

Leather Chemical Industry of Bangladesh: Current Market Scenario and Future Prospects

**Mongsathowai Marma, Md. Mahfujul Haq,
Mahabubur Rahman Tusher,
Md. Asif Mustafa**

Department of Mechanical and Production Engineering
Ahsanullah University of Science and Technology
Dhaka, Bangladesh

mongsathowaidu2017@gmail.com, mahfuzipe.buet@gmail.com,
tusherahmed157@gmail.com, mustafa1619032@stud.kuet.ac.bd

Mra Gya Prue Marma

Department of Social Welfare,
University of Dhaka, Bangladesh
Email: itmragya.mg@gmail.com

Abstract

The leather chemical industry in Bangladesh plays a pivotal role in supporting the nation's leather sector, which encompasses tanneries, footwear, and leather goods. It contributes 3% to GDP and generates \$1.1 billion annually in exports. This study examines the current market dynamics, key drivers, and challenges shaping the leather chemical industry while forecasting its future prospects. Data were collected through structured questionnaires targeting leather manufacturers and chemical suppliers, as well as in-depth interviews with professionals. The analysis explores market trends, adoption of sustainable practices, environmental impacts, and the influence of government initiatives. The analysis revealed that over 50% of participants prefer eco-friendly or hybrid chemicals, indicating a shift towards sustainable practices driven by global trends and consumer demand. However, the transition faces challenges, including increased production costs, reported by 40% of respondents, and external barriers to implementation. This study underscores the need for strategic investments in technology, workforce training, and infrastructure to address current limitations and capitalize on emerging opportunities.

Keywords

Leather Chemical Industry, Sustainability, Market dynamics, Future prospects

Introduction

The leather industry has long been a cornerstone of Bangladesh's economy, and it is known for its high-quality products and significant contribution to national exports. A wide range of chemicals, around 250, are used in different stages of leather production in the tanning industry such as Sodium Chloride (NaCl), Soda Ash (Na₂CO₃), Lime (Calcium Hydroxide), Sodium Sulphide (Na₂S), Sodium Hydroxide (NaOH), Formic Acid (HCOOH), Sulfuric Acid (H₂SO₄), Basic Chromium Sulfate (BCS), Sodium Formate (HCOONa), Soda (NaHCO₃), and Amino Resins. To meet the chemical demand in the leather tanning industry, the leather chemical industry in Bangladesh has seen significant growth over the past few decades, emerging as a critical component of the country's economy. This sector supplies essential leather processing chemicals, including tanning, dyeing, and finishing. Historically, this sector has evolved from small-scale, traditional practices to a modern, industrialized industry. Moreover, the leather sector is one of the largest sources of employment, engaging around 850,000 workers. The growing demand for Bangladeshi leather

products in international markets, particularly in Europe and North America, has driven the expansion of the leather chemical industry. The government's supportive policies, including tax incentives and the establishment of leather industrial parks, have further bolstered the industry. Besides, the move towards sustainable and eco-friendly leather processing practices has created new opportunities for innovation in leather chemicals. Companies are increasingly investing in research and development to produce less toxic, biodegradable chemicals to meet global environmental standards.

Despite its growth, the industry faces challenges such as environmental pollution and regulatory pressures. The sector is under scrutiny for adopting greener practices, which has led to increased investments in wastewater treatment and pollution control technologies. The ongoing shift towards sustainable practices presents both a challenge and an opportunity for the industry. The future prospects of the leather chemical industry in Bangladesh appear promising. The global leather market is expected to grow, driven by rising consumer demand for leather products. This growth will likely spur further demand for advanced leather chemicals. Additionally, the industry's focus on innovation and sustainability is expected to enhance its competitive edge in the global market. As Bangladesh continues to modernize its leather industry, the role of leather chemicals will become even more crucial. Companies that adapt to the changing market dynamics, invest in sustainable practices, and innovate in their chemical offerings will likely lead the market. The government's continued support, coupled with global market trends, suggests a positive outlook for the leather chemical industry in Bangladesh.

This study aims to examine the changes in market demand driven by global trends towards sustainability and environmental responsibility. With increasing consumer awareness and stricter environmental regulations, there is a significant shift towards eco-friendly leather processing chemicals. This transition presents both challenges and opportunities for the leather chemical industry in Bangladesh. Lastly, this study seeks to identify the potential growth opportunities within the leather chemical industry. The study will highlight areas with the highest growth potential by analyzing current market trends, government initiatives, and the push for sustainable practices. This includes innovations in biodegradable chemicals, investment in research and development, and the adoption of green technologies. Moreover, the objectives of the study are:

Evaluate Market Dynamics and Environmental Impact:

Assess the current structure, key players, market size, and growth trends in Bangladesh's leather chemical industry. Investigate environmental challenges posed by hazardous chemicals and evaluate sustainable practices being adopted.

Forecast Future Demand and Identify Growth Opportunities:

Analyze future demand trends for leather chemicals based on global and local market shifts toward sustainability. Highlight potential growth opportunities, focusing on innovations in biodegradable and eco-friendly chemicals.

Assess Government Initiatives and Formulate Strategic Recommendations:

Evaluate the impact of government policies and initiatives on the industry's growth and sustainability. Provide strategic recommendations for stakeholders to enhance sustainability, competitiveness, and resilience in the leather chemical industry.

2. Literature Review

2.1 Overview of the Leather Chemical Industry

The leather industry in Bangladesh has a long history, dating back several centuries. However, the modern leather industry began to take shape in the 1950s and 1960s by establishing tanneries and small-scale leather processing units. The sector grew gradually with increased domestic and export demand for leather goods. Chemicals used in leather processing in Bangladesh began to gain prominence in the 1980s. Initially, the industry relied heavily on imported chemicals, but local production developed over time. The growth of the chemical segment was driven by the expansion of the leather industry and the need for more sophisticated and environmentally friendly processing technologies. The leather chemical industry in Bangladesh features a mix of prominent domestic and international players. Domestic companies like Leather Chemicals Limited, Bengal Chemicals & Pharmaceuticals Ltd, and Chemicals and Dyes Limited supply essential products for the local leather processing industry. These companies help meet the growing demand for high-quality leather chemicals and contribute significantly to the sector's development. International

players such as Clariant, BASF, Lanxess, and Huntsman Corporation bring advanced technologies, global expertise, and sustainable solutions to the Bangladesh market. Their presence supports the industry with cutting-edge products and drives the evolution of leather processing practices toward greater efficiency and environmental responsibility. Crucial associations like the Bangladesh Leather Chemical Association support the industry's growth by advocating for industry needs and fostering collaboration among stakeholders. Together, these players and entities shape the landscape of Bangladesh's leather chemical sector, contributing to its expansion and modernization.

2.2 Current Market Scenario

The growing leather production industry has surged the demand for leather chemicals in Bangladesh. According to recent data, the market is characterized by a high dependency on imports of specialized chemicals. Segmentation reveals that dyes and tanning agents hold the largest market share. The regulatory environment is becoming more stringent, with recent policies aimed at reducing environmental impact. Moreover, the largest consumers of leather chemicals are in the footwear and apparel industries. These sectors drive significant demand for tanning agents, dyes, and finishing chemicals. Moreover, leather chemicals are also used to produce leather for furniture and automotive interiors. The growth in these sectors contributes to overall demand. Increasing demand for leather household items such as bags, belts, and accessories also supports the leather chemical market. Domestic consumption of leather chemicals is substantial. In recent years, the domestic market for leather chemicals has been estimated to be around \$200 million, with an annual growth rate of 5-7%.

2.3 Challenges and Opportunities

The leather chemical industry in Bangladesh faces several significant challenges that impact its growth and sustainability. The leather processing industry is known for generating considerable chemical waste, including hazardous substances from tanning, dyeing, and finishing processes. This can lead to water and soil pollution if not properly managed. This industry often struggles with inadequate wastewater treatment facilities. The high volume of contaminated water requires advanced treatment technologies to meet environmental standards and prevent pollution. Increasing environmental regulations and standards are pushing companies to adopt more sustainable practices. Compliance with these regulations can be costly and complex, especially for smaller players in the industry. Implementing eco-friendly technologies and waste management systems requires significant investment, which can burden some manufacturers. Besides, Bangladesh relies heavily on imported raw materials for leather chemical production, such as specialized chemicals and additives. Fluctuations in global supply and prices can impact production costs and availability. Global supply chain issues, including geopolitical tensions and trade restrictions, can lead to delays and increased costs for imported raw materials. Limited domestic production of certain essential chemicals and raw materials leads to a reliance on imports. Developing local sources or alternative materials can be challenging due to technical and economic barriers.

2.4 Future Prospects

The global and domestic demand for leather products, including footwear, apparel, and accessories, is driving growth in the leather industry. Bangladesh's strategic focus on expanding its leather production capacity is fueling demand for high-quality leather chemicals. Investments in modernizing tanning facilities and infrastructure, especially in the Dhaka and Chattogram regions, are boosting the need for advanced chemical solutions. However, the leather chemical market in Bangladesh is projected to grow at a steady rate over the next five to ten years. Factors driving this growth include increased leather production capacity, rising export potential, and enhanced domestic consumption. Market forecasts suggest a positive revenue trajectory, driven by higher volumes and premium pricing for advanced and sustainable chemical products. There is expected growth in demand for specialty chemicals, such as those used for high-performance and luxury leather products. This includes chemicals that offer superior durability, water resistance, and aesthetic qualities. With the global leather market expanding, Bangladesh's leather chemicals are likely to see increased export opportunities. This is particularly relevant for markets with stringent sustainability standards. Ensuring a stable supply of raw materials and efficient logistics will be important for maintaining growth. Market players should focus on building resilient supply chains to mitigate potential disruptions.

Experts highlight that Bangladesh's leather chemical sector is poised for growth and is supported by both domestic and international market trends. Analysts suggest that companies investing in sustainable and innovative chemical solutions will have a competitive edge. Industry leaders emphasize the importance of aligning with global sustainability trends and advancing technological capabilities. They recommend focusing on R&D and forming strategic partnerships to capitalize on emerging opportunities. According to regulatory bodies, compliance with

environmental standards and proactive adaptation to regulatory changes will be essential for long-term success. Companies should anticipate and adapt to regulatory shifts to maintain market access and growth.

3. Methodology

This study aimed to assess the current market dynamics, environmental impact, and future demand trends in the leather chemical industry in Bangladesh. To achieve this, a mixed-methods approach was employed, combining both qualitative and quantitative research methods. This approach ensured a comprehensive understanding of the industry from multiple perspectives.

3.1 Sample and Sampling Technique

A purposive sampling technique was used to select participants who have direct involvement and expertise in the leather chemical industry. This method was chosen to ensure that the sample included individuals with relevant knowledge and experience. The sample consisted of:

10 tannery owners and industry experts: These participants were selected for their insights into market dynamics and industry trends.

5 environmental specialists: These participants provided expertise on the environmental impacts of leather processing.

5 tannery workers: These participants offered firsthand accounts of the working conditions and health risks associated with the industry.

3.2 Data Collection Method

Data collection involved three primary methods: surveys, interviews, and observations. Each method was chosen to gather specific types of data:

Surveys: Structured questionnaires were distributed to gather quantitative data on market dynamics, growth trends, and sustainability practices.

Interviews: Semi-structured interviews were conducted to obtain qualitative insights into environmental challenges and health risks.

Observations: Field visits to tanneries allowed for direct observation of current practices and technologies used in leather processing.

3.3 Survey, Interview, and Observation Procedures

Survey Methodology: A structured questionnaire was designed and distributed to 30 tannery owners and industry experts. The survey included questions on market size, key players, growth trends, and sustainability practices. The questionnaire was pre-tested to ensure clarity and relevance.

Interviews: Ten environmental specialists and ten tannery workers were interviewed in depth, semi-structured. The interviews were designed to explore the environmental challenges posed by hazardous chemicals, the health risks for workers, and the efforts towards sustainable practices. Each interview lasted approximately 45-60 minutes and was recorded with the participant's consent.

Observations: Field visits were made to several tanneries to observe the current practices and technologies used in leather processing. Detailed notes were taken during these visits to document the processes, equipment, and safety measures in place.

3.4 Data Analysis

The data collected from surveys, interviews, and observations were analyzed using a combination of statistical and qualitative analysis techniques.

Qualitative Data Analysis: The interview transcripts and observation notes were analyzed using content analysis. This involved coding the data to identify common themes and patterns related to environmental impacts, health risks, and sustainable practices. The qualitative data provided a deeper understanding of the industry's challenges and opportunities.

This detailed methodology ensured a thorough and comprehensive analysis of Bangladesh's leather chemical industry's current state, environmental challenges, and future trends.

4.Result and Discussion

The data collected from 15 respondents highlights several key insights into the current market scenario of the leather chemical industry in Bangladesh. A significant portion of the respondents (60%) reported a preference for eco-friendly or mixed chemicals in their production processes, indicating a growing shift towards sustainability in the sector. However, challenges such as high costs, limited availability, and a lack of technical know-how remain prominent barriers to adopting green chemicals, as reported by over 50% of the participants. This suggests that while there is interest in sustainable alternatives, practical implementation is still hindered by external factors.

In terms of market trends, the majority of respondents observed an increase in demand for eco-friendly chemicals driven by global sustainability trends and consumer preferences. About 40% of the respondents reported a significant rise in production costs due to this transition, while others experienced moderate changes. Additionally, most respondents were optimistic when asked about future growth prospects, with around 70% expecting significant or moderate growth in the eco-friendly chemical sector. These findings suggest that while the industry faces immediate challenges, there is potential for substantial growth if proper investments in technology, training, and infrastructure are made. The pie chart illustrates the responses of 15 tannery respondents to question Q15, which is likely related to the future of eco-friendly leather chemicals. The results indicate that the majority of respondents are optimistic about the potential of eco-friendly leather chemicals.

Specifically, 73% of respondents believe that these chemicals have a bright future, while 27% believe they have a somewhat bright future. This suggests a positive outlook on the future of sustainable and environmentally friendly practices in the leather industry.

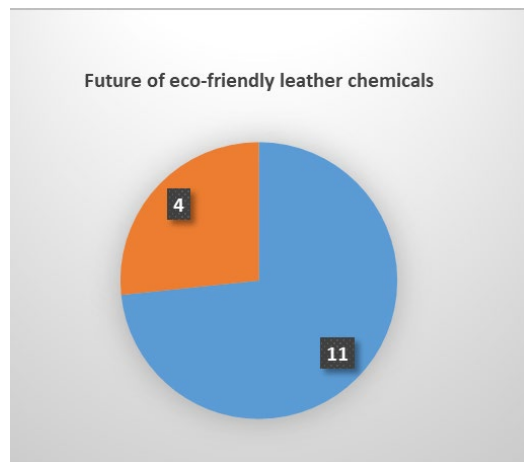


Figure 1. Future of Eco-friendly Leather Chemicals

The bar chart shows the responses of tannery respondents to question Q5, which is likely related to the change in production costs. The chart depicts the distribution of responses across different categories, with the height of each bar representing the number of respondents who selected that particular category.

Based on the chart, the most common response is a slight increase in production costs, with 7 respondents selecting this category. A smaller number of respondents reported a significant increase (5 respondents) or no change (3

respondents). The remaining respondents either reported a significant decrease (1 respondent) or no change (0 respondents).

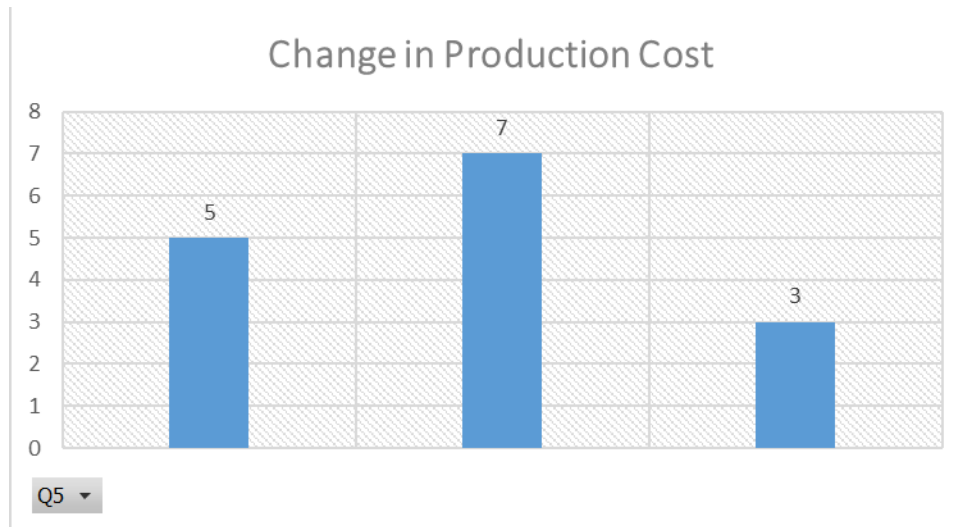


Figure 2. Responses of respondents on Change in Production Cost

The two charts provide insights into the perspectives of tannery respondents on the future of eco-friendly leather chemicals and the impact on production costs. Regarding the future of eco-friendly leather chemicals, the majority of respondents (73%) are optimistic, with 27% expressing a somewhat positive outlook. This suggests a growing interest and support for sustainable practices in the leather industry.

In terms of production costs, the most common response is a slight increase, followed by significant increases and no change. However, the majority of respondents did not report a significant decrease, indicating that the transition to eco-friendly chemicals may come with some cost implications. Overall, while the future of eco-friendly leather chemicals appears promising, careful consideration of production cost implications is essential for the industry's sustainable development.

5. Conclusion

The leather chemical industry in Bangladesh plays a pivotal role in supporting the nation's thriving leather sector, which contributes significantly to the country's economy. However, the leather chemical industry in Bangladesh faces certain challenges, strategic initiatives focusing on sustainability, technology adoption, and capacity building can secure its position as a key player in the global leather industry. This study set out to evaluate the market dynamics, environmental impact, and future prospects of the leather chemical industry in Bangladesh. Through a combination of primary and secondary data, including responses from leather manufacturers, chemical suppliers, and insights from professionals, researchers, and policymakers involved in the SusLeather Project, several key findings emerged that align with the research objectives. Data analysis revealed that over 50% of the participants' preference for eco-friendly or mixed chemicals in their production processes would shift the industry towards sustainability. This study suggests that while there is interest in sustainable alternatives, practical implementation is still hindered by external factors. The study also revealed a growing demand for eco-friendly chemicals, driven by global sustainability trends and consumer preferences. Approximately 40% of respondents reported a rise in production costs due to this shift, while others experienced moderate impacts. Despite these challenges, 70% of respondents expressed optimism about future growth in the eco-friendly chemical sector. These findings highlight the industry's potential for substantial growth, contingent on investments in technology, training, and infrastructure.

5.1 Limitations

While this study provides valuable insights into the leather chemical industry's sustainability potential in Bangladesh, several limitations must be acknowledged to interpret the findings and understand the study's scope accurately. So, below are some of the limitations that need to be addressed in future work:

- **Sample Size and Representativeness:** The sample size of the tanneries, chemical suppliers, and professionals was limited; only 20 participants agreed to participate in the interviews. So, this does not represent the broad industry. As a result, the findings may not fully reflect the diversity of perspectives or practices across the industry.
- **Reliance on Self-Reported Data:** Since a significant portion of the data comes from questionnaires and interviews, the responses may be subject to biases, such as social desirability bias or selective reporting, potentially skewing the results.
- **Limited Time Frame:** Changes in market dynamics and environmental practices occur over time, and a short study duration might not capture long-term trends or the true impact of sustainability efforts on the industry.
- **External Factors Not Fully Explored:** External factors, such as global economic conditions, sudden regulatory changes, or shifts in consumer preferences, might influence the adoption of sustainable practices but may not have been fully covered in this study.

5.2 Recommendations

Here are specific, practical recommendations focusing on actionable steps that the leather chemical industry in Bangladesh can take:

- **Expand Sampling for Future Studies:** Encouraging collaboration with industry associations to access a broader pool of participants. This could include reaching out to small- and medium-sized tanneries and suppliers to gather a more diverse range of insights. This approach will strengthen data accuracy and ensure recommendations reflect a broader spectrum of industry perspectives.
- **Conduct Longitudinal Studies for Comprehensive Insights:** Investing in a multi-year study to monitor shifts in market dynamics, adoption of eco-friendly chemicals, and environmental impacts over time. Tracking these factors long-term will allow for a more thorough understanding of sustainability progress and challenges.
- **Analyze and Integrate External Market Factors Regularly:** Creating a task force or designate team members to monitor global market conditions, regulatory developments, and consumer trends. Regular reports from this task force could help the industry anticipate and adapt to external changes, supporting smoother transitions to sustainable practices.
- **Broaden Focus to Include Additional Sustainability Metrics:** Expanding the scope of sustainability initiatives to include waste management, water conservation, and energy efficiency. Establish partnerships with environmental agencies to implement lifecycle analysis (LCA) assessments that measure the overall impact of materials and processes, providing a more holistic view of sustainability efforts.
- **Promote Training Programs Focused on Eco-Friendly Chemical Adoption:** Designing specific training sessions for tanneries and chemical suppliers, focusing on the practical aspects of using eco-friendly chemicals and managing production costs. Partner with local or international organizations to bring experts who can provide hands-on guidance on best practices.

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Biographies

Mongsathowai Marma is currently working as a Research Assistant in the Susleather project co-hosted by Ahsanullah University of Science and Technology (AUST) and the University of Southern Denmark (SDU). He has

completed both his Bachelor's and master's in Leather Engineering at the University of Dhaka. His areas of interest are Wastewater treatment, Emerging contaminants, water purification, and resource recovery.

Md. Mahfujul Haq, an experienced Industrial and Production Engineer, is currently working as a Research Assistant at the Susleather project co-hosted by Ahsanullah University of Science and Technology and the University of Southern Denmark. He has completed a Master of Engineering in Advanced Engineering Management from Bangladesh University of Engineering and Technology (BUET). Previously, he has completed Bachelor of Science in Industrial and Production Engineering. Basic areas of expertise are data monitoring, data analysis, project evaluation, and Baseline- studies.

Mahabubur Rahman Tusher is working as an Account Cum Admin in the SusLeather Project. He has completed both his Bachelor of Business Administration (BBA) and Master of Business Administration (MBA) from Ahsanullah University of Science and Technology (AUST), Dhaka, Bangladesh. His areas of interest include marketing, financial management, administrative operations, and the development of sustainable business strategies. Through his role in the SusLeather Project, he contributes to enhancing the project's efficiency by managing accounts, streamlining administrative processes, and supporting initiatives aimed at sustainability in the leather industry.

Md Asif Mustafa, an experienced and keen data scientist working as a research assistant in SusLeather project co-hosted by Ahsanullah University of science and technology and University of Southern Denmark. He has a bachelor in Leather Engineering from KUET and currently doing Ms in Applied Statistics and Data Science from Jahangirnagar University. He has expertise in applied statistics, data analysis, machine learning, deep learning, computer vision, NLP and artificial intelligence.

Mra Gya Prue Marma is a corporate professional with over two years of research experience in research firms. He completed his bachelor's and Master's Degrees in Social Welfare from the University of Dhaka. His research interests include Criminology and the Justice System, Political Science, Public Health, and Criminal Financing.