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RESEARCH ARTICLE

KPI-Linked Investment Mechanism for Textile Firms in Uzbekistan: 2023–2025 Evidence

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Abstract

This paper develops a KPI-linked investment mechanism aimed at improving the investment attractiveness of textile enterprises and motivates policy and managerial priorities using official sector-level evidence from Uzbekistan for 2023–2025. The empirical motivation is a conversion gap: fixed capital investments expanded rapidly, while textile export value declined over two consecutive years despite a shift toward finished products. Using National Statistics Committee press releases, we document that textile exports in 2024 amounted to USD 2,867.4 million (10.6% of total exports) and decreased by 6.7% compared to 2023; in 2025 they reached USD 2,632.5 million (7.8%) and decreased by 8.2% compared to 2024. Over 2021–2025, total fixed capital investments increased from 236.6 to 591.1 trillion soums, and in 2025 manufacturing absorbed 160.5 trillion soums (27.2% of total). We propose a five-block mechanism—financial, fiscal, institutional, infrastructure, and managerial—mapped to transmission channels affecting the cost of capital, risk profile, productivity, energy and resource efficiency, quality losses, and cash-flow predictability. A composite KPI architecture and an index-building procedure are provided to support enterprise ranking and monitoring of mechanism effectiveness. The results imply that prioritizing energy- and resource-efficiency upgrades, quality-loss reduction, and bankable project preparation, while strengthening one-stop services and infrastructure reliability, can improve investment attractiveness by reducing operational risk and increasing forecastable returns. The paper contributes a replicable IMRaD-aligned framework for aligning policy tools with measurable enterprise outcomes in an energy- and export-sensitive sector.

KEYWORDS

Investment mechanism; investment attractiveness; textile industry; KPIs; composite index; Uzbekistan; energy efficiency; exports.

INTRODUCTION

The textile and garment sector is frequently positioned as a backbone of industrial upgrading, employment creation, and export diversification in emerging economies. For investors, however, sector participation depends not only on current profitability, but on the expected risk-adjusted return over the life cycle of modernization projects. Such returns are shaped by financing conditions, infrastructure reliability, regulatory predictability, input-cost risks (especially energy and logistics), and the enterprise's capability to deliver stable cash flows and consistent quality.

In this context, an investment mechanism should be understood as a coordinated system of instruments and institutions that jointly reduce uncertainty and improve the economics of investment projects. The mechanism includes

financial tools (preferential credit, guarantees, export finance), fiscal incentives (tax relief, accelerated depreciation, special regimes in industrial zones), institutional arrangements (one-stop services, transparent procedures, investor protection), infrastructure enablers (electricity, water, transport, logistics, industrial sites), and managerial capabilities (project preparation, operational excellence, energy management, quality management, risk management). The joint effect of these components is expected to lower the cost of capital, reduce risk premia, and improve the predictability of operating cash flows, which together define investment attractiveness.

1. Sector motivation and the conversion gap

Uzbekistan's textile industry has been transitioning from raw cotton exports toward yarn, fabrics, and finished products, with the strategic goal of increasing domestic value added and export sophistication. Yet recent official indicators reveal a performance tension relevant to investment attractiveness. According to the National Statistics Committee press release for January–December 2024, textile exports amounted to USD 2,867.4 million (10.6% of total exports) and decreased by 6.7% compared to 2023. The structure of textile exports in 2024 was dominated by yarn (43.2%) and finished textile products (39.2%).

The press release for January–December 2025 indicates that textile products were exported for a total of USD 2,632.5 million (7.8% of total exports) and decreased by 8.2% compared to 2024, while the export structure shifted toward finished textile products (54.3%) and yarn (27.0%). This combination suggests that structural upgrading progressed, yet overall export values and the share of textiles in total exports faced headwinds.

In parallel, fixed capital investment expanded strongly at the macro level. The National Statistics Committee press release on investments in fixed capital reports that total fixed capital investments increased from 236.6 trillion soums in 2021 to 591.1 trillion soums in 2025. In 2025 the manufacturing industry utilized 160.5 trillion soums, which corresponds to 27.2% of total fixed capital investments, indicating the prominence of industrial investment.

The coexistence of rising investment activity and weakening textile export values motivates a conversion-gap perspective. Attracting investment inflows is not sufficient unless those inflows reliably convert into investor-relevant outcomes such as higher productivity, lower energy and resource intensity, reduced quality losses, and more stable cash-flow generation. If conversion is weak, investors require higher returns or avoid the sector, which undermines the sustainability of capital mobilization.

2. Related literature and research gap

The literature on investment attractiveness emphasizes multi-dimensional determinants that combine financial performance, risk, institutional quality, and market prospects. At the firm level, profitability, leverage, liquidity, asset quality and cash-flow stability are central, while at the environment level, investor protection, regulatory clarity, infrastructure reliability, and policy credibility affect the cost of capital and the feasibility of long-horizon modernization. In manufacturing, and especially in energy-intensive segments, energy efficiency and resource productivity increasingly shape competitiveness and risk exposure, which in turn influences investment decisions and financing terms.

However, many policy discussions remain descriptive and do not specify how individual investment policy tools are expected to translate into measurable enterprise outcomes. Likewise, many firm-level assessment approaches rely on narrow sets of financial ratios and under-represent technology renewal, energy intensity, quality losses, and export value added—factors that are especially relevant for textile enterprises facing global competition and standard requirements. This paper addresses the gap by proposing a KPI-linked mechanism that explicitly maps policy and managerial instruments to transmission channels and measurable outcomes, enabling monitoring, comparability, and subsequent causal evaluation.

3. Aim, research question, and contribution

The aim of the paper is to develop an IMRaD-aligned, KPI-linked framework for enhancing the investment mechanism that improves the investment attractiveness of textile enterprises, and to motivate priorities using official evidence for Uzbekistan in 2023–2025. The research question is: how can investment policy tools and enterprise-level modernization actions be aligned through measurable KPIs to improve the cost of capital, risk profile, productivity, and cash-flow predictability, thereby increasing investment attractiveness in the textile sector?

The contribution is threefold. First, the paper formalizes a five-block investment mechanism model tailored to an energy- and

export-sensitive manufacturing sector. Second, it proposes a KPI architecture and a composite index procedure suitable for enterprise ranking and monitoring of mechanism effectiveness. Third, it provides a sector-level trend-based gap analysis for 2023–2025 that motivates the prioritization of specific channels (energy efficiency, quality losses, project bankability, and infrastructure reliability).

METHODS

1. Research design

The study employs a mixed-method design combining descriptive trend analysis with structured framework development. The descriptive component documents recent sector-level dynamics in textile exports and macro investment activity to identify the conversion gap. The framework component develops a mechanism–channel–KPI mapping and a composite index methodology intended for subsequent enterprise-level implementation using panel data.

2. Data sources and materials

Sector-level textile export values, export shares in total exports, and the structure of textile exports by major product groups are taken from the National Statistics Committee press releases on foreign trade turnover of the Republic of Uzbekistan for January–December 2024 and January–December 2025. Macro fixed capital investment dynamics for 2021–2025, as well as the structure of investments by type of economic activity and the share of manufacturing, are taken from the National Statistics Committee press release on fixed capital investments for January–December 2025.

The policy background for energy efficiency is included because energy intensity is a binding competitiveness factor for textile production and a major driver of operational risk. We therefore reference Uzbekistan's updated legal framework on energy saving and energy efficiency (Law No. LRU-940 signed on 7 August 2024, with entry into force reported by official sources) and complementary international assessments of Uzbekistan's energy efficiency policy.

3. Operationalization of investment attractiveness

Investment attractiveness is operationalized as a multi-dimensional construct reflecting expected risk-adjusted returns. From an investor perspective, attractiveness rises when the weighted average cost of capital (WACC) decreases, when risk premia are reduced through improved predictability and lower operational volatility, and when enterprise KPIs signal a higher probability of reaching target margins and payback periods. Accordingly, we structure measurement into six KPI blocks that reflect key transmission channels from the investment mechanism to investor outcomes.

4. KPI architecture and indicator selection

The KPI architecture contains six blocks. The technology and assets block captures asset renewal and capacity utilization; the production efficiency block reflects productivity and cost dynamics; the energy and resource efficiency block measures energy intensity, savings, and exposure to input-price shocks; the quality and losses block captures defects, returns, and downtime as sources of hidden costs and risk; the financial resilience and cash-flow block evaluates margin stability, coverage, and operating cash-flow predictability; and the export value-added block reflects the share of finished products, market diversification, and compliance with standards that affect access to higher-margin segments.

Indicator selection follows three criteria. The first is relevance to investor outcomes via a clear channel (cost, risk, cash flow). The second is measurability and auditability using enterprise reporting and operational data. The third is comparability across firms and time, including the possibility of normalization. Indicators are classified as stimulants (higher is better) or destimulants (lower is better).

5. Composite KPI index procedure

To support monitoring and enterprise ranking, we propose a composite index I(i,t) computed for enterprise i in year t. The procedure includes six steps. First, indicators are collected and their direction (stimulant/destimulant) is defined. Second, data are verified, harmonized, and made comparable (e.g., deflation if monetary indicators are used; treatment of outliers; missing-data rules). Third, indicators are normalized to a common scale, for instance using min–max normalization. Fourth, weights are assigned at the indicator and/or block level; feasible approaches include expert weighting (e.g., AHP), information-based weighting (e.g., entropy), statistical weighting (e.g., PCA), or a hybrid design to enhance robustness. Fifth, normalized indicators are aggregated into block scores and then into an overall index as a weighted sum or another aggregation function. Sixth, robustness is tested through sensitivity analysis to weights and normalization choices, and results are interpreted to identify bottlenecks and policy priorities.

6. Analytical strategy and planned empirical extension

The present paper applies a trend-based gap analysis. We first document textile export dynamics and composition for 2024–2025, and interpret 2023 values as the comparator used in the official 2024 release. We then document macro investment dynamics and the prominence of manufacturing in fixed capital investments. We interpret the mismatch between export and investment trends using the mechanism–channel–KPI mapping. As a planned empirical extension, the composite index can be computed on firm-level panel data and used as a dependent variable in econometric models (e.g., fixed-effects or random-effects regressions), and policy changes can be evaluated using quasi-experimental designs where applicable.

RESULTS

1. Textile exports and structural upgrading indicators

According to the National Statistics Committee press release for January–December 2024, textile exports amounted to USD 2,867.4 million and represented 10.6% of total exports, decreasing by 6.7% compared to 2023. The same release reports that the export structure in 2024 was dominated by yarn (43.2%) and finished textile products (39.2%). The release also provides a reference value for total textile exports in 2023 used for comparison in that document.

The press release for January–December 2025 reports textile exports of USD 2,632.5 million, accounting for 7.8% of total exports, and indicates an 8.2% decrease compared to 2024. At the same time, the export structure shifted toward finished textile products (54.3%) and yarn (27.0%). This change suggests that the sector's product mix moved further toward higher value-added segments, but the total export value declined, which points to challenges in volumes, prices, or market access.

2. Macro investment dynamics and industrial allocation

The press release on fixed capital investments indicates that in January–December 2025, 591.1 trillion soums were invested in fixed assets, which is 10.5% higher than in the corresponding period of 2024. The same source provides the five-year dynamics of total fixed capital investments, showing an increase from 236.6 trillion soums in 2021 to 266.2 in 2022, 356.1 in 2023, 507.5 in 2024, and 591.1 in 2025, which is approximately a 2.5-fold increase over the period.

In the structure of investments in fixed capital by type of economic activity in 2025, the manufacturing industry prevails. The press release reports that 160.5 trillion soums, or 27.2% of total fixed capital investments, were utilized in manufacturing. This indicates that industrial modernization is a central component of national investment activity, and that the investment mechanism for manufacturing sectors, including textiles, is pivotal for overall investment efficiency.

The financing structure in 2025 highlights the importance of foreign capital. In the regional structure table, the press release reports that foreign investments and loans accounted for 71.4% of total fixed capital investments in Uzbekistan. This underscores the importance of investor confidence, transparency, and de-risking tools in maintaining investment flows.

3. Mechanism–channel–KPI interpretation of the conversion gap

The juxtaposition of declining textile export value and expanding fixed capital investments motivates the conversion-gap interpretation. From the perspective of the mechanism–channel–KPI mapping, conversion may weaken when investments prioritize capacity expansion without sufficiently improving investor-relevant outcomes such as energy intensity reduction, quality-loss control, operational stability, and cash-flow predictability. In such circumstances, enterprises may face margin volatility driven by energy and input-price shocks, downtime, and compliance costs, which increase the risk premium embedded in financing terms. The observed shift toward finished products indicates progress in upgrading, yet also implies higher requirements for standards, quality management, and stable input and logistics conditions.

Table 1. Selected sector-level indicators used in the gap analysis (Uzbekistan, 2024–2025; investments 2021–2025)

Indicator	2021	2022	2023	2024	2025
Fixed capital investments, trillion soums	236.6	266.2	356.1	507.5	591.1
Textile exports, USD	—	—	Ref. value in	2,867.4	2,632.5

million			2024 release		
Textile share of total exports, %	—	—	—	10.6	7.8
Finished textiles share in textile exports, %	—	—	—	39.2	54.3
Yarn share in textile exports, %	—	—	—	43.2	27.0

Note: The 2024 press release reports a reference value for 2023 textile exports for comparison within that document.

Table 2. Proposed KPI blocks for enterprise-level investment attractiveness measurement

KPI block	Candidate indicators (examples)	Direction	Investor channel
Technology & assets	asset renewal rate; depreciation ratio; capacity utilization; automation/digitalization proxy	+ / −	productivity, operational stability
Production efficiency	labor productivity; unit cost; OEE proxy; capital productivity (asset turnover)	+ / −	margin stability, payback
Energy & resources	energy intensity; share of energy costs; energy savings from projects; water intensity	− / +	input-risk reduction, competitiveness
Quality & losses	defect rate; returns; downtime; scrap; rework costs	−	risk premium reduction, cash-flow predictability
Financial resilience & cash flows	EBITDA margin; interest coverage; operating CF stability; leverage; liquidity	+ / −	WACC, bankability
Export value-added	share of finished products; market diversification; compliance/standards proxy; export margin	+	revenue stability, growth options

Table 3. Investment mechanism blocks mapped to transmission channels and KPI monitoring

Mechanism block	Typical instruments	Transmission channels	KPI blocks primarily affected
Financial	preferential loans; guarantees; export finance; project finance	WACC reduction; liquidity; commissioning speed	Financial; Technology; Export
Fiscal	tax incentives; accelerated depreciation; zone regimes	payback improvement; CAPEX affordability	Technology; Financial
Institutional	one-stop services; transparent procedures; standardized appraisal	transaction-cost reduction; regulatory risk reduction	Cash flows; Financial; Quality
Infrastructure	reliable electricity/water; logistics; industrial sites	operational continuity; cost stability	Energy; Production; Quality
Managerial	project preparation; energy management; quality management; risk management	bankability; productivity; loss reduction	All KPI blocks

DISCUSSION

1. Interpretation of results and implications for investment attractiveness

The evidence indicates that Uzbekistan's textile sector experienced a decline in export value in 2024 and 2025, while the export basket shifted toward finished products. This combination is consistent with a sector undergoing structural upgrading while facing constraints that limit volumes or unit values. For investment attractiveness, the key implication is that policy and enterprise actions must prioritize not only capacity expansion but also the investor-relevant drivers of stable margins and cash-flow predictability.

A KPI-linked investment mechanism provides a practical way to close the conversion gap. First, it aligns financial and fiscal support with measurable outcomes. Preferential finance and tax incentives can be conditioned on verified improvements in energy intensity, modernization milestones, and quality-loss targets. Second, it improves risk transparency. A standardized KPI dashboard reduces information asymmetry for lenders and equity investors and supports better pricing of risk, potentially lowering the weighted average cost of capital. Third, it supports prioritization. When firms are ranked by a composite KPI index, limited public resources (subsidized credit lines, guarantees, infrastructure commitments) can be allocated to projects with the highest expected conversion into value-added exports and stable cash flows.

2. Energy efficiency as a binding channel and policy alignment

Energy and resource efficiency emerge as binding channels because textile production involves energy-intensive processes and is exposed to input-price volatility. Uzbekistan has updated its legal framework on energy saving and energy efficiency through Law No. LRU-940 signed on 7 August 2024, which sets a target-oriented approach for different sectors. International assessments also emphasize sectoral implementation and targeted measures to realize energy efficiency gains. Translating this policy context into investment attractiveness requires bankable enterprise-level projects with measurable savings and lower operational risk.

Within the proposed mechanism, energy efficiency can be operationalized via three layers. At the enterprise layer, energy audits, ISO-aligned energy management, and monitoring systems can stabilize consumption and reduce wastage. At the financing layer, targeted credit lines and guarantees can lower the cost of capital for energy-saving projects, while repayment profiles can be linked to verified savings. At the infrastructure layer, reliability of electricity and industrial utilities reduces downtime and the risk of not achieving planned production and payback. These layers interact; therefore, single-instrument approaches are unlikely to deliver sustained investor confidence.

3. Managerial and institutional drivers of bankability

The investment mechanism must address not only financing availability but also project bankability. Investors and lenders evaluate the quality of feasibility studies, transparency of assumptions, risk registers, and the credibility of implementation schedules. Weak project preparation increases perceived risk, delays commissioning, and raises financing costs. Therefore, institutional one-stop services and standardized project appraisal can have a material effect on investment attractiveness by lowering transaction costs and improving the predictability of project execution.

Managerial capabilities are the primary interface through which policy tools translate into enterprise outcomes. Operational excellence and quality management reduce hidden costs and stabilize cash flows, while digitalization can improve traceability and compliance with buyer standards. In an export-oriented textile sector, improvements in finished-product share must be supported by consistent quality and delivery reliability; otherwise, the upgrading process may not improve revenues and may increase risk exposure.

4. Limitations and future research

This paper is limited by reliance on sector-level indicators for 2024–2025 and macro investment statistics for 2021–2025, and it does not estimate causal impacts of specific policy tools. The proposed composite index and KPI architecture are intended for enterprise-level panel data, which should be assembled from financial statements, operational records, energy indicators, and project documentation. Future research should compute the index for a firm sample, test determinants of investment attractiveness in panel regressions, and evaluate mechanism reforms using quasi-experimental designs where applicable. Complementary project-level analysis using NPV/IRR and sensitivity analysis can strengthen the investment-case rationale for targeted modernization and energy-efficiency projects.

CONCLUSION

This IMRaD-structured paper developed a KPI-linked investment mechanism to improve textile enterprises' investment attractiveness and used official sector-level evidence from Uzbekistan to motivate priorities. Textile exports decreased in 2024 and 2025, while the export structure shifted toward finished products. Over 2021–2025, fixed capital investments increased strongly, and manufacturing absorbed over a quarter of total investment in 2025, with foreign investments and loans constituting a dominant share of financing. These trends motivate a conversion-gap perspective: attracting investment is insufficient unless it reliably improves productivity, energy efficiency, quality, and cash-flow predictability. The proposed five-block mechanism model, KPI architecture, and composite index procedure offer a practical pathway for aligning policy tools and enterprise actions with measurable investor outcomes. Practical priorities include energy- and resource-efficiency upgrades, reduction of quality losses and downtime, strengthened project preparation and standardized appraisal, and improvements in infrastructure reliability and one-stop services. Future work should operationalize the index on enterprise panel data and evaluate the effectiveness of mechanism reforms empirically.

DECLARATIONS

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Conflict of interest: The author declares no conflict of interest.

Data availability: All numeric inputs used in the sector-level gap analysis are drawn from publicly available official press releases referenced below.

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