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TEXTILE INDUSTRY CLUSTERS AS A COMPETITIVENESS STRATEGY

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Abstract

Industrial clusters are widely promoted as a competitiveness strategy in the textile and apparel (T&A) sector, yet developing economies often implement clusters through state-led designs that diverge from "organic" agglomeration models. This paper examines how textile clustering enhances competitiveness through collective efficiency, governance quality, and upgrading in global value chains (GVCs), and evaluates Uzbekistan's cotton–textile cluster model as a contemporary case of rapid, top-down transformation. Using a structured comparative review of academic and policy sources, the study synthesizes evidence from benchmark clusters (Prato in Italy, Tiruppur in India, Vietnam's industrial zones, and Bangladesh's ready-made garment agglomeration) and contrasts their governance mechanisms, sustainability infrastructure, and upgrading trajectories. Results suggest that successful clusters combine (i) specialized factor development, (ii) strong intermediary institutions (associations, cluster management units), and (iii) shared sustainability/digital infrastructure (e.g., common effluent treatment, circular systems, traceability). Uzbekistan's model delivered fast vertical integration and reputational recovery after the elimination of systemic forced labor, but it remains vulnerable to "monolithic cluster" risk, commodity dependence (yarn-heavy exports), and institutional frictions in farm–firm relations. The paper proposes an evolution path from enterprise-dominated clusters to networked clusters through independent governance units, SME supplier ecosystems, and cluster-level digital and green compliance systems. Policy implications focus on upgrading from fiber/yarn to finished goods, improving competition and resilience, and building Digital Product Passport readiness for EU market access.

Keywords

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textile clusters; collective efficiency; agglomeration economies; global value chains; upgrading; sustainability; digital traceability; industrial policy; Uzbekistan; cotton–textile clusters

Introduction

The global textile and apparel sector remains a common entry point for industrialization due to labor intensity and scalable production stages. However, competitiveness increasingly depends on systemic capabilities: speed, quality assurance, compliance, and traceability across global value chains. Clusters—geographic concentrations of interconnected firms and institutions—are frequently proposed as a mechanism for developing economies to overcome SME constraints, enabling shared inputs, skill pooling, knowledge spillovers, and coordinated upgrading.

Classic theory identifies multiple channels through which clustering improves competitiveness. Marshallian external economies emphasize labor market pooling, specialized suppliers, and tacit knowledge diffusion. Porter's cluster logic adds that rivalry and sophisticated local demand can accelerate innovation. Schmitz's collective efficiency framework is especially relevant to developing economies: competitiveness emerges from both passive external economies and deliberate joint action, such as shared certification systems, bulk purchasing, or common treatment infrastructure.

Uzbekistan offers an unusually fast, state-facilitated shift from raw cotton exports toward vertically integrated cotton–textile "clusters" after 2017. The reform aimed to capture domestic value-added processing and address reputational constraints linked to forced labor. While the model delivered rapid processing deepening and renewed global integration, it also raises a central policy question: can a top-down, enterprise-dominated cluster design generate the same innovation and resilience as networked, institution-rich clusters observed internationally? This paper addresses that question through a comparative evidence synthesis and proposes a practical roadmap for Uzbekistan's next phase (2025–2030): upgrading into higher value garments, building digital/green compliance capacity, and strengthening cluster governance.

Methods

This study uses a structured comparative review design. Sources were selected from (i) academic literature on clusters, collective efficiency, and GVC upgrading; (ii) institutional reports (World Bank, ILO/Cotton Campaign, USDA FAS, UNIDO,

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UNIDO Knowledge Hub); and (iii) case documentation on benchmark textile clusters (Prato, Tiruppur, Vietnam, Bangladesh). The analysis followed three steps:

1. **Framework coding:** Evidence was coded under (a) governance model, (b) upgrading pathway (process/product/functional), (c) sustainability infrastructure, and (d) digital compliance/traceability.
2. **Cross-case comparison:** Best practices were mapped to a comparable indicator set (governance mechanism, sustainability milestone, upgrading focus).
3. **Uzbekistan application test:** Uzbek cluster evidence was evaluated against the identified best-practice conditions to detect gaps and derive policy implications.

Results

1) Global best practices: what "works" in textile clusters

The comparative cases point to three recurring competitiveness levers:

A. Institutional brokerage and coordinated upgrading

• Prato demonstrates that cluster competitiveness can be reinforced through coordinated governance linking firms and municipal planning, enabling circular systems and reputational advantage.

• Tiruppur shows how association-led governance can mobilize joint action at scale (export facilitation, common treatment plants, compliance).

B. Shared sustainability infrastructure

Environmental compliance has shifted from "nice-to-have" to "market access requirement". Cluster-level wastewater treatment (e.g., CETPs and ZLD systems) can reduce firm-level compliance cost barriers.

C. Digitalization as a trade gatekeeper

Digital traceability and product data management are increasingly tied to access to premium markets. Clusters that provide shared digital readiness services reduce the disadvantage of MSMEs relative to large firms.

Table 1. Cluster benchmarking (condensed)

Cluster	Primary edge	Governance mechanism	Signature sustainability/digital capability
Prato (Italy)	specialization + circular reputation	municipality + private coordination	closed-loop water / circular processing systems
Tiruppur (India)	MSME scale + export networks	exporters association (TEA)	ZLD via CETPs (cluster-level compliance)

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Cluster	Primary edge	Governance mechanism	Signature sustainability/digital capability
Vietnam (industrial zones)	FDI scale + industrial parks	state-led zones + FDI anchors	Industry 4.0 adoption push; process upgrading
Bangladesh (Dhaka RMG)	volume + compliance upgrading	BGMEA + global stakeholders	rapid "green factory" diffusion + social upgrading

2) Uzbekistan: structural gains, but risk of "commodity trap" and governance fragility

Uzbekistan's cotton–textile cluster model delivered speed: vertical integration, domestic processing deepening, and reputational normalization after forced labor was verified as eradicated. However, the model is structurally different from organic districts: in many districts, one cluster firm becomes the de facto hub controlling farm contracting and processing.

Key performance signal: rising output can coexist with export value volatility when the export basket remains concentrated in low-value products (e.g., yarn). That is a classic commodity exposure risk: production volume growth does not guarantee margin growth.

Observed constraints commonly reported across cluster systems in similar settings:

- debt and liquidity stress during price downturns,
- uneven mechanization and quality consistency constraints,
- weak inventory/logistics digitalization causing working capital lock-up,
- institutional frictions in farm–firm relationships where alternative marketing channels are limited.

Table 2. Uzbekistan cluster model: strengths vs constraints

Dimension	Strength delivered	Constraint / risk
Vertical integration	rapid processing deepening and coordination	"single-firm dependency" at district level
Reputation & compliance	post-boycott reintegration and EU opportunity	compliance must extend to traceability and data

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Dimension	Strength delivered	Constraint / risk
Export competitiveness	scale expansion + investment inflows	yarn-heavy exports → price vulnerability
Governance	fast policy execution	limited rivalry & weak SME supplier ecosystem

Discussion

The governance trap: speed vs resilience

Uzbekistan's model was effective for rapid transition (especially reputational and structural shifts), but enterprise-dominated clusters can underproduce two drivers that "old-school" clusters rely on: **rivalry** and **diversified local specialization**. When one anchor controls too much of the value chain, the system inherits balance-sheet risk: if the anchor fails, the district becomes fragile. In contrast, networked clusters diffuse risk across many specialized firms.

Policy implication: evolve toward "networked clusters" by encouraging independent specialized SMEs (maintenance, labs, accessory suppliers, design studios, finishing services) inside cluster geographies, supported by shared services rather than full vertical ownership.

Digitalization is becoming the new non-tariff barrier

EU-facing markets increasingly require product-level information readiness (traceability, composition, process documentation). Even if labor compliance is solved, weak data infrastructure can produce a "digital exclusion" effect. This particularly harms SMEs unless clusters provide shared traceability platforms and standardized reporting support.

Policy implication: establish cluster-level digital compliance units (traceability + DPP-readiness services) so SMEs can meet requirements without prohibitive fixed costs.

The productivity–sustainability nexus

Benchmark cases show that sustainability investments often reduce costs at scale (water reuse, process efficiency). For Uzbekistan, drip irrigation and energy modernization are not only environmental decisions but also risk management against climate and cost shocks. Yet mechanization and process upgrading can reduce demand for low-skilled labor; therefore, labor absorption must shift downstream into higher value apparel and services.

Policy implication: pair mechanization with aggressive downstream upgrading (garment manufacturing, design, logistics, e-commerce) to prevent rural labor displacement risk.

Conclusion

Clusters remain a credible competitiveness strategy in textiles, but only when they go beyond geographic concentration toward institutional depth: joint action mechanisms, shared sustainability infrastructure, and digital compliance capacity. Uzbekistan's cotton–textile clusters achieved rapid structural transformation and reputational recovery, but the next phase must address governance resilience and export upgrading. A practical evolution path is to transform enterprise-dominated clusters into networked ecosystems with independent governance units, stronger SME supplier bases, and cluster-level digital/green services. This shift would reduce commodity exposure, improve innovation incentives, and strengthen long-term competitiveness in EU and other premium markets.

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