Sustainability Challenges in Kanpur's Leather Industry: An Analysis of Export Performance, Social Responsibility and Environmental Challenges

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***Abstract*—Kanpur is a big Indian city that manufactures and exports leathers. The city contains more than 300 tanneries which mainly operate from the Jajmau Industrial area. Leather work is a major contributor to Indian foreign exchange, as well as a source of jobs to thousands of Kanpur residents. There are high costs in terms of environmental costs associated with the economic benefits of this industry. The industry is facing serious issues that comprise water and soil pollution issues, insecure working environments, and low export outcomes as compared to the other manufacturing center of analogous leather in India. The study recommends more powerful government policies, more pollution control, better working conditions and green practices to ensure that the industry grows in a more responsible manner.**

***Index Terms*—Kanpur leather industry, export performance, tannery pollution, worker wellbeing, sustainability, Ganges River**

I. INTRODUCTION

One of the major areas of exports of India has been its leather industry which has been of great significance in the country since the early seventies (Roy, 2012). The sector has been earning a lot of foreign exchange in the country as it offers millions of workers across the country with jobs. Kanpur city that is located in the state of Uttar Pradesh has been given the title of the Leather City of India. The city has several tanneries that are spread all over its Jajmau industrial area, spread on both sides of the banks of the Ganges River. The Kanpur leather cluster has been struggling with trying to sustain its competitive advantage over other Indian leather centres that also comprise Chennai and Kolkata. The cluster is second to these cities in export earnings and value realization of products (Sharma & Varma, 2012). The activities in tanneries in Jajmau industrial area have led to environmental degradation that has become a significant environmental problem to the people. The Ganges River is affected by pollution due to the release of the heavy metals which include chromium lead and cadmium by tanneries which not only damage the water way, but also the neighbouring lands and wellbeing of the residents (Tripathi, 2025).

Another issue that the situation challenges is worker welfare. The majority of these tanneries are in low-income communities and the majority of the workers operate on informal employment contracts, lack job security and health coverage (Shukla et al., 2025). The social issues the community is facing have introduced more challenges that make the leather industry unattainable to sustain growth.

This paper uses existing research studies from year 2012-2026 to create a comprehensive understanding of the sustainability issues which affect Kanpur's leather sector. The paper discusses three key issues and they are; export performance and environmental challenges and social responsibility.

II. LITERATURE REVIEW

The study Roy (2012) found that the growth in Indian leather exports came about because of the establishment of environmental regulations that began in the late 1980s and later went into the early 1990s. The results show that organizations are able to record improved performances by their creation of operational capabilities by adhering to environmental rules that formulate environmentally responsible designs needs.

In analysing the export performance of Kanpur cluster through the competitive framework developed by

Porter, some of the factors that lead to poor performance of the cluster were identified. The researchers found five issues which comprised of inadequate transport systems, poor electric supply, high production costs, limited use of modern machinery and lack of coordination among industrial players. The research revealed that the support that the state government offered the business sector in terms of money and the creation of policies did not offer enough support (Sharma & Varma, 2012).

The researchers Batabyal (2022) and Batabyal & Yoo (2022) developed a model that entailed two tanneries which were located on different banks of the river Ganges with one tannery constructed on the upstream of the other. The analysis exhibits that pollution is an economic problem besides being an environmental hazard. The economic cost of contaminated water was computed by researchers and he suggested that tanneries should implement effluent fee system which would help them to achieve social optima stage of producing leather (Batabyal, 2024). The study by Batabyal (2025) has shown that tanneries that merge their activities will be reducing the level of pollution but their overall competitiveness would be reduced due to high prices of leather and the lack of community benefits accumulation.

The authors identified the elements that render Indian leather producers resistant to implementing the circular economy approaches on the basis of the conducted research that found out that the real factory alteration requirements and current supplier relationships along with the lack of knowledge regarding the circular economy are the primary issues that troubling the companies (Karuppiah et al., 2023).

Paul et al. (2021) examined the associations of human capital and any value chain activity in leather industry. Businesses that hired workers with high skills produced better outcome in the production stage as well as exportation of the products. The study poses a direct relationship between satisfaction of employees and the business outcomes since it shows that social responsibility is not only a business issue but also an ethical one. The conceptual framework of the study is given in Figure 1.

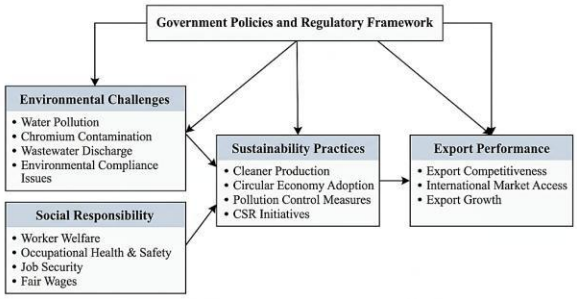

Figure 1. Conceptual Framework of the study (Author's own)

III. EXPORT PERFORMANCE OF KANPUR'S LEATHER INDUSTRY

The Indian leather industry has an annual revenue of US dollar 12 billion and thus, it is one of the largest contributors of foreign currency revenue to the country (Sharma, 2022; Singh, 2018). The Kanpur export performance and value creation of the products have continuously performed poorly compared to the Chennai and Kolkata leather clusters (Sharma & Varma, 2012). Major leather clusters are summarized in Table 1.

Table 1. Major Leather Clusters in Kanpur

Area	Location	Key Activity	Quantitative Indicator	Sustainability Challenge	Source
Jajmau Leather Cluster	Kanpur, Uttar Pradesh	Leather processing and tanning	The cluster has more than 300 tanneries; there are reports that there are more than 400 tanneries in the larger Jajmau belt.	Chromium contamination, disposal of wastes in the Ganges River.	(Oppla, 2026)
Jajmau CETP	Kanpur, Uttar Pradesh	Effluent treatment	Treatment of 36 MLD tannery effluent, 173 MLD sewage.	Desire to be under constant supervision and effectiveness of treatment.	(Press Institute of India, 2024)

New CETP Facility	Jajmau, Kanpur	Advanced wastewater treatment	20 MLD residence capacity and 900 KLD chrome recovery of unit.	Less toxic discharge and chrome recycling.	(WABAG, 2026)
Mirza International Ltd.	Kanpur, Uttar Pradesh	Leather shoes and processed leather products	It is one of the biggest exporters of leather in India; a large exporter via global markets under the Red Tape brand.	Adherence to international environmental and labour standards.	(Chakraborty & Chakraborty, 2026)
Superhouse Ltd.	Kanpur, Uttar Pradesh	Leather footwear	National award-winning leather exporter; high export level in Kanpur cluster.	Having a sustainable sourcing and cleaner production systems.	(Tnn, 2026)
Model Tanners	Kanpur, Uttar Pradesh	Finished leather production	Among top exporters of leather in Kanpur.	Waste management and environmental compliance.	(Admin & Admin, 2024)
Allah Dad Tannery	Kanpur, Uttar Pradesh	Finished leather exports	Kanpur cluster export-award-winning tannery.	Wastewater treatment and pollution control.	(Admin & Admin, 2024)
Jajmau Living Filter Project Area	Kanpur, Uttar Pradesh	Nature-based pollution mitigation	Tannery cluster 35 hectares of restoration area near tannery cluster.	Extensive deposition of heavy metal and loss of biodiversity.	(Oppla, 2026)

Kanpur and Unnao area transport and logistic infrastructure is not as good as that of southern cities. The low level of energy availability and outdated equipment increase costs of production resulting in high pricing of products sold to foreign markets by Kanpur companies. The unsynchronized work of various small and medium tanneries in the cluster so that they can get economies of scale that can see them compete with bigger exporting firms is not possible. Although the two approaches (market-based and environmental friendliness) to sustainability yield similar outcomes in the domestic market, researchers concluded that those companies that implemented either strategy perform better in the international trade environment. The study by Chishty & Sayari (2024) found that those firms that build ecologically friendly expertise and build their export strategies on the principles of their ecological beliefs are more successful in foreign business. The study shows that the Kanpur exporters need to adopt environmentally friendly business practices due to two reasons environmental protection and establishment of market advantage.

In their analysis of leather firms in Kanpur and Unnao, researchers discovered that economic and government policies play a major role in determining the sustainability of the firms (Brijendra et al., 2025). The researchers found that technological adoption had short-run disadvantages on small firms since they could not afford high start-up costs that came with new technologies. This case reveals that small tanneries in Kanpur live in troubles due to the need to have financial resources to introduce new technologies.

The other crucial element that leads to success is the human capital. Paul et al. (2021) found that organizations, which had better skilled workers, generated more levels of productivity leading to more exports. The human capital gap in Kanpur is due to the involvement of the low educated workers in informal workers arrangements whereby the industry is not able to develop and this impedes the ability to export.

IV. ENVIRONMENTAL CHALLENGES

Kanpur leather industry causes stark environmental harm which especially impacts Jajmau by the industries it operates in. Tanning process by tanneries consumes huge quantities of chemicals such as chromium salts and these chemicals find their way into the wastewater which flows into the Ganges River

(Tripathi, 2025; Batabyal, 2022). Figure 2 shows the environmental harm due to Kanpur leather industry.

(a)

(b)

(c)

Figure 2. Harm to environment because of leather tanneries (a) Discharge of wastewater into farmland (b) Wastewater forming foamy structure in nearby ponds (c) the wastewater is discharged into Ganges River (Gallagher, 2014)

Tripathi (2025) recorded that some of the major pollutants such as chromium, lead, cadmium, nickel, and copper are present in the effluents in the Jajmau tanneries. The implications of this pollution have far-reaching impacts on the environment. This renders the soil in that region toxic hence crop growing in the region is not possible. The water of the surface is polluted. Local people have skin diseases, physical ailments and other health problems that arise as they expose themselves to these chemicals over prolonged durations (Boruah, 2022).

Singh & Gundimeda (2020) evaluated compliance of Kanpur tanneries on environmental regulations which identified several key compliance problems. The field study revealed that tanneries failed to comply with regulations on pollution as the pollution regulatory bodies received information that did not reflect true discharge amounts. The surveillance system that uses single grab samples at only one point does not record the maximum levels of pollution which are experienced at night time and during irregular hours. They advised replacing it with composite sampling that occurred over a 24-hour time period and whose monitoring process should be included third party organizations such as the NGOs and the research institutions.

Batabyal (2024) suggested that the production of tannery could be taken to a socially more desirable level, through the use of an effluent fee. The market demand where tanneries will be forced to pay pollution charges will give them financial incentives to reduce their amount of pollution. Batabyal & Yoo (2022) were able to show that the current competitive market structure with which tanneries are operating without regard to their pollution consequences on other businesses and society leads to social inefficiency. Sameh et al. (2020) showed that the tannery wastewater could be successfully purified with the help of the electrocoagulation technique and UV photolysis that decreased the chemical oxygen demand of wastewater more than 94%. The availability of effective treatment technologies gives encouraging evidence of effective treatment procedures.

Karuppiah et al. (2023) clarified that Indian companies can use the circular economy approach to re-use and re-inflate leather waste but must address huge challenges to implementation. The primary obstacles

consist of resistance to change among firm owners, inability to have trusted suppliers to retrieve waste products, and the low perception of the practical meaning of the concept of a circular economy.

V. SOCIAL RESPONSIBILITY AND WORKER WELFARE

The study revealed that the employees in the Kanpur leather cluster experienced severe health problems that influenced their wellbeing in a number of ways (Shukla et al., 2025). The outcomes of wellbeing of workers who pertained to the three groups of women namely, unskilled workers as well as informal workers declined across all the assessment procedures. A major issue was experienced in the organization due to unequal distribution of wages among the employees. The workers had to work long hours with little pay and were not provided with any official health and safety provisions. The harm to workers is presented in Figure 3.

(a)

(b)

(c)

Figure 3. Impact on workers as well as nearby residents (a) skin condition developed due to toxic water (b) worker working bare foot in leather factory (c) Child lost eyesight due to toxic water and health issues (Gallagher, 2014)

Venkataraman & A (2025) examined the practices of sustainable supply chain management in the Indian leather industry, and discovered that the practices that had the least level of development throughout the supply chain were worker safety, and training in environmental matters. The stakeholder input approach applied by the organization entailed government officials and industry representatives and civil society groups in finding out that sustainability commitment by organization leadership prompted all organizational practices. The use of personal procedures on worker safety and training on environmental necessitates the total dedication of personnel in ownership and management of firms in accordance with the organizational need.

The primary cause of social problems in Kanpur tanneries is due to their employment system that is based on work without formal agreements. Employees working in an informal job arrangement in which they are not on official employment contracts are not provided with any job protection or job benefits and they have great challenges in reporting work related problems. Shukla et al. (2025) suggested that policy interventions could focus on enhancing the promotion of formal employment, health and safety regulations, and wage disparity, especially towards women and the unskilled workforce.

VI. CONCLUSION

The leather industry of Kanpur possesses required historical background and necessary expertise together with complete operational systems which establish it as a significant player in worldwide leather markets. The industry will not reach its full potential since three interdependent issues pose a challenge to the functioning of the industry that comprise low levels of export performance and high levels of environmental harm and poor working conditions. The way forward requires different groups to act as a single unit. The pollution monitoring system should be enhanced in terms of both more reliable measurements and detection devices. The tanneries can also obtain financial gains through the use of effluent charges along with the outcome-based subsidies that would give an incentive on minimizing the pollution. Implementation of cleaner technology in collaboration with the worker education programs should be supported by the government through credit assistance programs.

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