



Sustainable Manufacturing and
Environmental Pollution

Traceability in Bangladesh's Leather Value Chain: A Baseline Survey

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Executive Summary

Traceability within the leather value chain is a crucial mechanism for ensuring robust socio-environmental safeguards and strengthening accountability and transparency from the farm to the finished product. It enables the verification of sourcing practices, production processes, and compliance with sustainability standards, addressing key concerns related to animal welfare, environmental integrity, deforestation, biodiversity loss, and climate change, while fostering stakeholder trust. Conversely, the absence of effective traceability can undermine these objectives, allowing unsustainable practices to go undetected, weakening due diligence systems, and rendering sustainability commitments unverifiable.

The growing global recognition of the leather industry's environmental and social impacts has prompted the development of regulatory frameworks to ensure leather is produced, sourced, and traded responsibly. The industry's ability to meet emerging legislative requirements depends on robust, verifiable traceability and transparent reporting. The Baseline Survey assesses the challenges and barriers that exist in the adoption of traceability technologies amongst the 16 organisations that make up the project cluster for the Leathertrace Bangladesh project. The findings will provide key evidential insights in identifying the challenges and barriers that exist in relation to the adoption of traceability technologies within a Bangladeshi context.

1 INTRODUCTION

1.1 Survey Objectives

This report presents the findings of a Baseline Survey assessing the challenges and barriers to adopting traceability technologies among the 16 organisations within the Leathertrace Bangladesh project cluster. The results provide evidence-based insights into the factors influencing the adoption of traceability solutions in the Bangladeshi leather sector. The specific objectives include to:

- Identify existing traceability practices used by participating organisations.
- Understand the barriers that hinder the adoption of traceability technologies.
- Evaluate organisational readiness for e-traceability adoption.
- Explore the participating organisations' perspectives on the benefits of adopting traceability technologies.
- Determine support needs for successful adoption of traceability technologies.
- Provide a robust evidence base to guide the development of an e-traceability technology tailored to the Bangladeshi leather industry.
- Generate evidence to inform proposed policy and institutional reforms that enable and incentivise traceability adoption in the Bangladeshi leather industry.

1.2 Project Significance

Agriculture is the mainstay of the Bangladeshi economyⁱ, with 70% of the population's livelihoods depending on the agricultural sector, which accounts for 39.9% of the country's jobsⁱⁱ. According to the World Bank, the agricultural sector in Bangladesh contributes 11.6% to the GDPⁱⁱⁱ. In parallel, the share of livestock-related enterprises to direct employment generation stands at 20%, while the livestock value chain employs 50% of the Bangladeshi workforce and accounts for 1.4% of the GDP and 13.44% of the agricultural GDP^{iv}. Notably, 78.31% of households in Bangladesh engage in subsistent livestock rearing,^v underscoring its centrality to rural livelihoods and food security. According to the SSPS (Social Security Policy Support) programme, 70 % of agricultural production in Bangladesh comes from the marginal and smallholder farmers^{vi}, who depend on traditional agricultural practices^{vii}, with informal slaughtering and processing practices often leading to inconsistent quality in skins and leather^{viii}. As of 2023, the livestock population of Bangladesh was estimated at 432 million^{ix}, with livestock production set to increase by approximately 800,000 heads by 2026, compared to 2021^x.

As of the same fiscal year (FY), Bangladesh's leather industry exports exceeded USD 1.7 billion^{xi}. Bangladesh's share in the global leather value chain is 3%, which translates to

10% of the global leather market and with concerted government intervention, export earnings are projected to hit USD 12 billion by 2030^{xii}. While the leather sector in Bangladesh has the potential to export raw leather estimated at 350 million square feet annually, only a paltry 25% of that is exported as finished leather, and the remaining 75% is exported as crust, implying a 60% loss in value compared to finished leather^{xiii}. Additionally, earnings from Bangladesh's leather industry are constrained by persistent structural and environmental compliance challenges, particularly those related to global environmental policies such as the European Union Deforestation Regulation (EUDR)^{xiv}. The Savar Tannery Estate suffers from inadequate infrastructure, while its Central Effluent Treatment Plant (CETP) remains only partially operational. Similarly, only seven organisations within the leather value chain in Bangladesh have achieved the Leather Working Group (LWG) certification, which impacts and excludes Bangladesh from globally recognised 'responsible sourcing' networks. Implicitly, the remaining tanneries would have to look towards China at heavily reduced prices and extended payment durations^{xv}.

Furthermore, widespread non-compliance with labour standards like minimum wages, basic labour rights, and occupational health and safety, environmental standards like having a functional central effluent treatment plant (CETP), and product standards like the rising use of artificial leather, limits export opportunities for locally processed crust leather^{xvi}. At a broader level, several bottlenecks have an impact on the ease of doing business and the overall efficiency of the leather sector. Weak infrastructure and high operating costs increase production expenses and reduce competitiveness. The growing profitability of domestic markets compared with exports has shifted business focus away from international trade. In addition, challenges in raw material supply and collection, particularly during peak periods such as Eid-ul-Azha, disrupt production schedules. An overvalued exchange rate relative to competitor countries further undermines the sector's global competitiveness.

According to Arad Branding^{xvii}, the industry's growth is constrained by weak backward linkages, leading to frequent shortages of hides and skins and dependence on imported machinery and chemicals. Most tanneries and exporters operate through brokers, limiting their direct integration into global supply chains. The sector is further fragmented by the dominance of a few local firms subcontracting to MSMEs, while major international buyers avoid direct sourcing from Bangladesh due to concerns over persistent social, environmental, and economic shortcomings. Compared to leading producers such as China, India, Brazil, Vietnam, Italy, Turkey, and Indonesia, almost every stage of Bangladesh's leather value chain remains disadvantaged.

The global leather value chain is under significant challenge from stricter regulatory and market requirements, including higher quality benchmarks, labour and equality laws, occupational health and safety (OHS) standards, and tighter environmental and pollution control regulations^{xviii}. Traceability is essential for regulatory compliance in the leather

industry, particularly considering the new EU directives like the Deforestation Regulation (EUDR) and the Corporate Sustainability Reporting Directive (CSRD)^{xxix}. Under these regulatory regimes, companies within the leather value chain are mandated to demonstrate that leather and its raw materials are sourced from deforestation-free supply chains, verified through geolocation data and transparent due diligence systems. This regulatory shift reinforces broader quality and environmental standards, encouraging reduced chemical use in tanning, adoption of cleaner production technologies, and certification of responsible sourcing practices^{xx}. These measures are redefining competitiveness within the global leather value chain, compelling producers, particularly in export-oriented economies such as Bangladesh, to strengthen traceability, transparency, and sustainability performance to maintain access to EU markets, partnering with global brands and consumer trust^{xxixii}. However, many facilities in Bangladesh remain ill-equipped to meet such technical, social, and environmental standards^{xxiii}. Increasingly, international buyers demand independent audit certifications, such as those from the Leather Working Group (LWG) or the Sustainable Leather Foundation (SLF), as proof of responsible sourcing and compliance^{xxiv}.

Resource constraints remain a major challenge impeding the competitiveness of SMEs in the leather sector to espouse standards-compliant processes^{xxv}. To navigate this challenge, firms must invest in modern, sustainable technologies that enhance product design, quality, and resource efficiency^{xxvi}. In tanning, this includes sustainable production methods^{xxvii}, prudent water usage, safe disposal^{xxviii}, renewable energy use^{xxix}, and circular industrial systems. Beyond environmental and social improvements, future market access will hinge on vigorous traceability and transparency, which provide verifiable evidence of responsible sourcing and tanning practices across the value chain^{xxx}.

2 Benefits of Traceability and Transparency in the Leather Industry

2.1 Overview

In the leather industry, traceability and transparency have become indispensable elements, driven by rising expectations for ethical sourcing, sustainability, and quality assurance championed by key actors in the leather value chain^{xxxi}. The rationale for responding to this expectation resonates with the intent to not just address gaps within the leather value chain but also unlock key opportunities in the sector^{xxxii}. Delivering traceability and openness across the leather value chain provides the technological means for businesses to demonstrate compliance with global environmental policies. It also supports adherence to regulatory standards and enhances operational efficiency. In addition, it allows companies to optimise supply chain management and mitigate risks. These practices foster innovation and create competitive advantage.

Ultimately, they build long-term business sustainability and strengthen customer trust^{xxxiii}.

2.2 Sustainability and Ethical Practices

A notable benefit of deploying traceability in the leather value chain is to keep track of the impact of leather business activities on the environment, such as their carbon footprint, waste management, and resource usage^{xxxiv}. Equally, traceability enables tracking of the entire animal life cycle behind sourced leather, ensuring compliance with sustainable livestock practices while safeguarding natural resources such as forests, water, and energy^{xxxv}. Ultimately, openness about eco-friendly and social practices enables businesses to showcase their adherence to ethical and sustainability standards, including preventing deforestation linked to livestock grazing and prioritising fair labour standards^{xxxvi}. Besides, transparency has become a fascination for sustainability-minded customers and sustainability-conscious investors in the leather value chain^{xxxvii}.

2.3 Improved Operational Efficiency

In the leather industry, traceability enables oversight of the entire production chain, beginning with the sourcing of raw animal hides and skins, the process advances through stages of tanning and finishing treatments, ultimately culminating in the creation of the completed leather goods. Such end-to-end visibility reduces blind spots in operations, supports better control of inputs, and makes the chain more manageable^{xxxviii}. Implicitly, traceability makes it possible to detect problems like inconsistent quality or chemical contamination at an early stage, so they can be resolved quickly. As a result, products are more reliable and consistent in quality^{xxxix}. Being open about leather processing methods, like the chemicals or dyes used, allows companies to establish clear benchmarks, ensure consistent product quality, and drive ongoing improvements. It also helps meet customer demands for durable and safe products^{xl}. There are examples of the benefits of improved operational efficiency derived from implemented traceability in the leather sector. For instance, in the Italian shoe supply chain, traceability enabled early detection of process inefficiencies, leading to measurable gains in production efficiency and quality control.^{xli} In Brazil, traceability implementation in the leather sector has shown that connecting hide traceability with internal tannery traceability is necessary for quick and efficient socio-environmental compliance analyses. It is explicitly linked to faster due diligence, quicker decision-making and more efficient risk management^{xlii}. These case studies pointedly highlight traceability as an enabler of operational efficiency by improving information flow, quality control, and process responsiveness throughout the leather value chain.

2.4 Improved Supply Chain Management

Traceability gives leather manufacturers and brands the ability to follow hides and skins throughout the production chain, from their source, through all processing stages, and into the finished product^{xliii}. The end-to-end visibility availed by traceability ensured that organisations can better monitor supply-chain flows, anticipate disruptions, including delays in hide supply, bottlenecks in processing, and optimise scheduling and logistics for improved responsiveness. Such comprehensive oversight improves inventory management, minimises waste, and streamlines the supply chain, ensuring on-time delivery while reducing environmental impact^{xliv}. With such visibility offered into sourcing practices, transparency builds stronger supplier and partner relationships, ensuring hides are derived from humanely raised animals and not connected to deforested land^{xlv}. Transparency reinforces ethical sourcing, a standard that is becoming a growing expectation among sustainability-minded consumers^{xlvi}. In India, a blockchain-based traceability pilot for Kolhapuri leather footwear integrates artisans, tanneries and retailers into a single digital chain of custody. This visibility has improved inventory control, reduced coordination problems between producers and retailers, and strengthened the management of authentic, on-time supply^{xlvii}. In Brazil, a hide-traceability framework piloted with a leather manufacturer demonstrated that integrating external and internal traceability substantially improves information exchange, batch control and coordination between slaughterhouses and tanneries. This resulted in smoother material flows and more efficient supply-chain management^{xlviii}.

2.5 Risk Management

Through traceability, businesses can seamlessly recognise and sort flawed, anomalous, or negligently sourced leather, reducing sustainability risks and safeguarding customer confidence^{xlix}. Invariably, the ability to foresee and address potential issues before they escalate in the leather value chain, availed by transparency, lowers risk exposure of all key players in the chainⁱ. Implicitly, openness ensures that expectations are properly managed, and reputations and the environment are safeguardedⁱⁱ. In essence, traceability is not only a transparency and or compliance tool but also embodies strategic levers for risk reduction, resilience, and responsible business performance. It acts as both a preventive and corrective mechanism within the leather value chain. It enables early detection of non-compliant materials and practices, provides foresight to manage risks before escalation, builds collective accountability and trust among supply-chain actors, and protects brand reputation and safeguards environmental and social integrity. In the UK, Jaguar Land Rover (JLR) and partners harnessed blockchain-based traceability for leather used in the interior of automobiles to reduce ESG and compliance risk. The project tracked hides from farms in Scotland to the slaughterhouse to the tannery to the automotive manufacturer, using GPS, biometrics and QR codes to create a tamper-proof

audit trail^{lii}. Additionally, JLR could verify that all leather was sourced from local, grass-fed animals and that no deforestation was involved, reducing exposure to deforestation and “embedded land-use” risk. It could also verify the chain of custody, making it easier to demonstrate compliance with internal toxproof and sustainability requirements and external expectations on responsible sourcing. Similarly, the traceability supports credible sustainability claims and helps shield the brand from scandals around “dirty leather”^{liii}.

2.6 Innovation and Competitive Advantage

In the leather industry, traceability data not only supports compliance but also sparks innovation. It can lead to advances like environmentally preferred tanning techniques and products that can be tracked seamlessly from farm to retail^{liv}. Interestingly, traceability creates opportunities by enabling the design of better products, improving efficiency in production processes, and enhancing the overall customer experience. Additionally, transparency sets leather brands apart from competitors by highlighting their commitment to ethical, sustainable, and responsible practices^{lv}. When companies demonstrate commitment and openness with information about where their products come from, how they are made, and their impact on sustainability, they earn greater trust from consumers and partners. This trust translates into stronger engagement and a competitive advantage^{lvi}. Interestingly, sustainability-minded consumers and investors tend to demonstrate an economy of affection towards companies whose practices resonate and reverberate transparency and ethical conduct in their operations^{lvii}.

2.7 Customer Trust and Brand Loyalty

Through traceability, consumers can ascertain the source and production methods of leather goods, enabling them to choose products that align with their values, such as avoiding links to deforestation or exploitative labour practices^{lviii}. When companies are open about their sourcing, animal welfare standards, and environmental practices, it reassures customers and consumers and strengthens their trust in the brand^{lix}. What can be added is that stakeholders in the leather value chain are paying greater attention to the ethical impact of their purchases and tend to place more trust and loyalty in brands that demonstrate transparency and a commitment to sustainability^{lx}. Traceability and transparency considerations in the leather industry have gone beyond rhetoric to become an indispensable element of the industry^{lxi}. With traceability and transparency, companies can meet the growing expectations for ethical, sustainable, and high-quality products, while also ensuring they comply with regulations and manage risks effectively^{lxii}. Interestingly, as demand for sustainability and ethical sourcing increases, traceability and transparency will become ever more critical in the leather industry, serving as essential pillars of future business strategies^{lxiii}. In the UK, the Mulberry luxury brand launched the “Made to Last” initiative (2021), making 100% of its leather goods fully

traceable to their tanneries and publishing supplier details online. This led to increased consumer confidence through verified, transparent sourcing; all tanneries are Leather Working Group (LWG) Gold-rated. Customers could verify ethical and environmental standards behind the products, which reinforced brand authenticity and loyalty. Mulberry reported a rise in positive brand sentiment and alignment with sustainability-conscious consumers^{lxiv}.

3 Baseline Survey Approach and Outcomes

3.1 Design

As part of the design and eventual development of a leather traceability framework for Bangladesh, a baseline survey was conducted among 16 partners, including 11 tanneries, 3 leather goods producers and 2 footwear companies in Bangladesh. The selection of the 16 cluster partners combined a structured call-for-applications process with clearly defined evaluation criteria and a weighted scoring system. A formal Call for Applications was disseminated through project partners in Bangladesh via the Bangladesh Tanners Association (BTA), the Bangladesh Finished Leather, Leathergoods and Footwear Exporters Association (BFLLEA), and the Leathergoods and Footwear Manufacturers & Exporters Association of Bangladesh (LFMEAB). The Call for Applications detailed a structured scoring matrix reflecting the project's sustainability, innovation, and traceability priorities. The matrix assigned weightings as follows: legal documentation (10%), environmental sustainability (20%), sustainable production (10%), innovation potential (10%), market influence (5%), operational readiness (5%), technical capability (5%), supply-chain transparency (10%), stakeholder engagement (5%), and social sustainability (20%). Response to the call generated 33 expressions of interest, 15 from BTA, 12 from BFLLEA, and 6 from LFMEAB. Based on the scoring results, 5 firms each were selected from the BTA and the BFLLEA, while 6 were from the LFMEAB, bringing the total of eligible firms to 16.

3.2 Aim

The baseline survey aimed to gather data on the existing leather traceability practices, the traceability challenges faced by tanneries and manufacturers, and the readiness to adopt traceability technologies. The baseline survey data would serve as a prerequisite for understanding the design needs and policy support for e-traceability technology that tracks the leather value chain while minimising the environmental impact of tanneries and leather industries in Bangladesh.

3.3 Data Collection Method (Survey)

The survey was sent out to a cluster of 16 partners, including 11 tanneries, 3 leather goods producers and 2 footwear companies, and 16 responses were received,

representing 100% response rate and sample size. The results of the survey are detailed below.

3.3.1 Role of Participants in the Cluster Organisations

The survey comprised a spectrum of participants ranging from business owners/managers, production, procurement, compliance, export, sustainability, merchandising, sales and marketing. Of these participants, the largest proportion was the compliance, sales and marketing with 31.3%, followed by the product manager and owner/manager with 12.5% respectively. The data highlights a cross-functional diversity of leadership and operational managers with competence to discuss their current traceability practices, challenges, adoption readiness, and offer valuable insights into traceability technology design needs and required policy support for integrating traceability into Bangladesh's leather value chain. See figure 1.

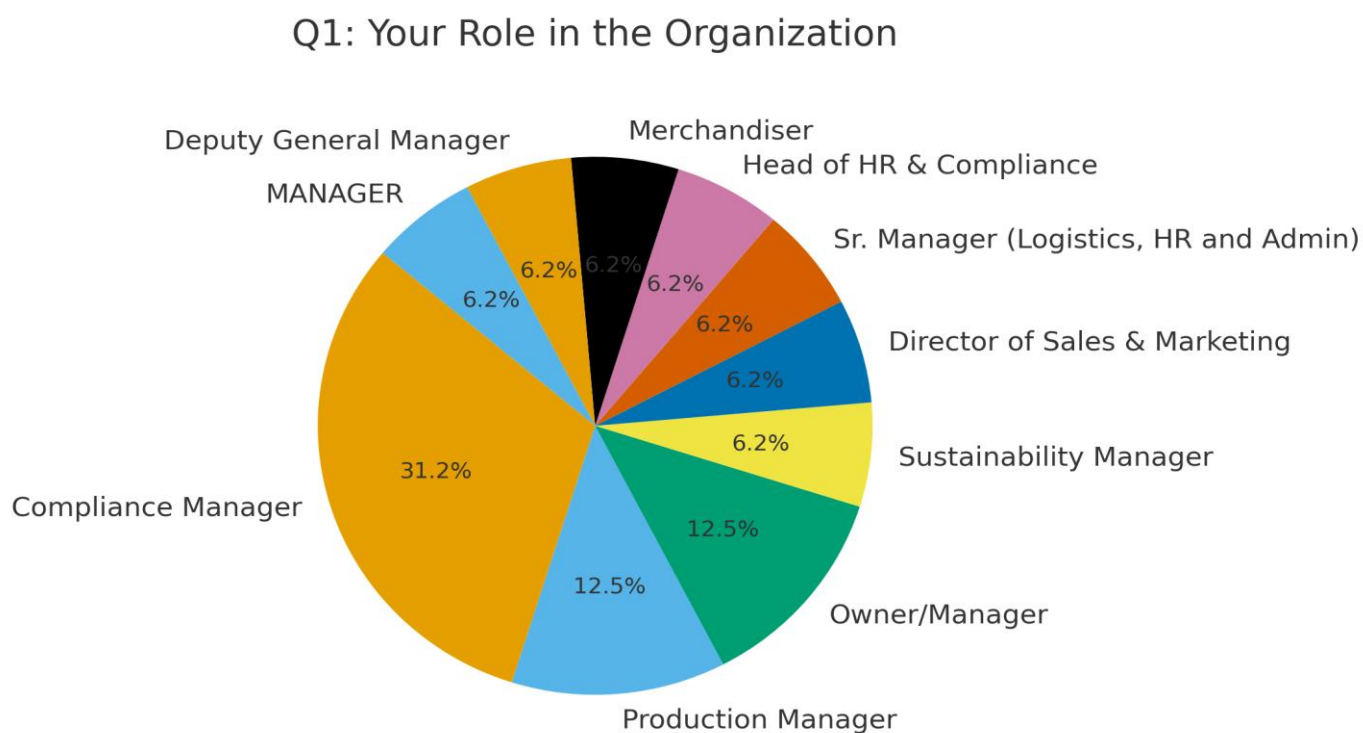


Figure 1: Respondent Roles

3.3.2 Main Business Focus of Participating Organisations

The baseline survey data regarding the main business focus of participating organisations indicates that 43.8% are raw material to finished leather manufacturers at the core of the tanning and finishing stages, which are both environmentally intensive and central to

traceability efforts. Similarly, 18.8% are leather goods manufacturers whose role is producing finished leather goods, which is crucial in understanding downstream traceability needs, including customer-facing compliance, branding, and sustainability certifications. Furthermore, 12.5% of participants are footwear manufacturers and crust to finished leather manufacturers, respectively. These groups represent both intermediate and downstream stages, and their perspectives are vital for linking intermediate traceability data with final product integrity, especially as footwear is a major export sector for Bangladesh. Additionally, 6.2% of participants are involved in wet blue/wet white to finished leather and raw material to crust leather manufacturing, respectively. These respondents bring insights into specialised intermediate processes critical for ensuring continuity in traceability. However, the noncoverage of raw material to wet blue manufacturers, wet blue to crust manufacturers, traders/hide collectors, and integrated meat processors highlights a critical gap in upstream engagement, particularly at the sourcing and early processing stages that are essential for full-chain traceability and environmental accountability. See figure 2 below.

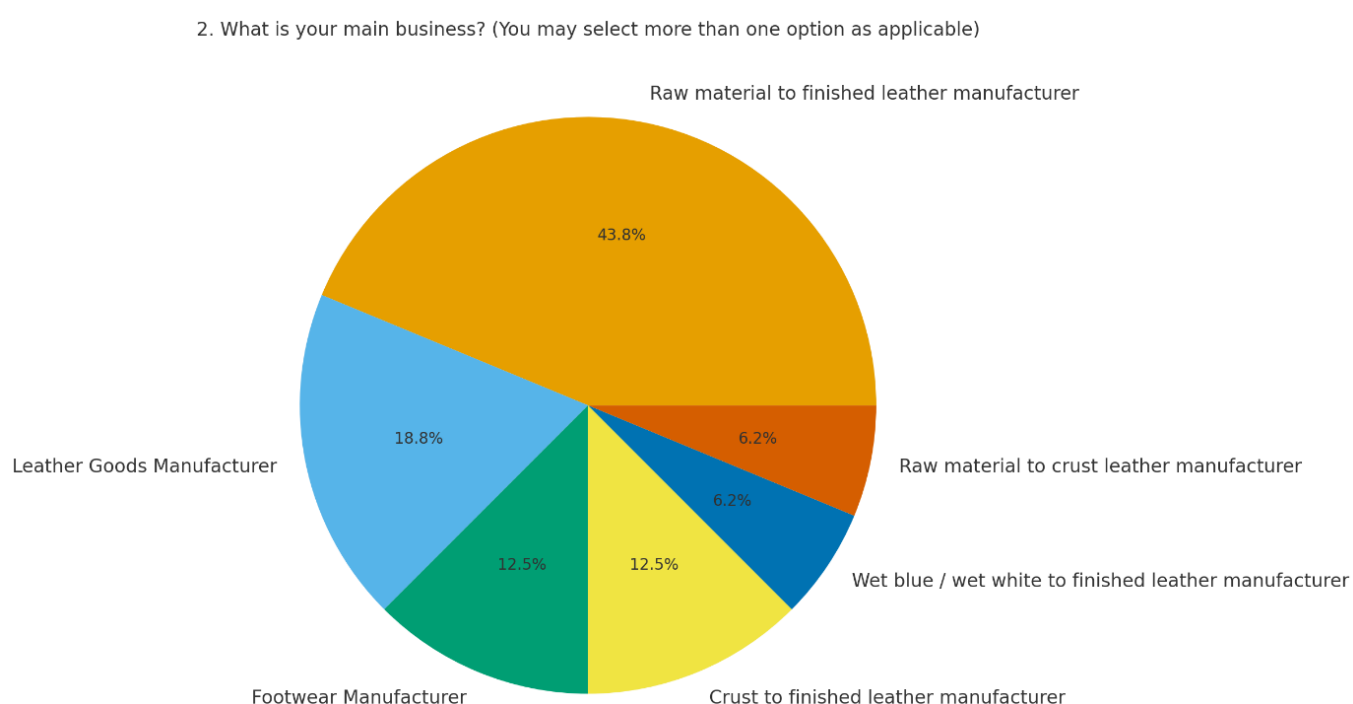


Figure 2: Main Business Type

3.3.3 Approximate Annual Production Capacity

The analysis of the approximate annual production capacity data indicates that 37.5% (4 tanneries and 2 leather goods manufacturers) of participating organisations' annual production capacity falls within the range of 0.5 - 5 million sq. ft, suggestive of small- to medium-scale processors. This is significant for understanding resource availability,

technology adoption readiness, and environmental management capacity. Equally, 18.8% (3 tanneries each) reported capacities of 5.1 - 10 million sq. ft. and 10.1 - 30 million sq. ft. respectively, while 6.2% participating organisations (1 tannery) reported 14 million sq. ft. production capacity. This group of processors/producers fall within the mid-to-large scale producers and is critical for scaling traceability solutions and ensuring alignment with export market requirements, as they handle substantial volumes. Similarly, there is a 6.2% distribution of leather goods manufacturers (1) and footwear manufacturers (2) who each produce 2 million pieces, 880,000 pairs and 1,080,000 pairs of finished leather, respectively. These reflect specialised manufacturers (leather goods and footwear producers), highlighting diversity in production measurement units within the sector.

Although there is the dominance of small-to-medium producers, indicating that traceability solutions should be accessible, affordable, and scalable for widespread adoption, the presence of large-scale producers underscores the need for robust traceability systems capable of accommodating high production volumes and meeting global compliance standards. The variation in units (sq. ft., pcs, pairs) reflects the heterogeneity of the sector and signals the need for a flexible traceability system that can accommodate multiple measurement standards across leather, footwear, and leather goods value chains. Implicitly, policy support should address capacity-related disparities, ensuring smaller producers receive the necessary technical and financial support while leveraging larger producers to drive sector-wide adoption. See figure 3.

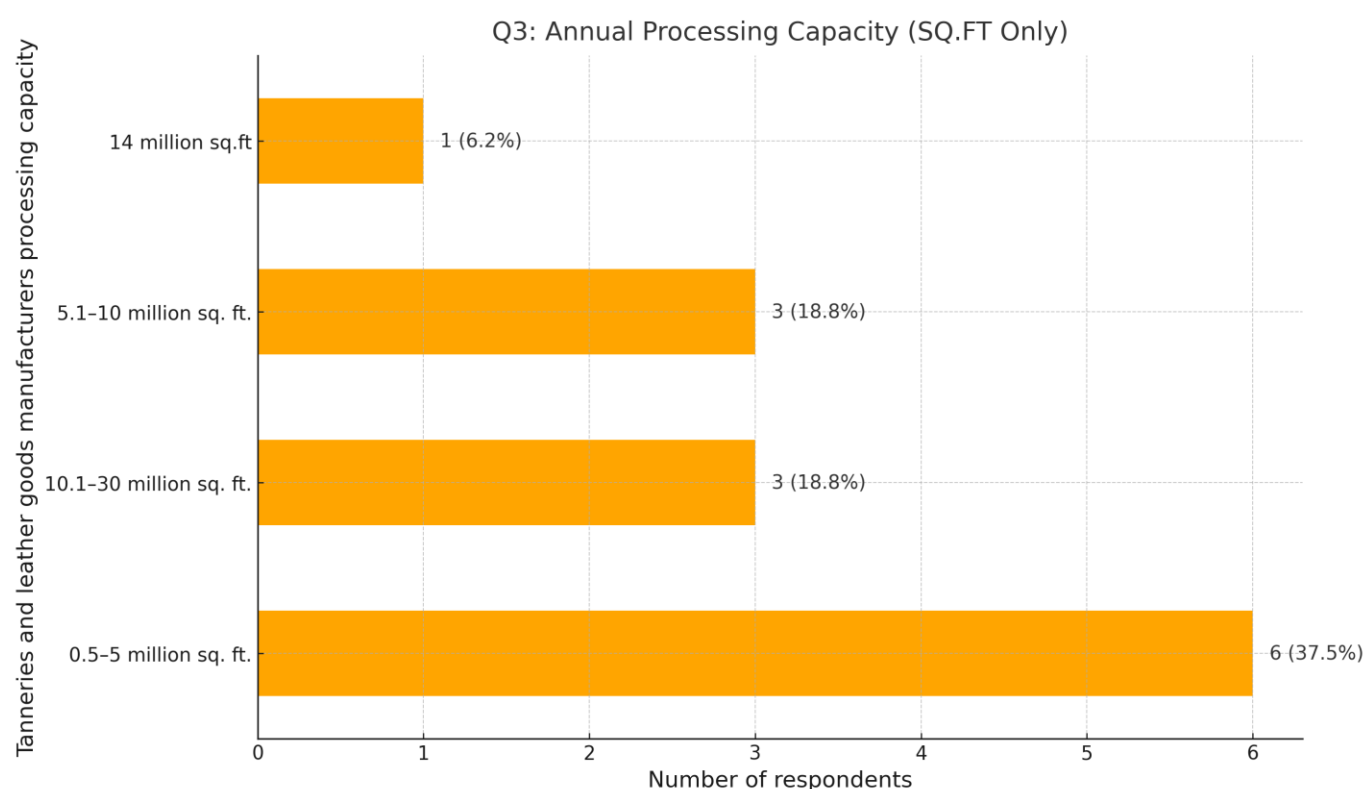


Figure 3: Annual Production Capacity for the Tanneries and Leather Goods Manufacturers

3.3.4 Source of Raw Materials

The analysis reveals a dual sourcing pattern where all organisations (100%) obtain raw materials from local suppliers in Bangladesh, which is critical for traceability as it involves direct engagement with domestic livestock markets, traders, and processors. In addition, 31.3% of organisations supplement local sourcing with imports to meet quality, volume, or specific requirements. While local supply clearly dominates, this reliance on imports highlights the need for traceability systems that can accommodate both domestic and international inputs. Implicitly, robust domestic frameworks are essential, particularly at the upstream level, while compatibility with global standards is required to manage cross-border data. Policy support could therefore focus on strengthening local supply chain transparency and enabling harmonisation with international compliance requirements for exporters. See figure 4.

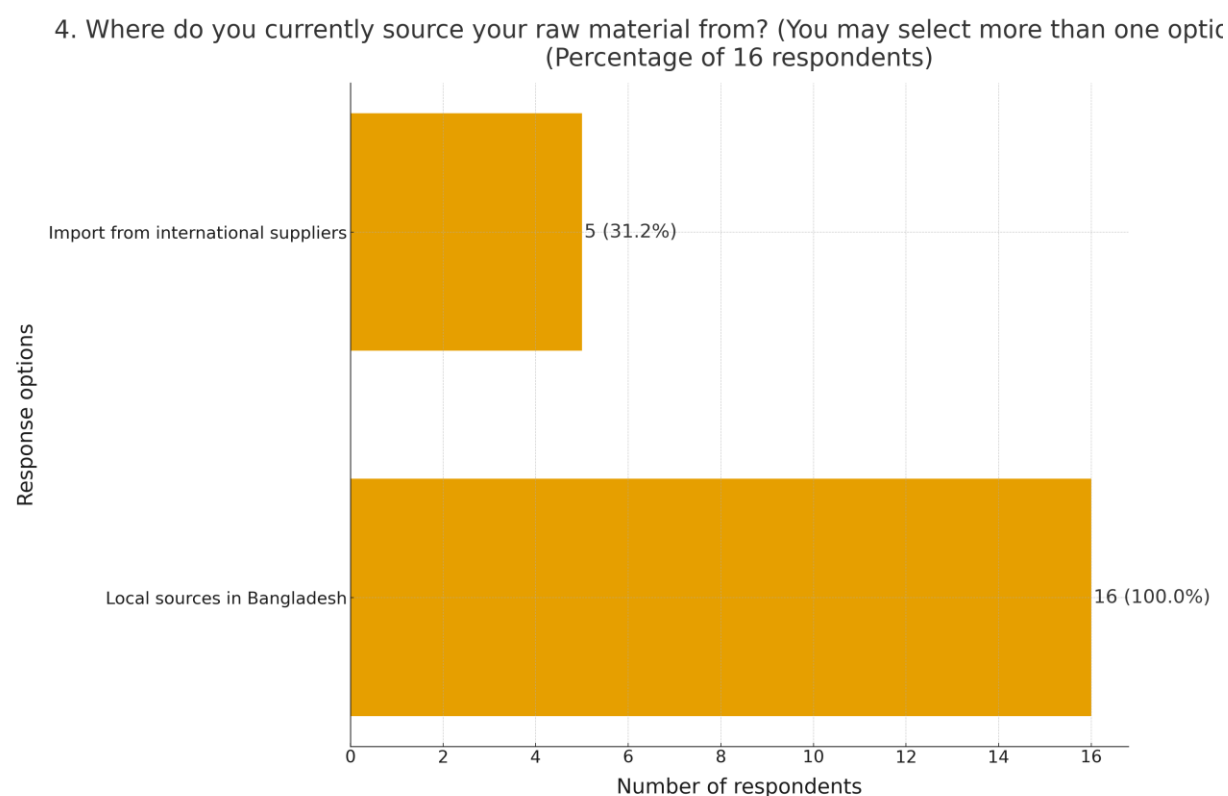


Figure 4: Raw Material Sources (Domestic & International)

3.3.5 International Raw Material Suppliers

The analysis of the data on international raw materials suppliers to Bangladesh shows China in the lead at 56.2%, followed by India and Italy at 43.8% respectively. This underscores a strong reliance on Asian and European supply chains. Next was Thailand

at 31.3%, along with Japan and Vietnam at 18.8% respectively, reflecting diversification within Asia beyond the three main hubs. A smaller share of 6.2% respectively from South Korea, South America, Germany, Spain, USA, England, Mexico, South Africa, Poland, and Local supplies indicate a global spread of sourcing, often for specialised grades or inputs. The heavy dependence on China, India, and Italy highlights the need for traceability systems to be compatible with supply chains in these countries, while the presence of multiple smaller suppliers calls for flexibility and interoperability to integrate diverse international standards. From a policy perspective, domestic traceability frameworks should ensure global harmonisation, particularly with Asian and European partners that dominate sourcing. See figure 5.

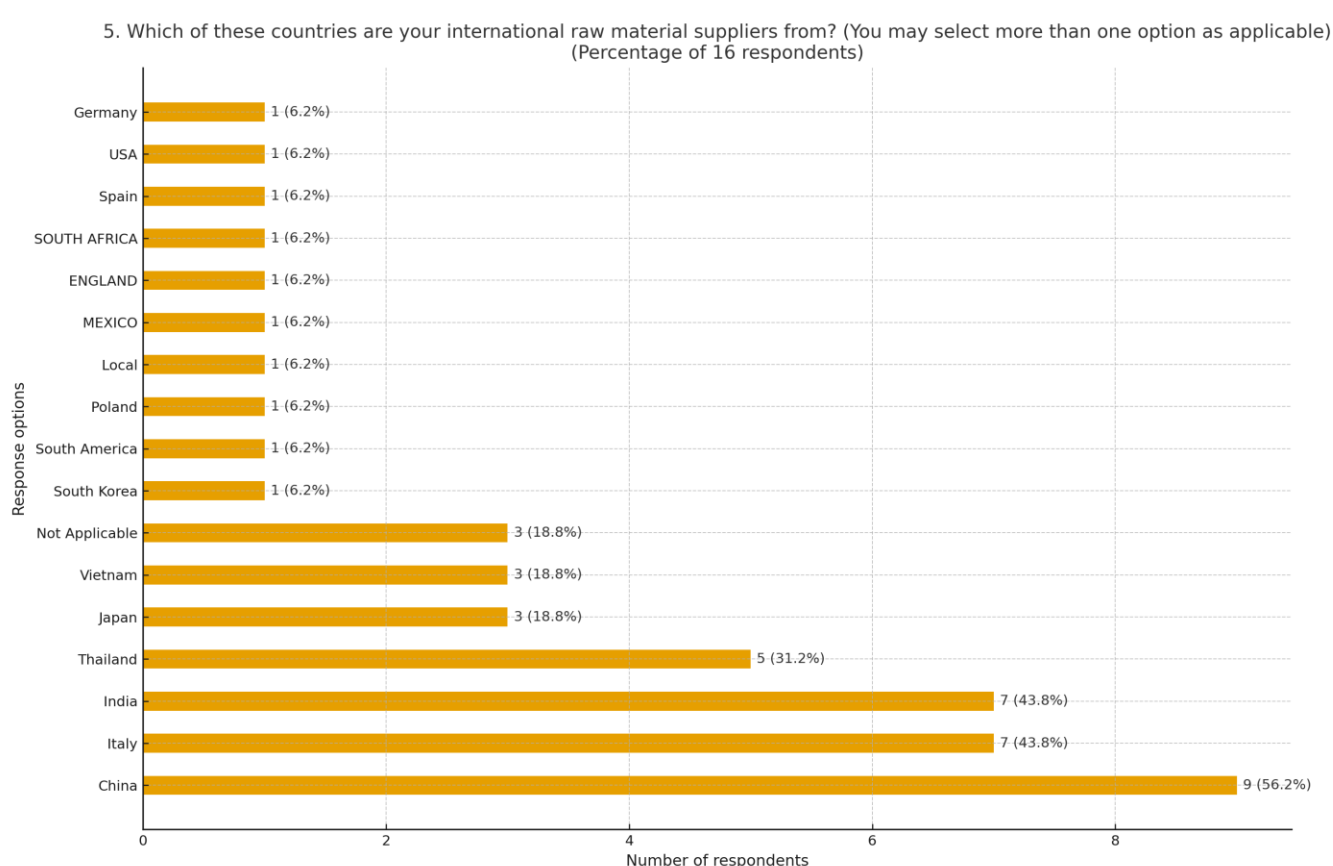


Figure 5: International Supplier Countries

3.3.6 Current Traceability Level adopted

Participating organisations report that traceability practices are largely informal and fragmented, with 62.5% relying on individual suppliers and 50% on local traders, both dependent on interpersonal transactions rather than structured systems. A further 12.5% indicated no traceability exists, and 6.2% were unaware of their suppliers' practices, highlighting significant gaps in awareness, adoption, and transparency. While 6.2% noted

that their foreign suppliers, particularly in Europe, follow structured systems, the overall picture points to a weak traceability foundation in Bangladesh’s leather sector. This undermines efforts to monitor sustainability, compliance, and environmental impacts, especially given the absence of formalised systems at upstream levels such as slaughterhouses, farms, and regions. What can be added is that addressing these gaps will require policy-driven interventions to embed upstream traceability, alongside awareness-raising and capacity-building to shift from informal to standardised practices. Leveraging international suppliers’ systems also offers opportunities to benchmark and align domestic frameworks with global standards. See figure 6.

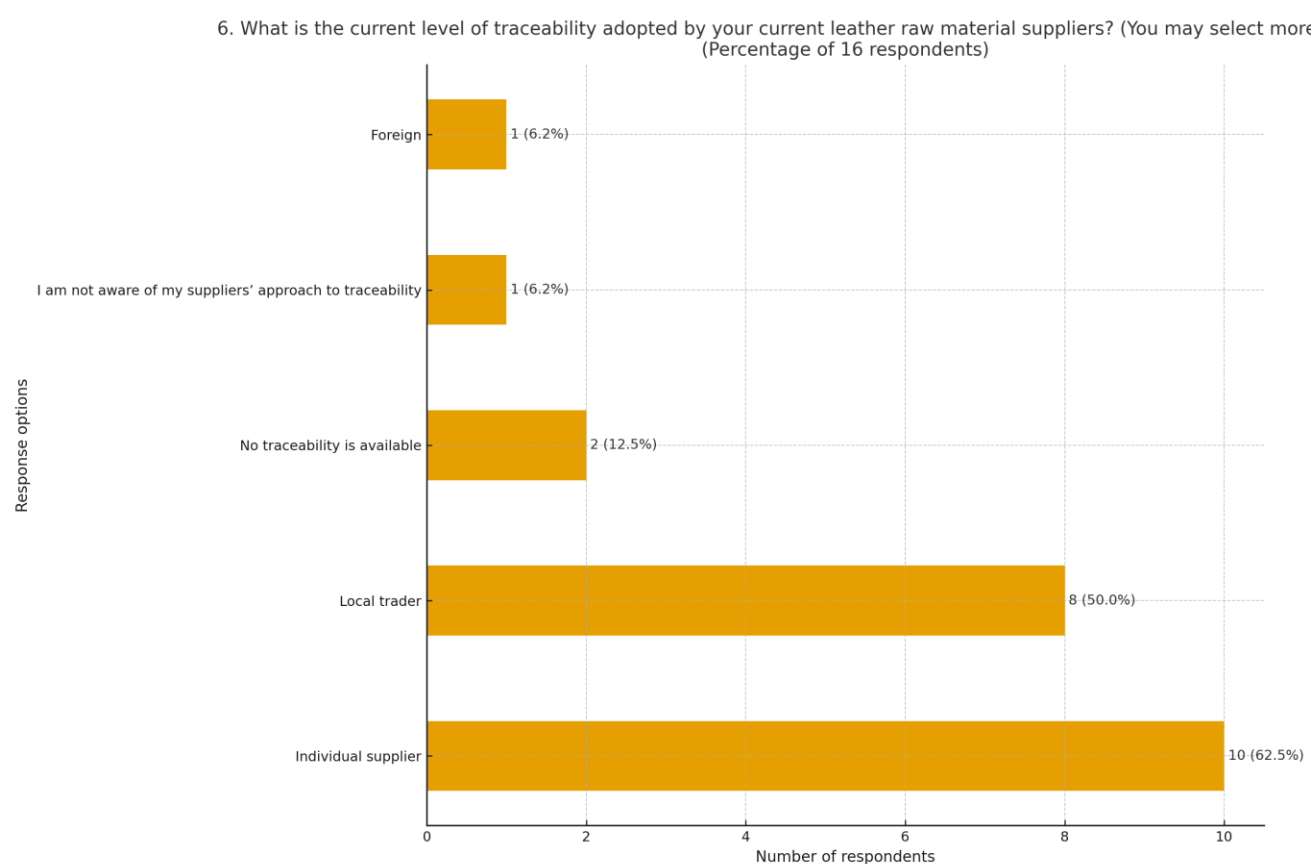


Figure 6: Current Traceability Level of Suppliers

3.3.7 Formal traceability agreements with suppliers

Regarding traceability agreements with suppliers, 50% of the participating organisations report relying on informal arrangements with suppliers, while only 12.5% have formal agreements with all suppliers and another 12.5% with some key suppliers. A further 18.8% have no mechanisms in place, and 6.2% are unaware of any agreements, underscoring significant gaps in awareness and oversight. Ultimately, structured

traceability agreements remain the exception rather than the norm, revealing a weak contractual foundation that leaves compliance and sustainability largely voluntary. This calls for policies and industry standards to promote or mandate formal agreements, alongside awareness-raising and capacity-building to shift from informal practices to standardised, enforceable systems aligned with international expectations. See Figure 7.

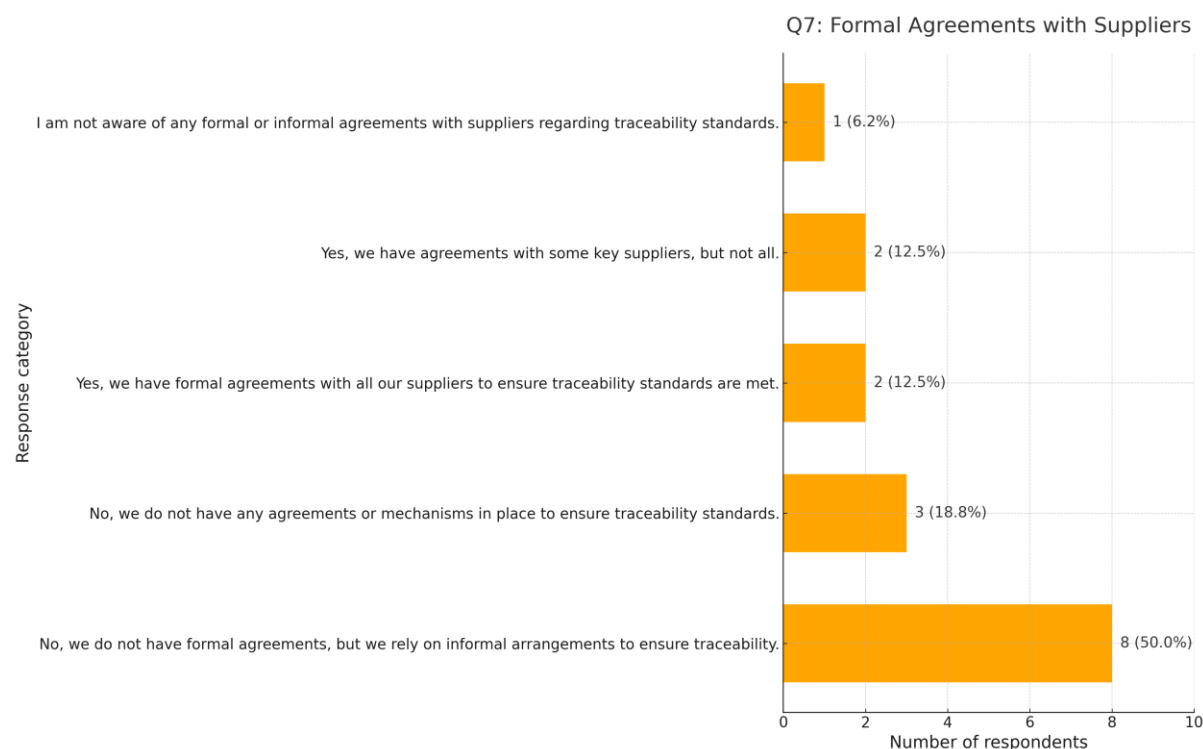


Figure 7: Existence of Formal Supplier Traceability Agreements

3.3.8 Types of traceability systems or mechanisms

The most common traceability approach is manual systems, used by 43.8% of organisations, reflecting limited digitisation and raising accessibility and scalability challenges. Physical marking methods are used by 37.5% of organisations, offering basic identification but lacking integration into digital frameworks. A notable 25% have no traceability system, exposing significant gaps in accountability and compliance, while only 6.2% use advanced technologies such as barcodes, RFID, or blockchain. Another 6.2% adopt traceability only to meet specific buyer requirements, indicating compliance-driven rather than systemic practices. No respondents reported using internal IT systems, highlighting the absence of organisation-level digital infrastructure. Overall, reliance on manual and fragmented systems shows the sector is still in the early stages of traceability adoption. This underscores the need for policies that incentivise digitisation, support scalable IT-based systems, and build capacity for smaller producers, while leveraging

international buyer requirements to gradually mainstream structured, technology-enabled traceability across the sector. See Figure 8.

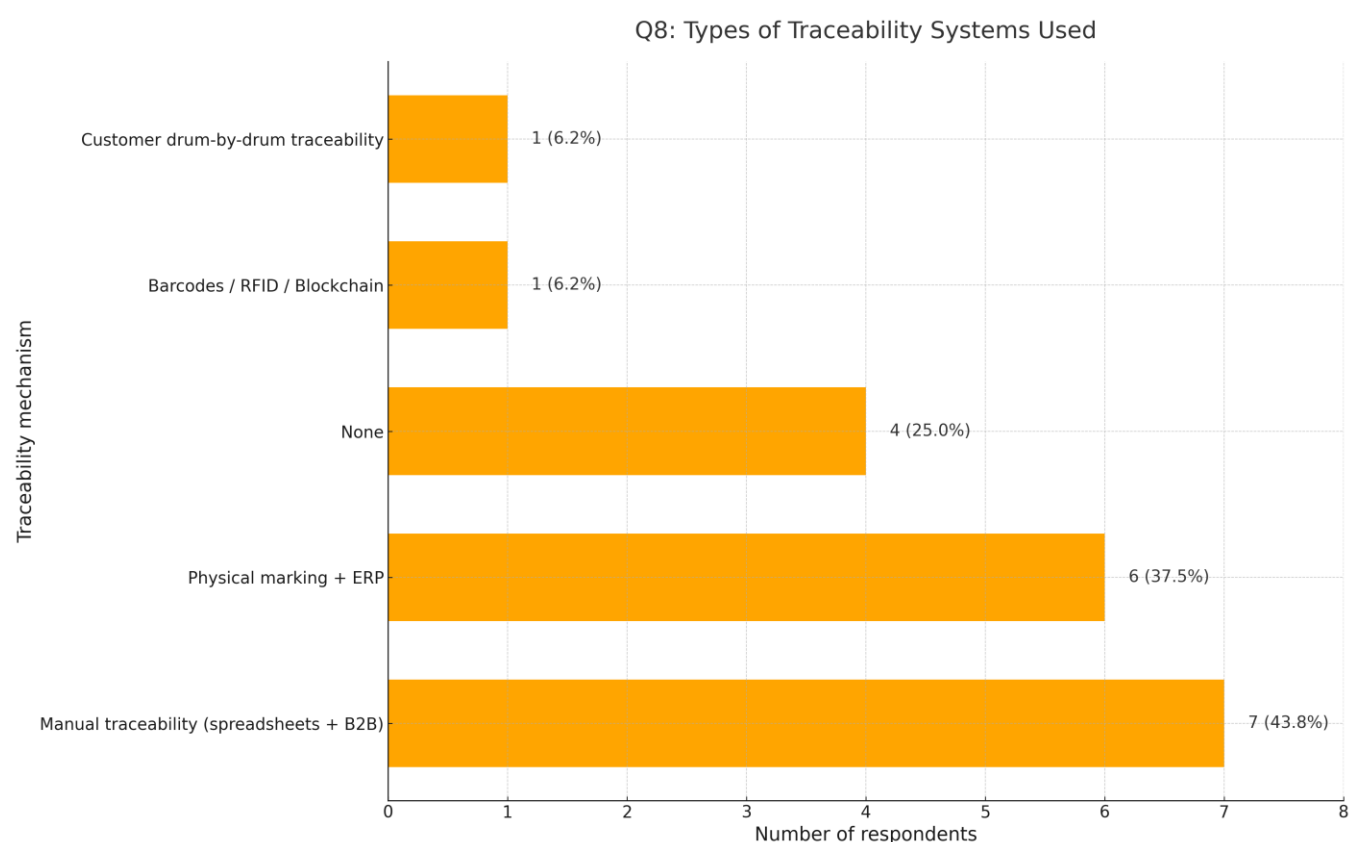


Figure 8: Traceability Systems in Use

3.3.9 Export Markets

All participating organisations report 100% exporting to international markets, underscoring the export-oriented nature of Bangladesh's leather sector. This makes compliance with international standards a non-negotiable requirement, as traceability is critical both for meeting buyer demands and for maintaining access to markets with strict environmental and sustainability rules. International buyers thus emerge as key drivers of traceability adoption, compelling exporters to align with global standards to remain competitive. The universality of exports also indicates that domestic policy frameworks must be harmonised with international compliance regimes, enabling sector-wide traceability reforms that safeguard Bangladesh's position in global value chains. See Figure 9.

Q9: Do You Export Your Materials to International Markets?

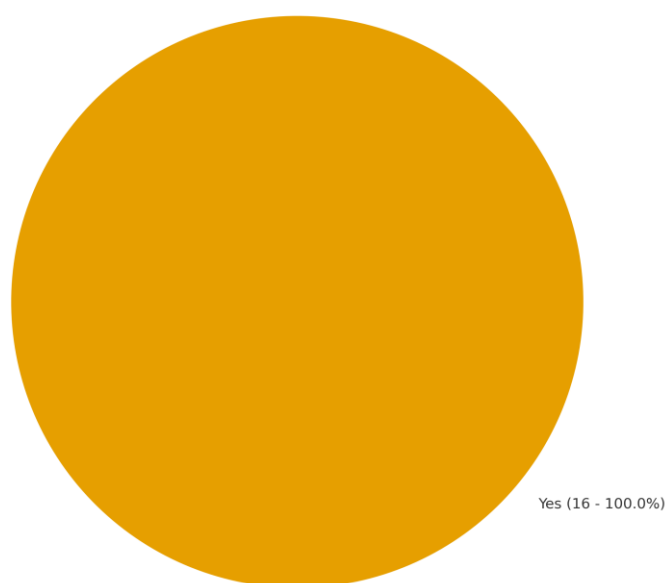


Figure 9: Export Status of the 16 partner organisations

3.3.10 Regions with important Export Markets

Regarding the regions that constitute import-export destinations for Bangladesh's leather value chain, Europe at 93.8% and Asia at 81.2%, are the dominant export markets for Bangladesh's leather sector, underscoring strong dependence on these regions and their compliance requirements. Secondary markets include Australia at 37.5% and North America/Canada at 31.2%, offering diversification opportunities but with stricter sustainability and traceability demands. South America and Mexico, at 6.2% each, represent smaller, niche markets with potential for specialised products. As all participating organisations engage in international trade, traceability systems must align with stringent European standards while remaining flexible to accommodate diverse regional frameworks. Policy frameworks should therefore prioritise harmonisation with EU requirements, ensure adaptability for other markets, and leverage niche opportunities through traceability-driven branding such as eco-certified leather. See Figure 10.

9.1. If yes, which regions are your important export markets? (You may select more than one option)
(Percentage of 16 respondents)

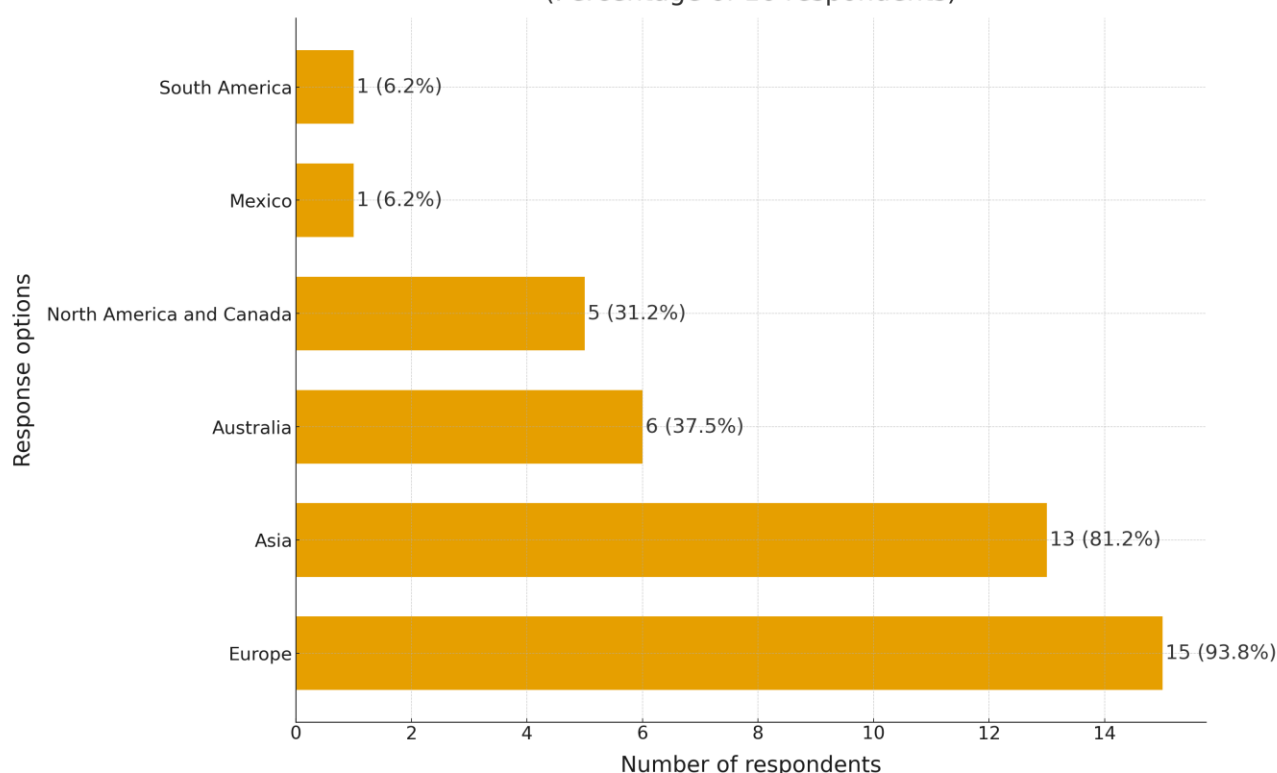


Figure 10: Export Market Regions

3.3.11 Buyers Demanding Proof of Traceability

On buyer requirements for proof of traceability, 37.5% of organisations reported no such demand, while 31.2% confirmed buyers do require it, and another 31.2% indicated partial requirements. This reflects inconsistent expectations across markets, with some demanding higher accountability than others. Equally, 6.2% cited ad hoc practices such as manual marking of wet blue, certificates of origin, or compliance with specific buyer requests, highlighting fragmented and case-by-case approaches rather than standardised systems. The fact that over 60% of organisations face at least some buyer demand signals growing market pressure for accountability, yet the variation underscores the lack of uniform enforcement. This reliance on informal practices points to the urgent need for structured, scalable traceability systems, supported by policies that establish sector-wide frameworks capable of meeting both stringent buyer requirements in key markets and basic compliance needs elsewhere, thereby securing Bangladesh's competitiveness in global trade. See Figure 11.

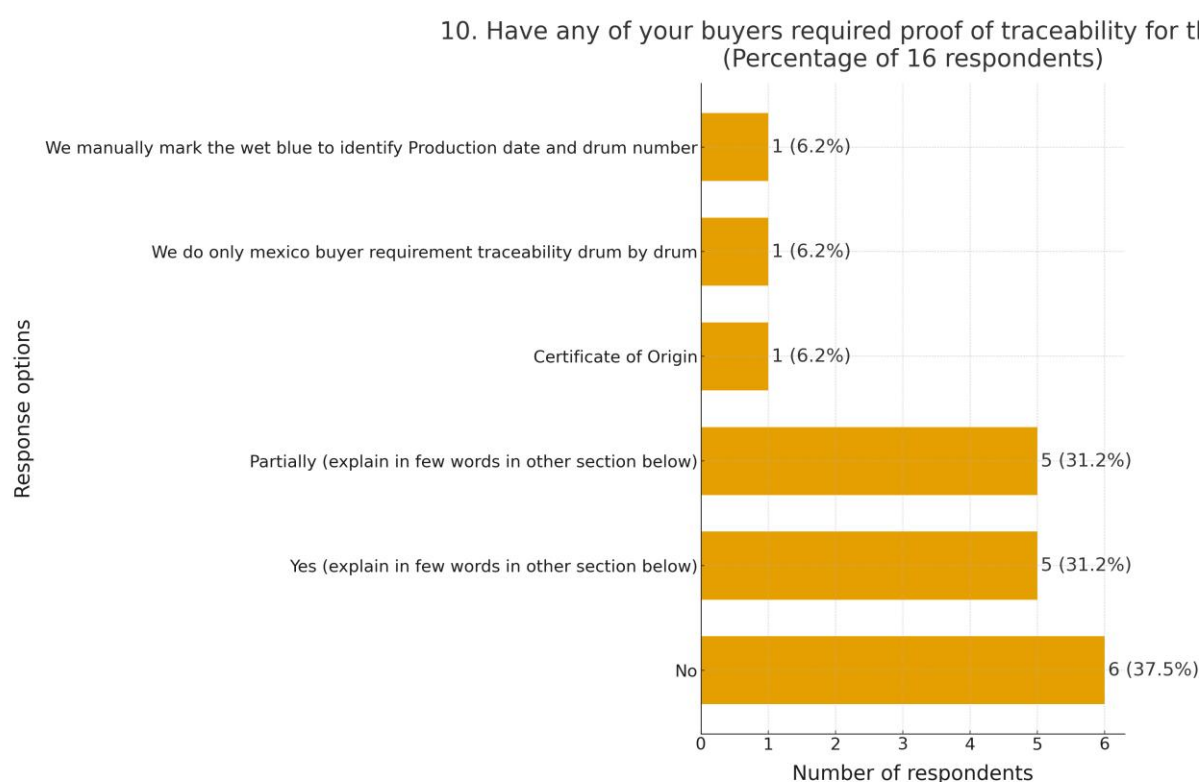


Figure 11: Buyer Requirements for Traceability Proof

3.3.12 Perceived Benefits of Traceability Technologies

The most widely perceived benefits of adopting traceability technologies are compliance with international standards and enhanced customer trust, both cited by 81.2% of participating organisations. This reflects the export-oriented nature of Bangladesh's leather sector, where meeting global rules and building buyer confidence are essential for market access. Similarly, 75% highlighted access to international and premium markets, showing that firms see traceability as a driver of competitiveness and entry into higher-value markets. Additionally, 56.2% noted improved product quality, underscoring its role in strengthening processes, quality assurance, and accountability. In sum, stakeholders recognise both external benefits (compliance, trust, and market access) and internal benefits such as product quality. Yet the stronger emphasis on external drivers suggests adoption is shaped more by market pressures than operational efficiency. The implication is that traceability is strategic for global competitiveness, and policies should prioritise internationally recognised, interoperable systems while also raising awareness of its role in supporting sustainable growth and quality improvements. See Figure 12.

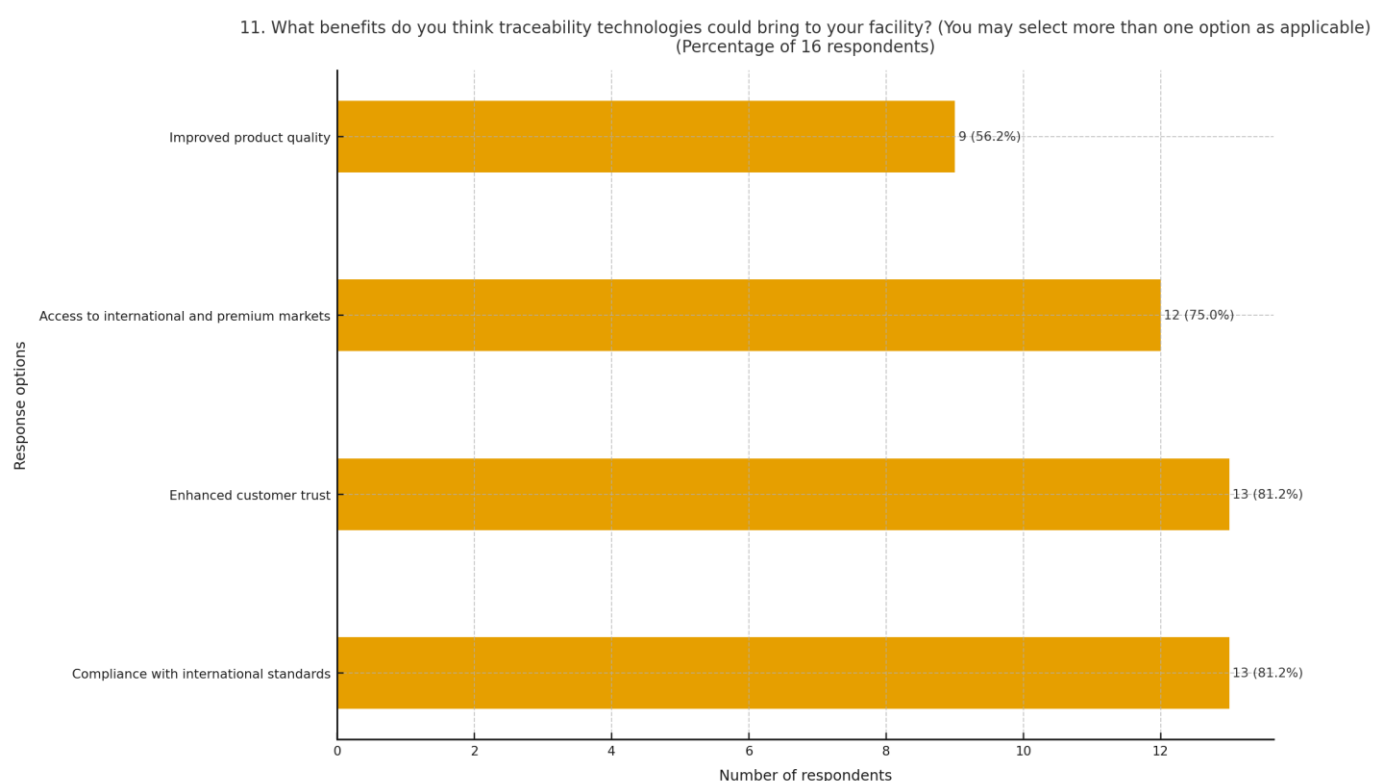


Figure 12: Perceived Benefits of Traceability Technologies

3.3.13 Perceived Barriers to Traceability Adoption

The most significant barrier to adopting traceability, cited by 75% of participating organisations, is raw hide collection practices rooted in fragmented and informal upstream supply chains. This complicates traceability efforts and highlights deep structural issues. A further 56.2% identified lack of awareness and unclear policies as key obstacles, underscoring the absence of strong institutional frameworks and guidance. Half of the respondents pointed to limited infrastructure, while 37.5% cited lack of technical expertise, reflecting practical constraints even among firms aware of traceability. Financial challenges, including high initial costs, limited access to financing, and maintenance expenses, were each reported by 31.2%, showing the burden on small and medium enterprises. Additionally, 18.8% noted low buyer pressure in domestic markets, which contrasts with stronger export-driven demand. These data imply that overcoming barriers requires upstream reforms to modernise sourcing practices, alongside clear policies, incentives, and awareness programmes. Investments in infrastructure, training, and financial support, coupled with efforts to stimulate domestic demand, are essential to drive sector-wide adoption of traceability. See Figure 13.

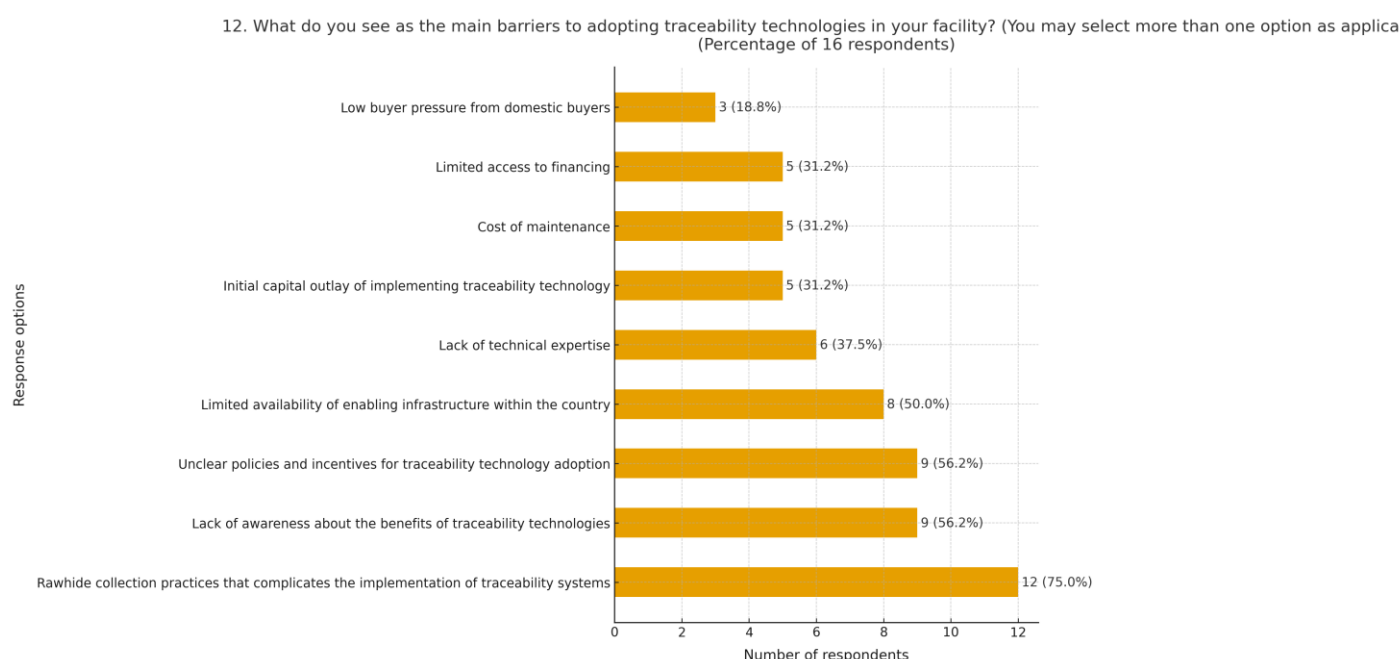


Figure 13: Barriers to Adopting Traceability

3.3.14 Organisational Commitment Towards Adopting Traceability Technologies

Regarding organisational commitment to adopting traceability technologies, 68.8% of firms are in the initial stages of exploration, reflecting widespread interest but limited concrete action. Half of the respondents plan to partially implement traceability, while another 50% are aware of the technologies but lack concrete plans, suggesting that financial, technical, and policy barriers continue to hinder full adoption. A paltry 6.2% reported having a comprehensive plan in place, while another 6.2% report no plans at all, underscoring the limited strategic commitment across the sector. Notably, all respondents indicated some level of engagement, confirming that traceability is on the agenda industry wide. Overall, the data highlights a strong interest but limited readiness, indicating the need for targeted policies, financial incentives, and technical support to transition firms from exploration to implementation. Closing gaps in strategic planning could be explored via capacity-building and roadmap development, and leadership engagement will be crucial, while supporting early adopters and easing barriers for others can accelerate sector-wide adoption and strengthen Bangladesh's competitiveness in global markets. See Figure 14.

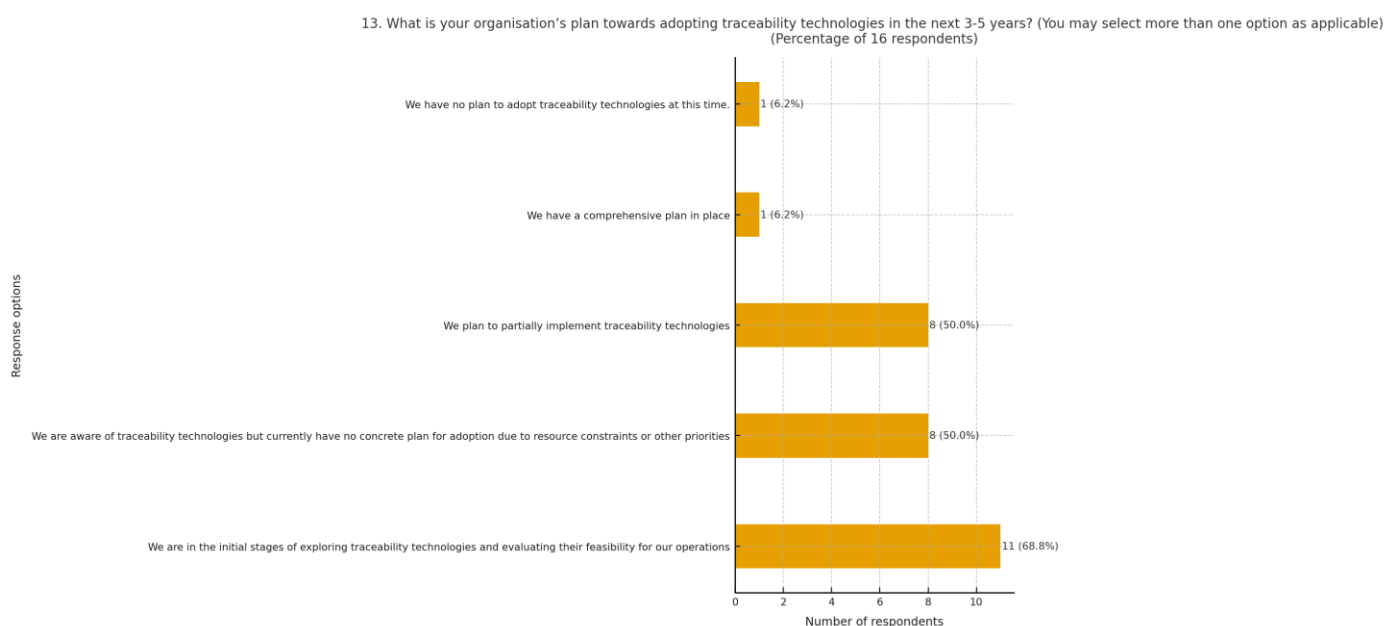


Figure 14: Future Plans for Traceability Adoption (1–5 Years)

3.3.15 Support Required for Adopting Traceability Technologies

The data shows that organisations in Bangladesh's leather sector see financial affordability as the key to adopting traceability technologies, with 75% each prioritising low-cost and scalable solutions. A further 68.8% emphasise the need for centralised platforms, underscoring the demand for coordinated, sector-wide approaches rather than fragmented systems. Government-backed subsidies and incentives are also highlighted by 62.5% as essential to ease adoption costs, while 50% point to public-private partnerships to combine resources and expertise. Additionally, 43.8% stress the importance of digital infrastructure, capacity-building, and stronger regulatory frameworks to create an enabling environment. In summary, the data indicate that while affordability is the top priority, successful adoption will require a multi-pronged strategy combining financial support, centralised systems, institutional reforms, and technical capacity to ensure sustainable and scalable traceability in the sector. See Figure 15.

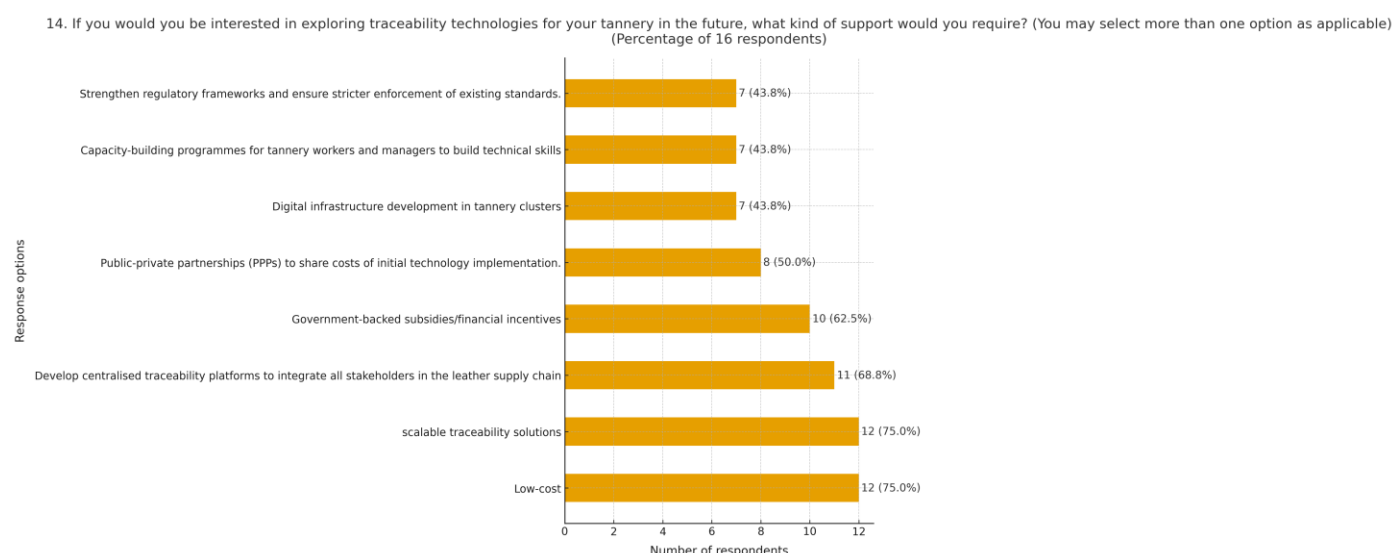


Figure 15: Interest in Exploring Traceability Technologies & Support Needed

3.3.16 Preference for Traceability Technologies Features

The data shows that organisations in Bangladesh's leather sector prioritise traceability features that strengthen both upstream transparency and compliance. The top preference is raw hide origin and condition, cited by 81.2% of respondents, followed by quality and compliance data at 75%, underscoring the sector's focus on meeting sustainability and international standards. Material and resource usage, identified by 68.8% of organisations, also ranks highly, reflecting the need to improve efficiency and resource accountability. Other valued features include batch IDs and process details, environmental data, and sales and buyer information, each at 62.5%, highlighting demand for full value chain visibility. Overall, the sector views traceability as a holistic tool to enhance sustainability, efficiency, and global competitiveness. See Figure 16.

15. What traceability technology features would you want to have for your facility in the future? (You may select more than one option as applicable)
(Percentage of 16 respondents)

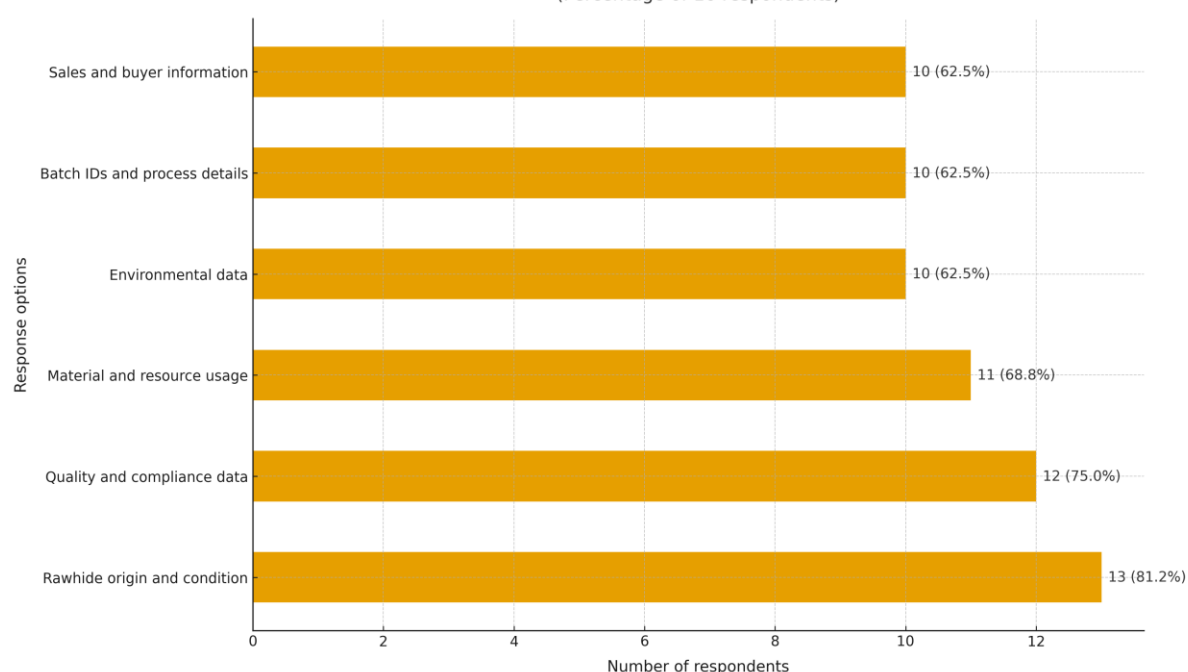


Figure 16: Desired Features in Future Traceability Systems

4 Discussion

Current systems are predominantly informal and fragmented, relying heavily on the preferences of individual suppliers and local traders. Formal agreements with suppliers are rare, making compliance largely voluntary and undermining accountability. While all firms source raw materials locally, some also supplement with imports. The heavy dependence on China, India, and Italy highlights the need for interoperability with international traceability systems. However, upstream actors such as hide collectors and meat processors remain outside existing frameworks, creating significant accountability gaps. All surveyed firms export, with Europe and Asia identified as the dominant markets. This export dependence makes compliance with international standards non-negotiable, even though buyer requirements for proof of traceability remain inconsistent across regions. Stakeholders widely view traceability as strategic for meeting compliance requirements, building customer trust, and securing access to international markets. Internal benefits, such as improved product quality, are acknowledged but ranked as secondary drivers.

Major challenges include fragmented raw hide collection practices, lack of awareness and unclear policies, inadequate infrastructure, limited technical expertise, and financial constraints. Weak buyer pressure in the domestic market further reduces incentives for adoption. Although many organisations are exploring traceability and some plan partial implementation, only a few have developed comprehensive strategies. This indicates that

while interest is evident, sector-wide readiness for adoption remains limited. Firms emphasise the need for low-cost, scalable traceability solutions, supported by centralised platforms and government-backed subsidies or incentives. Additional requirements include public-private partnerships, improved digital infrastructure, targeted capacity-building programmes, and stronger regulatory frameworks. Organisations prioritise systems capable of capturing raw hide origin and condition, quality and compliance data, and resource use. They also value features that provide batch IDs, process details, environmental data, and buyer information, demonstrating a demand for end-to-end value chain visibility.

5 Recommendations

There is an imperative to modernise raw hide collection systems and formally integrate informal suppliers, traders, and processors into traceability frameworks to close existing accountability gaps at the source of the value chain. There is a pressing need to modernise raw hide collection systems and formally integrate informal suppliers, traders, and processors into traceability frameworks to close existing accountability gaps at the source of the leather value chain. Strengthening these foundational stages will ensure that traceability begins where materials originate, thereby enhancing overall transparency and reliability across the sector.

At the same time, the development of low-cost, user-friendly digital traceability solutions tailored to the needs of small and medium-sized enterprises (SMEs) should be prioritised. These efforts must be supported by targeted government subsidies, financial incentives, and access to concessional financing to overcome the economic and technical barriers that often limit adoption. Establishing national or sector-wide electronic traceability platforms that are interoperable across firms and aligned with international standards will further enable seamless data sharing, supply-chain transparency, and compliance with global market requirements.

Building human and institutional capacity is equally critical. Sustained training, technical assistance, and awareness-raising programmes are needed to equip industry actors with the knowledge and skills required to transition from informal practices to structured, technology-enabled systems. Complementary to these measures, governments should introduce clear regulations, enforceable compliance standards, and robust monitoring mechanisms harmonised with EU and global requirements, while streamlining domestic governance structures to facilitate traceability implementation.

The influence of international buyers and global compliance regimes should be harnessed as key drivers for adoption, while simultaneously stimulating domestic demand for traceability to create a comprehensive, market-based push for transformation. Strengthened collaboration among government agencies, industry

associations, technology providers, and development partners will be essential to co-design, co-finance, and scale traceability solutions that are inclusive, practical, and sustainable. Ultimately, traceability should be promoted not merely as a compliance tool but as a strategic mechanism to improve product quality, enhance environmental performance, and reinforce the long-term competitiveness of the leather sector in global markets.

6 Conclusion

The baseline survey underscores that Bangladesh's leather sector, while strongly export-oriented and increasingly receptive to traceability technologies, remains constrained by fragmented practices, weak upstream integration, and limited digital readiness. Stakeholders clearly recognise traceability as essential for meeting international compliance requirements and securing market access, yet widespread adoption is impeded by high costs, inadequate infrastructure, and low awareness. To safeguard its position in global value chains, the sector needs to urgently implement affordable, scalable, and centralised e-traceability systems supported by robust policy frameworks, institutional reforms, and targeted capacity-building. Aligning domestic practices with international standards, while addressing structural barriers at the upstream level, will be critical to driving sector-wide adoption. By doing so, Bangladesh's leather industry can enhance transparency, strengthen sustainability credentials, and consolidate its long-term competitiveness in an increasingly compliance-driven global marketplace.

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