion

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Abstract: This review explores the evolving relationship between craftsmanship, fashion, and technological progress, offering a nuanced understanding of how innovations have reshaped the fashion industry. Technology integration into fashion has improved production quality and efficiency, enabled precise, scalable manufacturing processes, and fostered global connectivity. However, this progress comes with challenges. Traditional craftsmanship faces threats such as cultural homogenization, artisanal displacement, and environmental concerns. Yet, technology also presents unique opportunities for growth and development, including digital archiving of cultural heritage, sustainable production practices, and the creation of innovative materials.

The review highlights this intersection's economic and social benefits, particularly for local communities. By embracing technology, artisanal crafts can reach new markets and create employment opportunities, driving economic growth. Additionally, technological advancements in sustainable production methods can alleviate the environmental impact of fashion, contributing to global efforts toward sustainability. The value of workmanship, especially in maintaining national identity and regional traditions, is also underscored. As technology enables the preservation of traditional techniques through digital platforms, communities can maintain their cultural legacy while exploring new avenues for innovation.

Ultimately, the findings emphasize the need for collaborative efforts between policymakers, educators, and industry leaders to ensure a harmonious future where craftsmanship and technology coexist. Striking a balance between innovation and tradition is crucial for promoting sustainable fashion practices, preserving cultural heritage, and empowering local communities. The debate between technology and craftsmanship extends the fashion industry's creative possibilities and reinforces its social and cultural relevance, ensuring a more equitable, sustainable, and culturally rich future.

Index Terms - craftsmanship, fashion, technology advancement, sustainability, cultural heritage, artisanal production.

I. INTRODUCTION

The fashion industry, a vibrant and dynamic sector, has long been characterized by its delicate balance of artistry, craftsmanship, and technological innovation. Craftsmanship, the backbone of fashion, embodies the skillful fusion of human touch, material, and technique, passed down through generations. From haute couture to traditional textiles, craftsmanship has played a pivotal role in shaping cultural identities, preserving heritage, and driving creative expression.

The debate on the relationship between traditional craftsmanship and technological advancements in the fashion industry is a critical area. Hand-woven fabrics, embroidery, and other traditional crafts are cultural assets in countries like India. The connection between craft and technology is evolving with new technologies such as digital design tools, automated looms, and virtual try-on systems.

This paper addresses the question: How does fashion technology both enhance and hinder traditional craft processes? Technology can help sustain traditional crafts by expanding their market reach, reducing production timelines, and improving designs. For example, 3D printing and AI applications have advanced the functionality and capabilities of design while preserving the classic appearance of designed items. Additionally, e-commerce and virtual showrooms have given traditional crafts international exposure.

However, the integration of technology also presents challenges. Automated weaving may diminish the essence of handwoven fabrics and hand-sewn apparel, potentially affecting traditional artisans. Moreover, technological products prioritise speed over craftsmanship, impacting the uniqueness of the original work. This study seeks to map the complex relationships between technology, creativity, and craftsmanship by synthesising existing research and informing policies and practices that balance tradition and innovation. This review will examine the current state of craftsmanship in the fashion industry, the role of technology in shaping its future, and the implications for artisans, designers, and the environment. This paper explores how technology can be integrated into the art of fashioning garments without compromising the authenticity of traditional craftsmanship, focusing on cultural preservation and meeting current needs.



Figure 1: Different types of crafts practiced in the fashion industry

II. REVIEW OF LITERATURE:

Boğa-Moisin and Schreiber (2021) This exploratory study examines the Indian textile and fashion industry's perspective on textile craftsmanship through sociocultural and legal lenses. It focuses on how Indian stakeholders perceive the value of Indian textile craftsmanship, both within India and in the global market, particularly about the "Made in India" label. The research also investigates the meaning of "sustainability" in the Indian context and how it differs from Western notions, emphasizing that "Cultural Sustainability" is the dominant narrative due to India's deeply embedded cultural practices. Through four weeks of immersive field research and in-depth unstructured interviews with members of India's textile and fashion elite, the study highlights how Indian stakeholders see the role of textile craftsmanship in sustaining livelihoods and preserving cultural heritage. A key feature of the study is its focus on the unique voices of highly experienced Indian nationals who shape the contemporary narrative of craft and sustainability in India. The study also introduces the concept of legally protecting traditional textile knowledge and cultural expressions, positioning Indian craftsmanship as a valuable source of sustainable practices for the global textile and fashion industry.

Narasimhan and Mahajan (2023) This article explores the integration of traditional textile crafts with sustainable fashion practices in urban India, focusing on how craft-based products can bridge fashion consumption with sustainability goals. Crafts are culturally meaningful and authentic, making them ideal for promoting sustainable consumption. The study, conducted in Delhi and craft clusters in Banaras and Barmer, highlights the co-creation approach, where designers collaborate with artisans to create versatile, sustainable clothing. Craft-based brands like Anokhi, Fab India, and Taneira have gained traction, offering handmade, eco-friendly products to both local and global audiences. The research emphasizes how design students can connect with conscious consumers, acting as tastemakers and promoting slow fashion by leveraging indigenous crafts. Ultimately, craft-based fashion offers a template for conscientious consumption, benefiting both artisans and consumers while advancing environmental goals.

Hu et al. (2023) This study examines the challenges and value creation in designer-artisan collaborations in the craft sector, based on a systematic literature review of articles from 2000 to 2022. Professional growth, community development, and autonomous capability are the three main phases of sustainable value that are outlined. However, challenges such as unclear value coordination, differing values, and a lack of understanding of roles hinder effective collaboration. The study addresses in these gaps by providing an in-depth overview of current processes and outlining potential directions for future research. Creating frameworks to help craftspeople collaborate on design, improving communication, and investigating originality in traditional crafts are some of the main study directions. The findings provide valuable insights for fashion designers, artisans, and educators, promoting better collaboration and sustainable development of traditional crafts.

Saxena and Pandey (2024) This research redefines craft as a valuable contributor to human-centric design and sustainability, countering the view that it is primitive or outdated. It explores how traditional craft practices can be integrated into modern sustainable design, encouraging collaboration between researchers, designers, and artisans. The study highlights three key areas: the relationship between craft, human-centric design, and sustainability; validation of craft-based approaches through case studies; and enhancing stakeholder engagement in sustainable development.

Feedback from Indian consumers supports the idea that craft can positively impact sustainable design. The research proposes incorporating craft as a foundation for human-centric design, emphasizing its potential to drive economic, environmental, and societal transformation. With its minimal environmental impact and use of renewable resources, craft aligns with Glenn Adamson's theory that it is a way of thinking adaptable to various practices. Ultimately, the study shows how traditional craft can evolve to address modern sustainability challenges.

Oladejo-Ajagbe (2024) The survey reveals a generally positive reception toward integrating digital technology with traditional techniques among clothing and textile artists. While traditional practices remain highly valued, artists recognize the benefits of digital tools in enhancing creativity, efficiency, and accessibility. Despite challenges like technical proficiency and balancing authenticity with innovation, there is optimism about future integration. The survey highlights the resilience and adaptability of artists as they embrace technology while preserving heritage. Respondents, ranging from diverse experience levels, value traditional craftsmanship but see digital tools as a way to expand creative possibilities and connect with wider audiences. While challenges in adopting technology exist, the openness to advanced tools like AI and AR presents opportunities for future innovation. Artists also see the influence of technology on consumer preferences and recognize the importance of collaboration. Experienced artists advise aspiring creators to focus on mastering their craft, experimenting, networking, and persisting in this evolving landscape.

K et al. (2024) This paper examines the resurgence of traditional Indian textiles and handicrafts as a popular choice for consumers, driven by rising awareness of sustainability and conscious consumerism. While modern fashion trends have evolved, indigenous crafts and textiles remain highly valued, particularly for special occasions. The study explores how culturally rooted and eco-friendly products have gained traction, with consumers preferring Indian weaves, embroideries, and handcrafted textiles. Designers like Sabyasachi and Anita Dongre have embraced these crafts in contemporary collections, while increased disposable incomes, e-commerce, and global demand, including from NRIs, have boosted their popularity. Artisans, empowered by technology and entrepreneurship programs, are also capitalizing on the market potential of traditional crafts. Indian textiles and handicrafts have thus emerged as a lasting trend in both domestic and export markets.

Significance of the study:

Provides a comprehensive understanding of the impact of technology on traditional craftsmanship in the fashion industry.

Fosters dialogue among artisans, designers, and technologists to ensure a balanced approach to technological integration.

Objectives:

To examine the impact of technology on traditional craftsmanship in the fashion industry.

To discuss the challenges and limitations of technological adoption in the fashion industry.

III. METHODOLOGY:

The research article is purely conceptual. All of the study materials were gathered from secondary sources and were analysed to carry out the study thoroughly. The secondary data was gathered from numerous academics and researchers, published books, and articles that have appeared in various magazines, periodicals, conference papers, working papers, blogs, and websites.

IV. RESULTS AND DISCUSSION:

To examine the impact of technology on traditional craftsmanship in the fashion industry.

1. Innovations Enhancing Production Quality and Efficiency

The emergence of digital printing techniques has brought about a significant transformation in the textile handcraft industry. This innovation empowers artisans to craft intricate patterns with unparalleled precision, previously unattainable through manual methods. Digital printing unlocks limitless design and colour possibilities, enabling the creation of bespoke textile products. Furthermore, eco-friendly and sustainable dyeing techniques have revolutionized the industry, utilizing natural sources to minimize environmental impact. This shift caters to the rising demand for sustainable products, harmonizing tradition with environmental responsibility.



Figure 2: Hand block print



Figure 3: Digital print

The textile handcraft sector has seen significant advancements with the introduction of computer-aided design (CAD) software. The artisans can generate complex patterns, analyse designs, and modify details before production with the use of CAD tools, ensuring accuracy and reducing waste. This technology has streamlined the design process, boosting efficiency, accuracy, and product quality.

Moreover, by carefully combining traditional methods with automation, modern weaving technology accelerates output capacity while preserving the uniqueness and skill of traditional textiles. This harmonious fusion of tradition and innovation enables artisans to produce high-quality textiles efficiently, maintaining the sector's cultural integrity.

2. Growth and Development Opportunities

One new possibility is the growing desire for handcrafted, distinctive, as well as culturally rich products on a global level. Artists can present their unique crafts to an international clientele by extending their reach to foreign audiences via the use of internet platforms and clever marketing tactics. Social media and e-commerce platforms give artists direct access to customers throughout the globe, allowing them to increase their profit margins by avoiding traditional retail middlemen.

The adoption of modern technology and innovative practices presents significant growth opportunities for artisans. Craftspeople can improve the efficiency and standard of their manufacturing processes by utilising machines such as digital looms, CAD software, and eco-friendly dyeing methods. These advancements increase the attraction of traditional crafts to contemporary consumers by enhancing workmanship and creating new opportunities for artistic expression. Working together, designers and artisans can create innovative pieces that appeal to a wider range of consumers by fusing traditional workmanship with contemporary style.

3. Textile Handicrafts and Cultural Heritage Preservation

The textile handicraft sector, which is a living museum of cultural legacy, gains a great deal from the marriage of contemporary technology and craftsmanship. Conventional arts like embroidery, weaving and dyeing skills are not merely methods of production but carry the historical and cultural legacy of many locations. By integrating technology such as digital design tools and sustainable production techniques, artisans can preserve these traditional crafts while enhancing their efficiency and appeal to contemporary markets. This fusion ensures that the unique artistic expressions and cultural symbols passed down through generations remain relevant, allowing artisans to safeguard intangible cultural heritage in an evolving world.

In addition, the designs and patterns of traditional textiles typically include great cultural importance, expressing the roots, beliefs, and ideals of the people they represent. These textiles act as living cultural artifacts, linking modern society with its ancestral roots. By merging craftsmanship with technology and promoting these crafts through exhibitions, museums, and cultural festivals, artisans can not only preserve these traditions but also elevate their visibility. This approach fosters a greater appreciation for cultural diversity and artistic heritage, ensuring that these rich narratives continue to resonate with contemporary audiences.

4. Economic and Social Impact on Local Communities

The integration of technology into the textile handicraft industry offers immense potential to enhance the sector's sustainability, thereby increasing employability and driving economic growth. In rural areas, where job opportunities are limited, combining traditional craftsmanship with modern tools can improve production efficiency and expand market reach. This promotes the general economic development of local communities in addition to helping craftspeople earn more money and sustain their families. Furthermore, as women make up a sizable share of those employed in this industry, technology use can give them even more power by expanding their prospects for social recognition and financial independence.

Beyond economic advantages, the integration of technology in the textile handicraft sector can also enhance social cohesion and community solidarity. By modernizing traditional practices, artisans can work more collaboratively within cooperatives and workshops, creating spaces where knowledge exchange and innovation thrive. This strengthens communal bonds and promotes social well-being. Moreover, elder artisans pass on their knowledge to future generations while incorporating new tools, the industry's integration with technology promotes intergenerational learning, maintains cultural continuity, and deepens community pride and identity.

5. Preserving Community Traditions and National Identity

Maintaining local customs and enhancing national identity are greatly aided by the integration of modern technology in the textile handicraft sector. By digitizing traditional designs and techniques, artisans can preserve and document their cultural practices for future generations, ensuring that these unique customs are not lost. Technology also enables broader sharing of these crafts on global platforms, allowing communities to celebrate and showcase their heritage to a wider audience. This fusion of innovation with tradition ensures that cultural expression remains vibrant, adapting to modern times while continuing to reinforce a community's identity and national pride.

At the national level, technological advancements in the textile handicraft sector support larger initiatives, such as those described in initiatives like Vision 2030, which are meant to conserve and advance cultural heritage. The government can further highlight the value of cultural preservation and promote a unified national identity by modernizing traditional crafts. Investing in the technological advancement of this sector not only ensures the survival of traditional practices but also strengthens cultural diplomacy. By showcasing its rich artistic traditions to a global audience, the country enhances its international cultural standing, allowing its heritage to resonate far beyond its borders. (Alfawaz, 2024)

To discuss the challenges and limitations of technological adoption in the fashion industry.

1. The traditional textile handicraft sector faces formidable challenges in the globalized market. The danger posed by mass-produced, machine-made textiles is considerable since craftsmen find it difficult to compete on both production volume and pricing. As a result, there is less of a market for handcrafted goods, endangering the livelihoods of those who make their living from these crafts. Furthermore, ensuring the sustainability of traditional practices presents an additional challenge, potentially leading to the loss of cultural heritage and craftsmanship.
2. This crisis has far-reaching consequences, impacting not only artisans' income but also the preservation of cultural traditions and community livelihoods. To mitigate these challenges, strategic support, innovation, and market access are crucial. By promoting traditional handicrafts and providing artisans with resources and opportunities, we can preserve cultural heritage and ensure the long-term viability of this cherished sector.
3. Traditional textile handicrafts face pressing challenges in the modern era. Environmental concerns surrounding conventional dyeing and weaving methods have escalated, prompting artisans to adopt sustainable practices. However, transitioning to eco-friendly technologies and materials requires substantial investments, posing a significant hurdle. Moreover, the sector struggles with knowledge transfer and skill preservation due to inadequate formal training and education for young artisans.
4. In the past, family generations have carried on ancient crafts, but in the absence of formal education, these talents run the risk of disappearing. Furthermore, the survival of traditional crafts is in jeopardy as new generations become more and more lured to contemporary careers that offer greater financial security and social prestige. This generational divide underscores the need for innovative solutions to attract and train the next generation of artisans. (Alfawaz, 2024) (Nalawade, 2024)

Future Prospects of Textile Handicrafts with Technology

The expanding global appreciation of handcrafted and culturally meaningful products is expected to propel the textile handicraft business toward a bright future. Given that distinctive and sustainable products are becoming more and more in demand, textile crafts have a great opportunity to increase their market share worldwide. The secret to this transformation will be combining ancient methods with cutting-edge inventions, which will allow craftspeople to produce high-quality goods that satisfy modern needs while protecting cultural heritage.

Government programs such as Vision Viksit Bharat 2047 emphasise the value of economic diversification and cultural preservation, providing a solid platform to assist the textile handicraft industry. Because of the initiative's emphasis on tourism and heritage preservation, traditional crafts can be effectively promoted and expanded both nationally and globally.

V. CONCLUSION

In conclusion, Because of the increasing demand for handcrafted and culturally meaningful products around the world, the prospects of the textile and handicraft business appear to be quite bright. By embracing innovation while preserving traditional techniques, the fashion industry can foster sustainable growth, empower local communities, and promote cultural diversity. This delicate balance between heritage and innovation is crucial in shaping a fashion industry that values both. Obtaining a greater market share worldwide will depend on artists' ability to combine age-old methods with innovative innovations to produce superior products that satisfy modern consumers' needs while conserving cultural heritage.

As the industry evolves, sustainability, e-commerce, and technological advancements will be critical drivers of growth. The increasing demand for eco-friendly and unique products, coupled with the rise of online platforms and innovative production methods, positions handicrafts for significant expansion.

Looking ahead, emerging markets in Asia, sustainable tourism, and artisanal collaborations with designers will further propel the industry's growth. By embracing these trends and innovations, artisans can ensure the handicraft industry not only survives but thrives in the modern world, enriching our cultural landscape. Ultimately, a harmonious blend of tradition and innovation will secure the textile handicraft industry's place as a vibrant, sustainable, and culturally rich sector for generations to come.

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