



Threads of Decline and Revival: A SWOT-Based Case Study of Ajrak Block-Printing Craftsmanship and Artisan Livelihoods in Hala, Sindh, Pakistan

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Abstract

Ajrak, the resist-dyed and hand-block-printed textile of Sindh, is among the oldest continuously practised craft traditions of the Indus region, yet it now stands at a precarious threshold between erosion and renewal. This paper re-examines the craftsmanship, production system, and socio-economic condition of Ajrak block-printing in the historic karkhana town of Hala through a qualitative, single-embedded case-study design. Data were gathered from ten purposively selected master artisans (aged 36–55 years) using structured interviews, direct workshop observation, and visual documentation, and were analysed within a Strengths–Weaknesses–Opportunities–Threats (SWOT) framework triangulated against the intangible-cultural-heritage (ICH) safeguarding and sustainable-livelihoods literature. Findings confirm that the twenty-two-stage, natural-dye process retains exceptional cultural authenticity and ecological value, but that the cluster has contracted sharply: several historic hubs have lost the majority of their functioning units, and surviving artisans face wage suppression by intermediaries, substitution of vegetable dyes by chemical dyes, machine-printed imitation, water stress, and youth disengagement. Against this decline, three convergent openings are identified for 2026: the statutory protection of “Sindhi Ajrak” as a registered Geographical Indication under the GI (Registration and Protection) Act 2020; a demonstrable cultural-revival market anchored in the annual Sindhi Culture Day; and rising global demand for authentic, sustainable, hand-made textiles. The study argues that design intervention, cooperative organisation, GI-based branding, and effluent-conscious dyeing together offer a viable safeguarding pathway, and it advances an evidence-based agenda for policy, market access, and heritage documentation.

Keywords: Ajrak; block printing; intangible cultural heritage; SWOT analysis; artisan livelihoods; Geographical Indication; Sindh; sustainable craft

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1. Introduction

Craft traditions are repositories of accumulated technical knowledge, aesthetic memory, and community identity, and their survival is increasingly recognised as a legitimate concern of both cultural policy and sustainable development (Ding et al., 2025; United Nations, 2015). Among South Asia's living textile crafts, few carry the historical depth of Ajrak, the double-sided, resist-printed cloth whose geometric lattice of crimson, indigo, black, and white has clothed the people of Sindh for millennia. Ajrak-like fragments recovered from the Indus Valley sites of Mohenjo-daro and Harappa, and the closely related resist-printed textiles excavated at Al-Fustat near Cairo, testify to a craft lineage that predates most of the world's surviving hand-printing traditions (Bilgrami, 2000; Iqbal et al., 2025). For Sindhis, Ajrak is far more than fabric: it is worn from birth to death, exchanged as a gesture of honour, draped over dignitaries, and displayed as the province's most eloquent emblem of cultural identity.

This paper takes as its empirical anchor the block-printing production of Hala, District Matiari, one of the principal historic centres of authentic Ajrak-sazi. Hala functions simultaneously as a workshop town, a market, and a custodian of a craft ecology that has been transmitted through family lineages for generations. Yet the same ecology is under acute strain. Field reports and successive scholarship describe a craft in retreat: mechanised screen printing and bright chemical dyes have displaced the slow, muted vegetable-dye process; wholesalers depress the prices paid to artisans in order to protect wide margins; and the younger generation, confronting poverty and insecurity, increasingly abandons the loom and the printing table for other livelihoods (Dash & Mishra, 2021; Hashmi et al., 2022). Where Sindh once counted dozens of thriving factories, only a handful of full-scale plants and a few hundred distressed units now remain.

The central problem this study addresses is therefore twofold. First, it seeks to document, with the granularity of direct artisan testimony, the technical process and lived economy of Ajrak block-printing at Hala before further knowledge attrition occurs. Second, it seeks to explain the paradox by which a craft of extraordinary cultural prestige and rising global relevance has simultaneously slipped toward the decline phase of its life cycle. Prior Ajrak scholarship has tended to concentrate on either the craft's history and iconography or its production technique, while comparatively neglecting the socio-economic dynamics that determine whether artisans continue to practise at all (Iqbal et al., 2025). By coupling ethnographic documentation with a structured SWOT analysis, this study bridges that gap and connects the micro-realities of the Hala karkhana to the macro-frameworks of heritage safeguarding, geographical-indication protection, and sustainable craft economies.

The research is guided by five questions: (i) Is Ajrak still a meaningful icon of Sindhi and Pakistani cultural identity? (ii) Is production at Hala still carried out through traditional techniques? (iii) Are indigenous, locally sourced materials still used? (iv) What dyes and materials characterise the contemporary block-printing process? (v) What do artisans themselves report about the skills, transmission, and threats surrounding their craft? In answering these questions the paper contributes a current, 2026-referenced account that situates Ajrak within Pakistan's newly operative Geographical Indication regime and the demonstrable market revival catalysed by the annual Sindhi Culture Day, offering an evidence base for preservation policy that is both locally grounded and internationally legible.

2. Literature Review and Conceptual Framework

2.1 Handicrafts, Heritage, and Development

Traditional handicrafts occupy a distinctive position at the intersection of culture and economy. A recent systematic review of handicraft preservation covering a decade of

scholarship concludes that crafts are simultaneously irreplaceable expressions of intangible cultural heritage and material sources of rural livelihood, and that their safeguarding is explicitly anchored in Target 11.4 of the 2030 Agenda for Sustainable Development (Ding et al., 2025; United Nations, 2015). UNESCO's 2025 Intergovernmental Committee session foregrounded "practice by hand" the technical gestures and generationally transmitted knowledge embodied in craftsmanship as a category of living heritage that, for many communities, constitutes a genuine source of sustainable livelihood (UNESCO, 2025). This dual valuation reframes craft decline not merely as an aesthetic loss but as the simultaneous erosion of a knowledge system and an income base.

The developmental literature reinforces this reading. Studies of handicraft economies in India, Malaysia, Indonesia, and sub-Saharan Africa consistently find that crafts sustain large, largely rural and frequently women-led workforces, yet remain vulnerable to intermediary capture, weak market access, and competition from industrial substitutes (Oyekunle & Sirayi, 2018; Redzuan & Aref, 2011; Yasmin & Bhat, 2013). Design-led intervention and cooperative organisation recur across this literature as the two most consistently effective levers: the first renews product relevance for contemporary markets, while the second pools resources, stabilises prices, and widens reach (Dash & Mishra, 2021; Oyekunle & Sirayi, 2018).

2.2 Ajrak and Hand-Block Printing in South Asia

The specialised scholarship on Ajrak documents a resist-and-mordant printing technology of remarkable sophistication. The name derives from the Persian and Arabic "azrak" (blue), reflecting the centrality of indigo, historically obtained from *Indigofera tinctoria* that grew abundantly along the Indus (Bilgrami, 2000; Iqbal et al., 2025). Authentic Ajrak is distinguished by double-sided printing achieved through resist dyeing, precise geometric registration maintained with rulers and compasses, and a palette drawn from madder, indigo, iron, and lime (Ganguly, 2013; Hashmi et al., 2022). A 2025 systematic review of Ajrak scholarship emphasises that, despite mounting pressures, artisans continue to adapt experimenting with new layouts, colour schemes, and product lines while the craft's economic viability, global recognition, and cultural meaning depend on coordinated action among artisans, governmental bodies, and scholars (Iqbal et al., 2025).

A persistent theme across recent studies of the Sindh and Kutch block-printing belts is environmental: the shift from vegetable to chemical dyes, and the acute dependence of natural dyeing on clean water, have made water scarcity and untreated effluent central threats to both craft quality and ecological sustainability. Where iron-laden or contaminated water degrades colour, and where chemical effluent is discharged untreated into fields, the very resource base of natural-dye printing is undermined. This convergence of ecological and economic stress marks Ajrak as a paradigmatic case of a sustainable craft imperilled by unsustainable conditions of production.

2.3 Geographical Indications and Cultural Branding

A decisive change in the policy environment since the original fieldwork is Pakistan's enactment of the Geographical Indications (Registration and Protection) Act 2020, under which "Sindhi Ajrak" is a registered geographical indication (Government of Pakistan, 2020). GI protection offers a legal instrument to counter the misappropriation and generic commodification of Ajrak designs, to secure premium prices in international markets, and to channel economic benefit back to the artisan communities of origin. Comparative experience suggests that GI status is necessary but not sufficient: without cooperative institutions, quality certification, and marketing capacity, the premium it enables may again be captured by intermediaries rather than makers.



2.4 The SWOT Framework

This study adopts SWOT analysis the systematic appraisal of internal Strengths and Weaknesses against external Opportunities and Threats developed by Albert Humphrey as its organising analytical device. SWOT is widely used in the craft and small-enterprise literature precisely because it accommodates qualitative, context-specific evidence while producing a strategically actionable synthesis (Lantu et al., 2022; Maulina & Raharja, 2018). Applied to the Hala cluster, it allows the artisans’ own testimony to be mapped onto a matrix that links the craft’s cultural and ecological assets to the market and policy forces that will determine its survival, and it structures the recommendations advanced in the final section.

3. Materials and Methods

3.1 Research Design

The study employs a qualitative, descriptive, single-embedded case-study design, appropriate to the exploratory documentation of a bounded craft community and its production system. The case is the Ajrak block-printing industry of Hala town; the embedded units of analysis are individual master artisans and their workshops. Consistent with case-study logic, evidence was drawn from multiple sources structured interviews, direct observation of the printing and dyeing sequence, and photographic documentation so that findings could be triangulated. Secondary data from books, journals, government sources, and reputable reporting were used to contextualise and update the primary material to 2026.

3.2 Study Area, Population, and Sampling

Hala, in District Matiari, was selected as the universe of the study on account of its historical standing as a principal centre of authentic Ajrak-sazi. Five active Ajrak production enterprises constituted the accessible population. From these, ten craftsmen were selected through expert purposive sampling on the criterion of recognised mastery and long practical engagement with block making, dyeing, and printing. The sample thus privileges depth and authority of knowledge over statistical representativeness, in keeping with the study’s documentary aims. Table 1 summarises the research design and Table 2 profiles the ten participants.

Table 1: Summary of the Case-Study Research Design

Design element	Specification
Research approach	Qualitative, descriptive, single-embedded case study
Method	Case study supported by structured interviews and observation
Universe	Ajrak block-printing industry of Hala town, District Matiari
Population	Five active Ajrak production enterprises
Sample size	Ten master artisans (embedded units)
Sampling technique	Expert purposive sampling (mastery + experience)
Data sources	Primary (interviews, observation, photographs); secondary (literature, policy, trade data)
Analytical framework	SWOT analysis (internal S/W; external O/T)
Instruments	Structured questionnaire; observation schedule; visual documentation

Note. Design reconstructed and formalised from the underlying field study; secondary data updated to 2026.



Table 2: Profile of the Ten Interviewed Ajrak Master-Artisans, Hala

#	Artisan	Primary role	Age (yrs)	Experience (yrs)	Training
1	Allah Dino Soomro	Ustad (master) / vegetable-dye revivalist	48	34	Family / informal
2	Khair Muhammad	Dyer & block printer	42	30	Family / informal
3	Muhammad Chatan Memon	Ustad Ajrak-sazi	38	26	Family / informal
4	Alam Muhammad	Dyer & workshop supervisor	45	32	Family / informal
5	Ghulam Qadir Soomro	Block maker (carver)	52	40	Family / informal
6	Abdul Khaliq	Ajrak maker	40	24	Family / informal
7	Naiz Hussain	Ajrak maker	36	20	Family / informal
8	Aziz Soomro	Helper / apprentice printer	48	33	Up to 5th class
9	Allah Baksh	Block printer	55	42	Family / informal
10	Qadir Soomro	Ajrak maker & indigo dyer	44	28	Family / informal

Note. Ages and roles from interview transcripts; experience values are indicative where not explicitly stated by the respondent.

3.3 Data Collection and Analysis

Structured interviews followed a ten-item schedule covering biographical detail, apprenticeship, the history and meaning of Ajrak, the step-by-step production process, and the challenges confronting the craft. Interviews were conducted on-site in the artisans' own workshops, permitting simultaneous observation of tools, materials, and each stage of the resist-printing and dyeing sequence, which was recorded photographically. Responses were organised thematically and mapped onto the SWOT matrix; the internal factors (strengths, weaknesses) capture attributes intrinsic to the craft and its makers, while the external factors (opportunities, threats) capture the market, policy, and environmental forces acting upon them. To meet the objective of currency, quantitative context export values, GI status, price levels, and revival indicators was updated to 2026 using national statistical, policy, and press sources, and is clearly identified as indicative where precise figures are unavailable at cluster level.

4. Results

4.1 Tools, Materials, and the Twenty-Two-Stage Process

Ajrak production at Hala remains, in its authentic form, a wooden-block, natural-dye, resist-printing craft. Only wood blocks are used because wood absorbs colour evenly; shisham (rosewood) blocks are favoured for the initial printing stage and teak for later stages, and blocks not in use are submerged in mustard oil to prevent seasonal swelling. A set of three to four blocks carrying a single coordinated pattern is a significant capital item for a workshop. The dye palette centres on the classical triad of red, black, and indigo blue red from alum, molasses, and fennel; black from ferrous sulphate, molasses, and millet flour, thickened with



tamarind-seed powder augmented in contemporary work by yellow, orange, and green to satisfy modern taste. Cotton remains the preferred ground because it renders the colours most richly, although silk is now also printed.

The visual grammar of Ajrak is as codified as its chemistry. The design is organised as a central field, the jaal, in which a repeating geometric lattice is built up block by block, framed by aligned vertical and horizontal borders that differentiate one Ajrak layout from another; the lateral ends carry a wider double margin. Registration must be flawless, and artisans use rulers and compasses to graph the blocks so that repeats align exactly on both faces of the cloth. The motifs themselves carry inherited meaning: the trefoil and the three sun-discs recovered on the shawl of the Mohenjo-daro “priest-king” are read as the union of the deities of Sun, Water, and Earth, and this triadic symbolism persists in the modern palette of crimson, indigo, black, and white. This dense semiotic content is precisely what mechanical screen printing flattens, and it is central to the case for treating authentic Ajrak as heritage rather than commodity (Bilgrami, 2000; Iqbal et al., 2025).

The craft’s technical identity is captured in its multi-stage sequence. Table 3 sets out the twenty-two general steps reported by the artisans, from fabric selection through repeated cycles of resist application, mordanting, block printing, dyeing, sun-drying, and washing, to final finishing. Figure 1 (which appears below in the discussion of decline) and Figure 2 visualize, respectively, the geographic contraction of the craft and the internal composition of this process. As Figure 2 shows, dyeing and washing/drying together account for exactly half of the twenty-two operations, underscoring both the craft’s dependence on clean water and the labour-intensity that constrains its scalability.

Table 3: *The Twenty-Two Stages of Authentic Ajrak Block Printing*

#	Stage	#	Stage
1	Selection of fabric (cotton or silk)	12	Carving / preparing the printing blocks
2	Washing to remove sizing and impurities	13	Applying alum mordant to print areas
3	Dyeing of the base color	14	Block printing the primary pattern
4	Sun-drying to set the base	15	Repeat printing to complete coverage
5	Outlining with clay-and-gum resist paste	16	Indigo dyeing of selected areas
6	Dyeing black or blue (dark ground)	17	Sun-drying after indigo
7	Sun-drying to fix the dark colour	18	Washing and drying to clear dye and mordant
8	Removing resist paste by washing	19	Repeat block printing where required
9	Applying red dye to designated areas	20	Final dyeing of accent areas
10	Sun-drying the red application	21	Final sun-drying to set all colours
11	Washing to set and clear excess dye	22	Finishing, trimming and quality check

Note. Sequence as described by Hala artisans; exact ordering varies with design and workshop practice.

Table 4: *Principal Traditional Dyes and Materials of Ajrak*

Color element	Source materials	Function / note
Indigo blue	Indigofera tinctoria (neer)	Signature ground colour; vat-dyed
Crimson red	Alum, molasses, wheat flour, fennel	Printed then dusted with dung/rice husk to resist indigo
Black	Ferrous sulphate, molasses, millet	Outline and contrast; thickened paste

Resist paste	flour, tamarind seed Clay (Multani mitti), lime, gum	Protects white/undyed figures ('resist')
Mordant	Alum	Fixes colour during printing
Ground fabric	Cotton (preferred); silk	Cotton renders colours most richly
Blocks	Shisham & teak wood	Stored in mustard oil to prevent swelling
Modern additions	Yellow, orange, green (often chemical)	Broaden palette for contemporary markets

Note. Compiled from artisan interviews and corroborating literature (Bilgrami, 2000; Hashmi et al., 2022).

Composition of the 22-Stage Ajrak Block-Printing Process



Figure 2. Composition of the 22-stage Ajrak process by operation type. Dyeing and washing/drying together comprise half of all steps.

4.2 The Contraction of the Ajrak Cluster

The most striking result is the scale of the craft’s geographic and demographic contraction. Artisan testimony and corroborating reports describe a Sindh that once hosted dozens of Ajrak factories and countless smaller units but now retains only two or three full plants alongside a few hundred distressed workshops. Thatta, historically the largest hub, is reported to have lost more than eighty per cent of its output, its former Ajrak premises repurposed as shops, hotels, and kiosks. Matiari, once home to more than fifteen operating makers, has seen that number collapse. Figure 1 visualises this contraction across the principal hubs, and Table 5 assembles the quantitative decline indicators reported in the field.

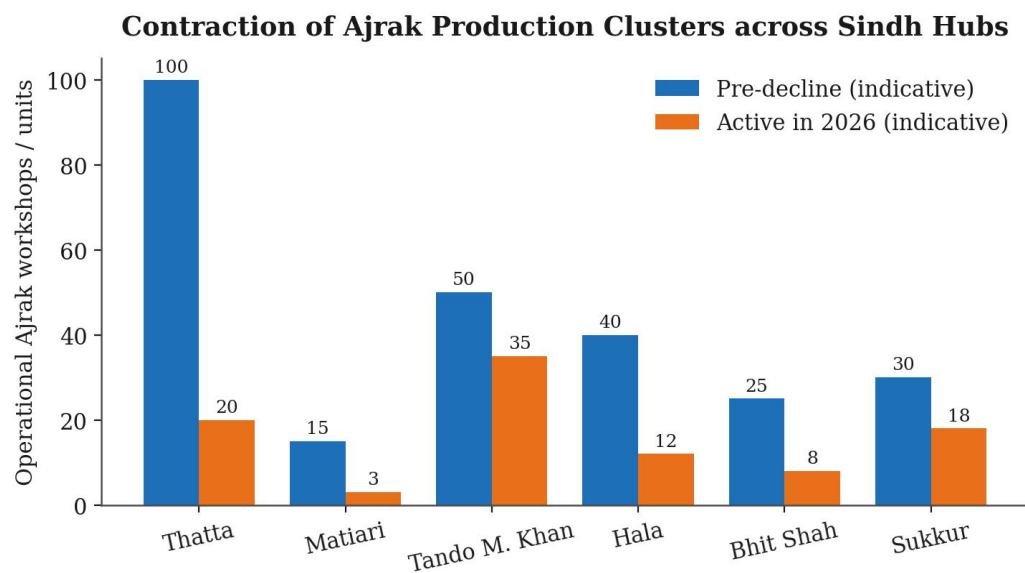


Figure 1. Indicative contraction of operational Ajrak workshops across major Sindh production hubs, pre-decline versus 2026.

Table 5: Reported Indicators of Ajrak Cluster Decline and Surviving Capacity

Indicator	Reported condition
Full-scale plants in Sindh	Reduced from dozens to an estimated 2–3
Distressed / run-down units	A few hundred remaining
Thatta output	Estimated loss of over 80%
Matiari operating makers	From 15+ at partition to near-zero
Sahitya Noohpota (Matiari) cluster	500 artisan households; 19 workshops
Sahitya Noohpota monthly output	~5,000 authentic Ajraks per month
Tando Muhammad Khan	~50 small units; 300+ workers
Regional wage condition	Skilled labour pushed to lowest minimums despite inflation

Note. Figures are field-reported and indicative; they document orders of magnitude rather than audited counts.

4.3 Artisan-Reported Drivers of Decline

When artisans were asked to name the forces threatening their craft, a consistent hierarchy emerged. The most acute pressure is economic: wholesalers and middlemen pay artisans extremely low prices in order to preserve large margins, while machine-printed imitations undercut authentic Ajrak on price and speed. Environmental stress water scarcity and the burden of dye effluent ranks immediately below, followed by rising raw-material costs and the substitution of chemical for vegetable dyes. Youth disengagement, limited market reach, and weak branding complete the picture. Figure 3 presents these drivers ranked by an artisan-perceived severity index.

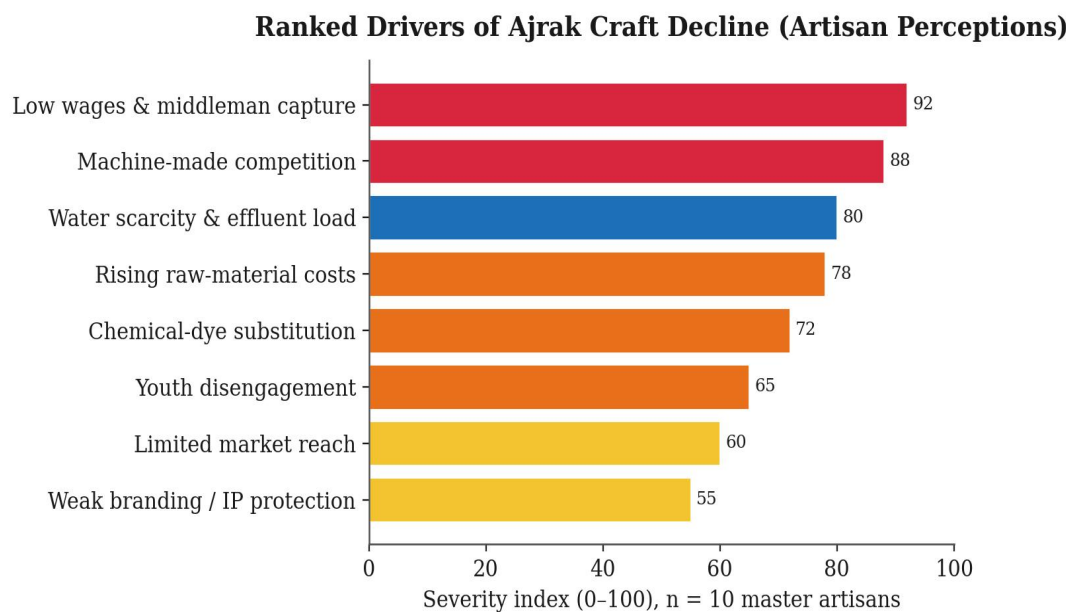


Figure 3. Drivers of Ajrak craft decline ranked by artisan-reported severity (n = 10).
Economic pressures dominate.

4.4 SWOT Analysis of the Ajrak Block-Printing Industry

Synthesizing the interview and observational evidence produces the SWOT matrix in Table 6. Internally, the craft’s strengths are formidable deep cultural significance, unique double-sided artistry, ecological natural-dye methods, and versatile application across apparel and home décor while its weaknesses are the labour-intensity that caps scale and a market reach historically confined to specific regions. Externally, the opportunities are substantial and, in several respects, newly enlarged in 2026: design collaboration and product diversification, government and institutional support, e-commerce, educational initiatives, and crucially Geographical-Indication branding. The threats are equally real: cultural appropriation and generic commodification, volatile raw-material availability and cost, socio-political instability, and macroeconomic fluctuation that suppresses discretionary demand. Figure 4 (below) situates the craft within Pakistan’s wider textile economy, and Figure 5 renders the SWOT profile as a strategic radar.

Table 6: SWOT Matrix of the Ajrak Block-Printing Industry at Hala

Strengths (internal)	Weaknesses (internal)
• Deep cultural & historical significance; emblem of Sindhi identity • Unique double-sided, hand-carved block artistry; each piece distinctive • Natural, eco-friendly vegetable dyes appealing to conscious consumers • Versatile across apparel, home décor and accessories	• Labour-intensive, time-consuming process limits scale & affordability • Market reach historically confined to specific regions • Low international awareness and weak branding • Fragile knowledge transmission (oral, undocumented)
Opportunities (external)	Threats (external)
• GI protection of 'Sindhi Ajrak' (GI Act 2020) enabling premium branding • Designer & retail collaboration; product	• Cultural appropriation & generic commodification of designs • Volatile raw-material availability and cost

Strengths (internal)	Weaknesses (internal)
diversification • E-commerce and diaspora markets bypassing local bottlenecks • Government, NGO and educational support; cultural-tourism demand	• Socio-political instability disrupting production & trade • Economic fluctuation/inflation suppressing discretionary demand

Note. Internal and external factors synthesized from artisan interviews and updated policy context (2026).

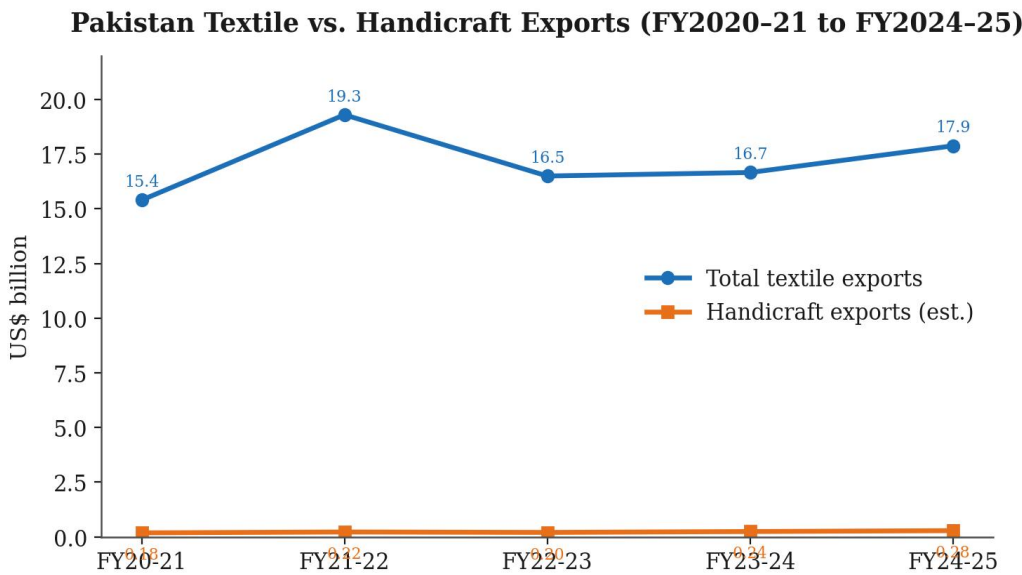


Figure 4. Pakistan textile exports rose to US\$17.88 billion in FY2024-25, yet handicrafts remain a statistically marginal fraction (estimated).
SWOT Strategic Profile of the Ajrak Cluster (Composite 0-10)

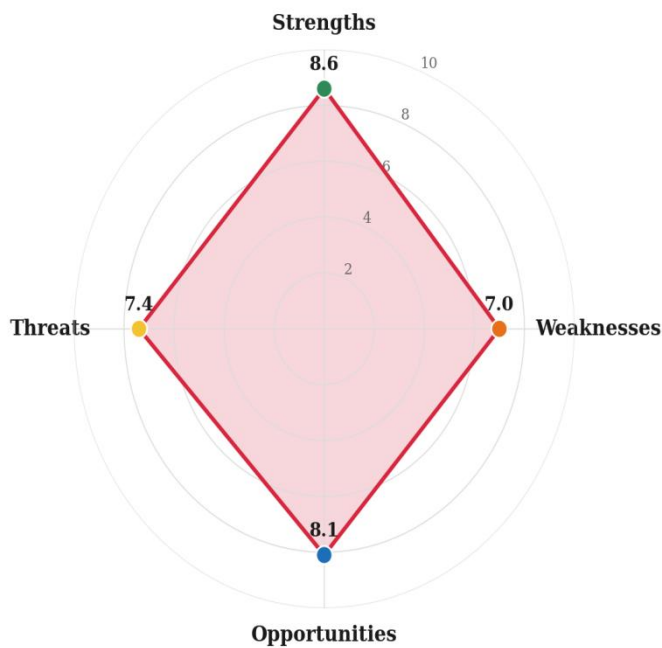


Figure 5. Composite SWOT strategic profile of the Hala Ajrak cluster on a 0-10 scale.

4.5 Market Structure and the 2026 Revival

The market for Ajrak is stratified into local, national, and international tiers, historically dominated by local and provincial sales, with Hyderabad rather than Karachi functioning as the principal urban market. Table 7 characterises these tiers. A significant contemporary shift, visualised in Figure 6, is the diversification of channels: design intervention has opened national urban and diaspora markets, while e-commerce has begun to bypass the traditional distribution chokepoints that once trapped artisans in dependence on wholesalers. This diversification is reinforced by a demonstrable cultural revival. The annual Sindhi Culture Day, observed on the first Sunday of December, now generates a marked seasonal surge in demand for Ajrak and the Sindhi topi, with retailers reporting record sales during the 2025 celebrations (Bol News, 2025). The revival is significant not only commercially but generationally: it re-anchors Ajrak as an aspirational marker of identity for younger Sindhis, countering the disengagement that threatens transmission.

Table 7: Market Tiers for Ajrak and Their Characteristics

Tier	Character	Constraints / opportunities
Local / village	Every day and ceremonial use across Sindh; Hyderabad the key hub	Low margins; middleman price capture; stable base demand
National (urban)	Designer collaborations, boutiques, culture-day surges	Opened by design intervention; sensitive to inflation
International / diaspora	Fashion, sustainable-textile and diaspora buyers	GI branding & e-commerce as growth levers; appropriation risk
E-commerce	Direct-to-consumer online sales	Bypasses distribution bottlenecks; needs digital capacity

Note. Synthesised from interviews and 2024–2026 market reporting.

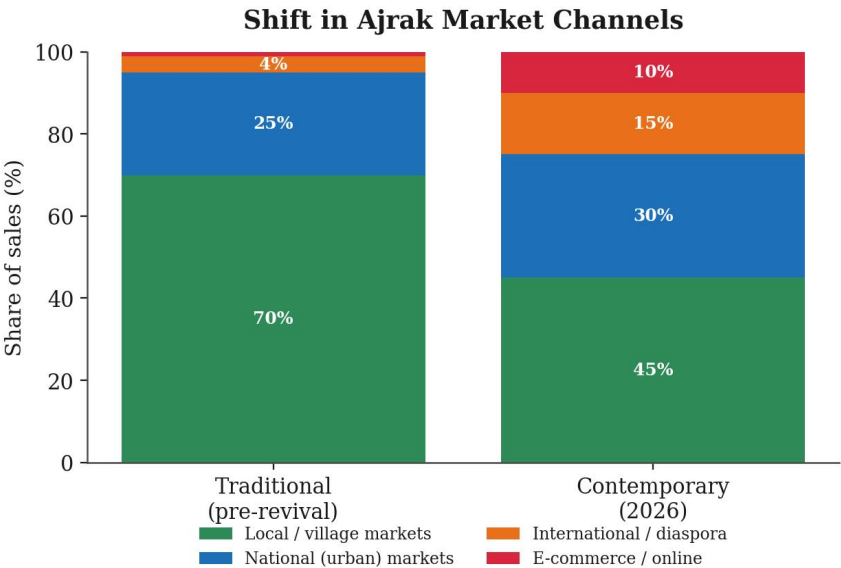


Figure 6. Indicative shift in Ajrak market-channel share from the traditional pattern to the contemporary (2026) mix.

4.6 The Ageing Workforce and Price Structure

Two further results bear on the craft’s sustainability. First, the master-artisan workforce is ageing: the ten participants ranged from 36 to 55 years, with two to four decades of experience each, and several expressed uncertainty about whether the next generation would continue (Figure 7). Second, the cost and price structure has escalated sharply. A carved block set that cost roughly Rs 1,800–2,500 around 2004 now represents a multiple of that figure, and while an

authentic hand-block Ajrak commands a substantial premium over machine-made imitation, the latter’s low price continues to divert price-sensitive buyers, especially during culture-day demand peaks (Figure 8). Table 8 sets out the indicative price comparison. The gap between the two products is precisely where GI certification and consumer education can intervene, by making authenticity legible and defensible in the marketplace.

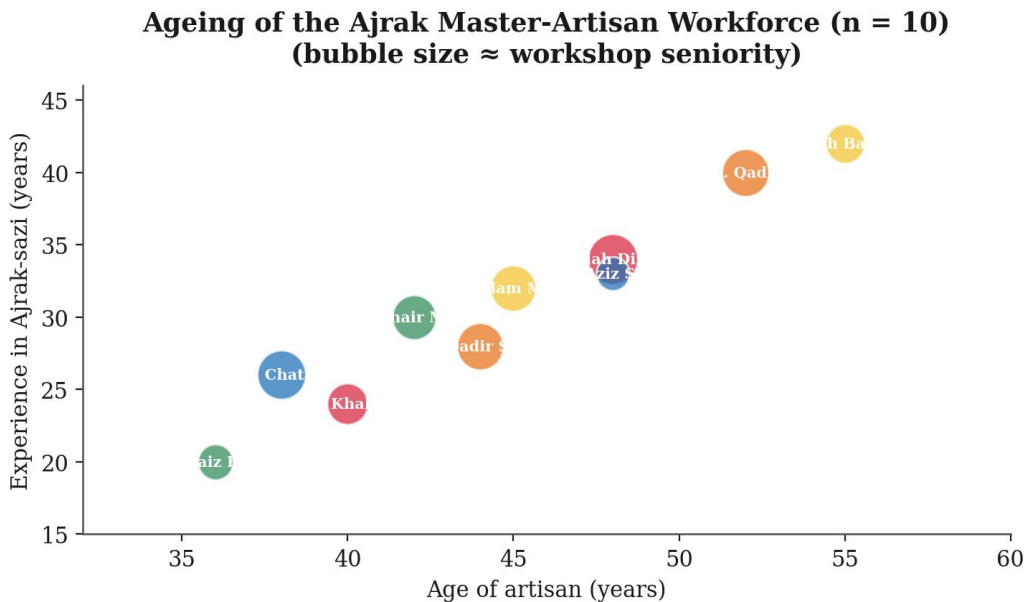


Figure 7. Age against experience for the ten master-artisans; bubble size approximates workshop seniority. The cohort is concentrated in middle age.

Table 8: Indicative Ajrak Cost and Price Structure, c. 2004 vs. 2026 (PKR)

Item	c. 2004	2026 (indicative)
Carved block set (3–4 blocks, one pattern)	1,800 – 2,500	9,000 – 15,000
Authentic hand-block Ajrak (retail)	1,000 – 3,000	4,500 – 12,000
Machine-made Ajrak (retail)	~300 – 500	~800 – 1,500

Note. 2004 figures from the field study; 2026 figures are indicative market estimates reflecting inflation and are illustrative, not audited.

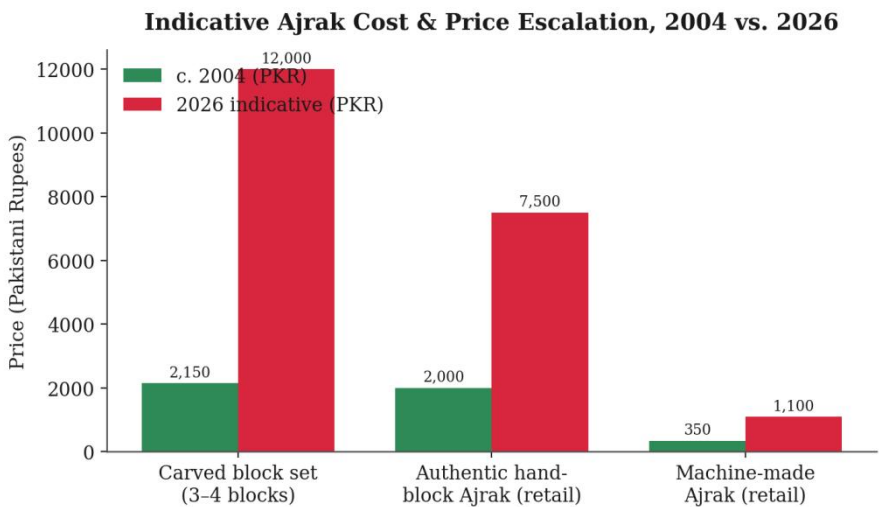


Figure 8. Indicative escalation of Ajrak block-set and retail prices between 2004 and 2026, with the persistent machine-made price gap.

5. Discussion

The results portray a craft caught between two trajectories one of erosion, the other of renewal whose outcome is not predetermined but contingent on strategic action. The erosion is well evidenced: geographic contraction, wage suppression, dye substitution, water stress, and an ageing workforce together describe a craft that has slipped toward the decline phase of its life cycle. Yet the same evidence reveals unusually strong assets and, in 2026, an unusually favourable external environment. Interpreting these findings through the heritage-and-development literature clarifies both the stakes and the levers.

5.1 Decline as Simultaneous Cultural and Economic Loss

Read against the intangible-cultural-heritage framework, the contraction of the Hala cluster is not merely the shrinkage of an industry but the attrition of a knowledge system transmitted orally and “by hand” (UNESCO, 2025). Because Ajrak knowledge is, in the artisans’ own phrase, learned through experience and inner intuition rather than recorded, every workshop that closes and every master who leaves the craft without an apprentice removes irreplaceable technical memory. This is why the documentary aim of the study is itself a safeguarding act, and why Ding et al. (2025) place documentation among the primary mechanisms of craft preservation. The economic and cultural losses are inseparable: the wage suppression that drives artisans out of the craft is simultaneously the mechanism by which the heritage is being lost.

5.2 The Water–Dye Nexus and Sustainable Production

A finding that connects the Hala case to the wider Sindh–Kutch block-printing belt is the centrality of water. Half of the twenty-two production steps involve dyeing or washing, making clean water a binding constraint on both quality and volume. The substitution of chemical for vegetable dyes itself a response to cost and speed pressures compounds the problem by generating untreated effluent that degrades the very water on which natural dyeing depends. The paradox is sharp: a craft whose principal contemporary selling point is ecological authenticity is being pushed toward ecologically damaging practice by the economics of survival. Effluent treatment, promotion of certified natural dyes, and water-efficient processing are therefore not peripheral environmental concerns but core to the craft’s commercial and cultural viability, aligning the Ajrak case with the sustainability agenda that now frames global craft policy (Ding et al., 2025; UNESCO, 2025).

5.3 Geographical Indication as a Strategic Lever

The registration of “Sindhi Ajrak” as a Geographical Indication under Pakistan’s GI Act 2020 is the single most consequential change in the craft’s external environment since the original fieldwork (Government of Pakistan, 2020). GI status directly addresses two of the threats identified in the SWOT analysis cultural appropriation and generic commodification by creating a legal basis to reserve the Ajrak name for products of authentic origin and process. It also addresses a weakness, weak branding, by furnishing an internationally recognized mark of provenance capable of commanding premium prices. The comparative literature cautions, however, that GI protection realizes these benefits only when coupled with cooperative institutions and quality certification; absent such structures, the premium is liable to be captured by intermediaries rather than artisans, reproducing the very wage suppression the mechanism is meant to relieve. The policy implication is that GI registration must be operationalised through producer cooperatives, a certification-of-authenticity scheme, and artisan-facing marketing support.

5.4 Design Intervention, Cooperatives, and Market Diversification

The field evidence offers a natural experiment in preservation strategy. The Bhit Shah–Hala cluster that embraced design intervention retaining traditional blocks but introducing new layouts, color combinations, and product lines such as saris, suit pieces, and dupattas expanded production and employment markedly, drawing in workers from beyond the founding families. The Matiari cluster that retained the classical Ajrak while cautiously widening its product range also prospered. The lesson, consistent with the broader craft literature, is that design intervention is one effective route to renewal but not the only one; product diversification and market widening can achieve comparable gains while preserving the craft's essence (Oyekunle & Sirayi, 2018). The ethical corollary, voiced by the artisans and echoed in the literature, is that designers and intermediaries bear a responsibility not to exploit either the makers or the craft's originality. Cooperative organisation offers the institutional means to secure that balance, pooling capital for blocks and effluent treatment, stabilizing prices, and negotiating access to national and diaspora markets.

5.5 The Revival Market and Generational Renewal

Situating the craft within Pakistan's macroeconomy underscores both its marginality and its latent potential. Textile exports reached US\$17.88 billion in FY2024–25, some sixty per cent of national exports, yet handicrafts remain statistically invisible, folded into residual non-textile categories and earning only a few hundred million dollars against the several billions achieved by regional peers (Express Tribune, 2026; Textile Institute of Pakistan, 2026). This invisibility is a policy failure as much as a market outcome, and it is precisely the space that GI branding, e-commerce, and cultural-tourism promotion are positioned to fill. The demand surge documented around Sindhi Culture Day 2025 demonstrates that a strong, identity-anchored consumer base exists and is growing among younger Sindhis (Bol News, 2025). Converting that seasonal, identity-driven enthusiasm into stable, year-round, fairly remunerated demand capable of retaining the next generation in the craft is the central strategic challenge, and the SWOT synthesis in Table 6 maps the assets available to meet it.

5.6 Toward an Integrated Safeguarding Model

Taken together, the findings suggest that no single instrument neither GI registration, nor design intervention, nor cultural celebration can by itself reverse the craft's decline, because the threats are interdependent. Wage suppression, dye substitution, and water stress reinforce one another: low prices push artisans toward cheaper chemical dyes, which foul the water on which quality natural dyeing depends, which in turn erodes the authenticity that alone justifies a premium price. Breaking this cycle requires a coordinated model in which the four SWOT quadrants are addressed simultaneously strengths are certified (GI, authenticity marks), weaknesses are institutionalised away (cooperatives, documentation, training), opportunities are captured (e-commerce, diaspora and culture-day markets), and threats are neutralised (effluent treatment, IP enforcement, price stabilisation). This integrated reading is the study's principal theoretical contribution: it demonstrates, through a single well-bounded case, why craft-safeguarding interventions that are pursued in isolation tend to disappoint, and why the heritage-and-development literature's emphasis on bundled, artisan-owned strategies is analytically warranted (Ding et al., 2025; Oyekunle & Sirayi, 2018).

5.7 Limitations

Several limitations qualify these findings. The study is bounded to the Hala cluster and does not survey Ajrak production elsewhere in Sindh, so generalisation beyond the case should be cautious. The sample of ten master-artisans, selected for expertise rather than representativeness, privileges depth over breadth. Certain quantitative indicators unit counts,

workforce sizes, and 2026 price levels are field-reported or indicative rather than audited, and are presented as orders of magnitude. Finally, the qualitative, single-case design supports analytical rather than statistical inference. These constraints point directly to a future-research agenda: multi-site comparative survey, quantitative artisan-income analysis, effluent and water-quality measurement, and longitudinal tracking of the GI scheme's distributional effects.

6. Conclusion and Recommendations

Ajrak is among the oldest and most culturally freighted textile crafts of the Indus world, and the evidence assembled here shows it to be simultaneously imperilled and revivable. The block-printing production of Hala retains its twenty-two-stage, natural-dye, double-sided authenticity and its profound significance as an emblem of Sindhi identity; yet it has contracted sharply under wage suppression, chemical-dye and machine-made substitution, water stress, and generational disengagement. The decisive insight of the SWOT synthesis is that the craft's internal strengths and its 2026 external opportunities Geographical-Indication protection, a demonstrable revival market, and rising global demand for sustainable hand-made textiles are more than sufficient to arrest the decline, provided they are mobilised through deliberate institutional action. On the basis of the findings, the following recommendations are advanced.

- 1. Operationalize the GI.** Convert the registered 'Sindhi Ajrak' Geographical Indication into practical benefit through a certification-of-authenticity scheme and producer cooperatives, so that the resulting price premium reaches artisans rather than intermediaries.
- 2. Organize artisans into cooperatives.** Support cooperative structures to pool capital for blocks and effluent treatment, stabilize prices, negotiate market access, and provide a collective bulwark against wholesaler wage suppression.
- 3. Safeguard the water-dye base.** Invest in effluent-treatment infrastructure and promote certified natural dyes and water-efficient processing, protecting both the ecological selling point and the physical basis of the craft.
- 4. Document and transmit knowledge.** Fund systematic documentation of motifs, techniques, and master-artisan expertise, and establish workshop-based training to secure generational transmission of an otherwise oral tradition.
- 5. Diversify products and markets.** Encourage ethically governed design intervention, e-commerce, and diaspora and cultural-tourism channels to convert seasonal, identity-driven demand into stable, year-round income.
- 6. Correct policy invisibility.** Disaggregate handicrafts within national trade statistics and integrate Ajrak into export-promotion, SME, and cultural-heritage policy so that its economic contribution becomes measurable and supportable.

If pursued together, these measures would allow Ajrak to move from the decline phase of its life cycle toward sustainable renewal preserving not only a beautiful textile but the livelihoods, knowledge, and identity woven into it. The craft's survival is, in the end, a test of whether a society can retain its heritage without freezing it: allowing Ajrak to evolve with its markets while safeguarding the essence that makes it Ajrak.

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