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Article

Labor Utilization and Production Organization in the Garment and Knitwear Industry Under Globalization: Pakistan's Experience and Implications for Uzbekistan

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Abstract: This article examines practices in labor utilization and efficient production organization in Pakistan's garment and knitwear industry in the context of globalization and assesses their potential applicability to Uzbekistan. Against the backdrop of intensifying competition in global markets, the study discusses the application of efficiency-oriented management approaches, including lean manufacturing, Kaizen, and 5S, to workforce management and production-process optimization in Pakistani enterprises. Pakistan's experience is also examined in relation to global value-chain integration, vertical integration, energy efficiency, workforce training, labor productivity, and export development. Drawing on a comparison with the current development of Uzbekistan's garment and knitwear industry and the characteristics of its labor market, the article offers recommendations for developing a national approach to production organization based on the efficient use of labor. The findings may help improve production efficiency, strengthen competitiveness, and support the integration of Uzbekistan's light-industry enterprises into global markets.

Keywords: garment and knitwear industry; Pakistan's experience; production efficiency; vertical integration; lean manufacturing; Kaizen; Uzbekistan.

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1. Introduction

In today's global economy, characterized by intensifying competition, improving production efficiency, using resources rationally, and increasing export potential have become priorities of national industrial policy. The garment and knitwear industry plays an important role not only in meeting consumer demand but also in supporting foreign trade and creating employment.

Growing global demand for textile products, together with increasingly stringent requirements for environmental sustainability and energy conservation, calls for the introduction of innovative and efficient management systems. In this context, studying international experience and adapting relevant practices to Uzbekistan's production system are particularly important.

In recent years, Uzbekistan has adopted several government programs and regulatory documents aimed at developing light industry. In particular, the Development Strategy of New Uzbekistan for 2022–2026 and the Uzbekistan 2030 Strategy create opportunities for the digitalization of production processes, deeper processing of domestic

raw materials, and the manufacture of export-oriented products. Government measures aimed at expanding processing in the garment and knitwear industry also encourage modernization, technological innovation, and the adoption of international practices.

Countries such as Türkiye, India, Bangladesh, and Pakistan have developed internationally competitive garment and knitwear industries. Pakistan's experience is particularly relevant to this study because its economy also has a substantial agricultural base, access to cotton raw materials, and significant labor resources. Accordingly, this article examines production organization in Pakistan's garment and knitwear industry and considers which elements of its experience may be applicable to Uzbekistan.

M. A. Quddus et al. examined factors affecting production efficiency in Pakistan's textile industry and argued that technological modernization, workforce skills, and improvements in raw-material supply influence the sector's competitiveness. Their study also emphasized the importance of policy continuity in increasing export potential [1].

R. S. Kalirajan and M. Bhide applied data envelopment analysis (DEA) to measure production efficiency in India's textile sector and identified inefficient resource use among small and medium-sized enterprises as a major challenge. This approach is relevant to the analysis of developing economies, including Uzbekistan and Pakistan [2].

S. Mahmood and A. Hussain examined the relationship between labor productivity and technological transformation in Pakistan's garment and knitwear industry. They reported that the adoption of innovative solutions could increase production capacity by 15–20% and observed higher efficiency among enterprises operating within clusters [3].

Drawing on Bangladesh's textile sector, M. Rahman highlighted the role of government policy in the production of export-oriented goods and suggested that public–private partnerships (PPPs) could contribute to production sustainability [4].

H. K. Raza and colleagues analyzed Pakistan's Textile Policy 2020–2025 and argued that export-support measures, tax incentives, and energy subsidies positively affect industrial efficiency [5].

N. Karim and A. Tanveer examined the effects of digital technologies on the efficiency of garment and knitwear enterprises. According to their findings, enterprise resource planning (ERP) and Internet of Things (IoT) systems can reduce production-related time losses by 10–12% [6].

2. Materials and Methods

This study employs comparative analysis, statistical data analysis, and content analysis of regulatory documents to examine production organization in Pakistan's garment and knitwear industry and identify opportunities to adapt relevant practices to Uzbekistan.

The study compares macroeconomic indicators, cotton raw-material potential, production capacity, and export trends in the garment and knitwear industries of Pakistan and Uzbekistan. It also examines similarities and differences between Pakistan's Textile Policy 2020–2025 and Uzbekistan's policy measures for developing the textile sector.

The study draws on information attributed to Pakistan's textile-sector authorities, the Ministry of Investment, Industry and Trade of the Republic of Uzbekistan, the International Labour Organization (ILO), the United Nations Industrial Development Organization (UNIDO), and the World Bank. The information was synthesized to develop conclusions and practical recommendations for Uzbekistan.

3. Results and Discussion

The textile and knitwear industry is a strategic sector of Pakistan's economy, supported by government institutions involved in industrial policy, investment, and trade. Relevant bodies include institutions responsible for commerce and investment promotion.

These institutional arrangements aim to strengthen export capacity, improve international competitiveness, and facilitate access to new markets.

Pakistan's Textile Policy 2020–2025 sought to modernize the textile industry, improve production efficiency, and encourage the adoption of innovative technologies. The policy included measures such as tax incentives, concessional financing, and export support. Such instruments were intended to help producers improve their competitiveness and meet international market requirements.

Pakistan's institutional and policy approach illustrates how the garment and knitwear industry can be supported as a strategic sector and offers potentially useful lessons for the design of management and economic mechanisms in Uzbekistan.

Table 1. Uzbekistan and Pakistan: Key Macroeconomic Indicators

Indicator	Uzbekistan (2024)	Pakistan (2024)	Source
Population (millions, approx.)	36.0 million	251.3 million	World Bank - Population.
Gross domestic product (nominal, USD)	**114.97 billion** (2024, nominal).	**373.07 billion** (2024, nominal).	World Bank / FRED / Data.
GDP per capita (nominal, USD)	**3,161.7** (2024, nominal).	**1,484.7** (2024, nominal).	World Bank - GDP per capita.
GDP growth (%)	**6.5%** (2024 rough estimate / World Bank assessment).	**2.6%** (2024, IMF/national reports).	World Bank / IMF country briefs.
Consumer price inflation (%)	**11–12%** (2024 – according to various sources; see IMF data).	**20%** (2024 – World Bank/IMF data indicate that inflation has a structural component).	World Bank / IMF inflation series.
Unemployment rate (% – ILO/World Bank estimate)	4.5% (2024 – close to program/national data).	5.5% (2024 – modeled ILO/World Bank estimate).	World Bank / TradingEconomics.
Income classification	Lower-middle income	Lower-middle income; wide coverage.	World Bank country classification.
Textile/apparel exports (USD billion; estimate)	Exact figures: not included in the ratings consulted, but efforts are being made to increase exports (to be taken from specialized industry sources).	Textile exports are large (fact): $16+ billion (around 2024); textiles hold the main share of Pakistan's exports.	Pakistan textile data / UN COMTRADE / national agencies.

Table 1 compares selected indicators for Uzbekistan and Pakistan in 2024. Both economies have substantial agricultural and manufacturing sectors, although their overall scale and demographic characteristics differ.[7]

According to the figures presented in Table 1, Pakistan's nominal GDP in 2024 was approximately USD 373.07 billion, with a population of 251.3 million. Uzbekistan's corresponding figures were approximately USD 114.97 billion and 36.0 million. Pakistan

therefore had a larger economy and population, while its nominal GDP per capita was lower than Uzbekistan's.[8]

Uzbekistan recorded comparatively strong economic growth in 2024, with the estimate presented in Table 1 at approximately 6.5%. Pakistan's corresponding growth estimate was 2.6%. Energy constraints, external debt pressures, and political uncertainty are among the challenges discussed in relation to Pakistan's economic performance. [9]

Inflation remained an important macroeconomic issue in both countries. The approximate ranges presented in Table 1 suggest higher inflation in Pakistan than in Uzbekistan in 2024. These estimates should be interpreted with reference to the specific data series and reporting periods used. [10]

Industry, particularly the textile sector, including knitwear and cotton processing, plays an important role in both economies. Uzbekistan has pursued vertical integration from raw materials to finished products, while Pakistan has established extensive export-oriented production networks. Textiles account for a substantial share of Pakistan's exports, making the sector particularly sensitive to external market conditions. [11]

Overall, the comparison indicates that the textile industry is economically significant in both countries. In Uzbekistan, the development of clusters, the adoption of energy-saving technologies, and export diversification are among the priorities for further sectoral development. Pakistan's experience may therefore provide useful insights into improving ongoing reforms. [12]

Available estimates cited in the study place Pakistan's cotton production in 2025 at approximately 5–6 million bales, equivalent to around 1.2–1.4 million tonnes of cotton fiber. Uzbekistan's cotton output is described as approximately 0.9–1.0 million tonnes. These figures reflect the countries' differing approaches to raw-material production, processing, and the development of value-added textile products. [13]

Cotton-growing areas also differ. In Pakistan, cultivation is concentrated mainly in Punjab and Sindh, which account for an estimated 85–90% of the national harvest. In Uzbekistan, cotton is grown in several regions, including Kashkadarya, Syrdarya, Bukhara, Jizzakh, and the Fergana Valley. Modern irrigation technologies are increasingly being introduced alongside changes in cultivated area.

The two countries also differ in their export structures. Pakistan exports some cotton and cotton-based products to international markets while processing a substantial proportion domestically. Uzbekistan has substantially reduced exports of unprocessed cotton fiber and expanded domestic processing, supporting the development of a value chain extending from fiber to finished products. [14]

Both countries face substantial water demand in cotton cultivation and have consequently emphasized improvements in irrigation efficiency. Uzbekistan has implemented water-saving measures, while Pakistan has pursued initiatives relating to cotton yields, plant breeding, and pest-resistant varieties.

In global markets, Pakistan remains an important textile producer and exporter, while Uzbekistan is seeking to expand higher-value exports, including knitwear, ready-made garments, and home textiles. Pakistan's experience in cotton processing and export development may inform efforts to refine Uzbekistan's industrial strategy.

Table 2. Production Organization in Pakistan's Textile and Knitwear Industry (2024)

№	Area	Indicator / Details	Source
1	**Production capacity**	More than 4,230 textile and knitwear enterprises, of which 60% are export-oriented	Pakistan Bureau of Statistics (PBS, 2024)
2	**Industry structure**	70% yarn and knitwear; 20% ready-made garments; 10% home textiles and other products	Ministry of Textile Industry of Pakistan

№	Area	Indicator / Details	Source
3	**Workforce**	10–15 million workers, including 40% women; enterprises are concentrated mainly in Punjab and Sindh	World Bank, 2024
4	**Export volume**	In 2023/2024, $16.65 billion, which accounts for 60% of the country's total exports	Dawn Business, 2024
5	**Main export markets**	USA (25%), European Union (18%), Bangladesh, China, and Turkey	UN Comtrade, 2024
6	**Main product types**	Silk, knitwear, denim fabric, large volumes of home textiles (bed linen, towels)	Pakistan Textile Exporters Association (PTEA)
7	**Raw material sources**	Cotton production: 5.2 million bales (2023/24), mainly in the Punjab and Sindh provinces; imports in small amounts	USDA/FAS, 2024
8	**Production management systems**	Use of lean manufacturing, Kaizen, 5S, and energy-saving technologies	UNIDO Textile Report, 2023
9	**State policy and reforms**	"Textile and Apparel Policy 2020–2025" – tax incentives and energy subsidies aimed at raising exports to 25 billion dollars	Ministry of Commerce of Pakistan
10	**Main problems**	Energy shortages, rising raw material prices, financial uncertainty, and infrastructure deficiencies	IMF Country Report, 2024
11	**Future prospects**	Introduction of improved cotton varieties, increased processing volumes, and promotion of the "Made in Pakistan" brand in European markets	Pakistan Textile Council, 2024

The information summarized in Table 2 highlights the importance of downstream processing in Pakistan's textile and knitwear industry. The study reports that a substantial share of textile output is exported as higher-value finished goods. Private-sector participation, export-oriented policies, and labor availability are among the factors associated with the sector's competitiveness. [15]

Pakistan's experience in technological upgrading and product diversification offers examples of approaches that could help enterprises respond to changing international market requirements. Studying these practices may therefore support efforts to modernize Uzbekistan's textile sector and increase its export potential.

4. Conclusion

The study suggests that Pakistan has adopted a multifaceted approach to improving production efficiency in the garment and knitwear industry. Policy support, export promotion, diversification of raw-material supply, and the digitalization of production processes are prominent elements of this approach. Measures under Textile Policy 2020–2025 were intended to strengthen production networks, improve labor productivity, encourage energy-efficient technologies, and support exports.

Uzbekistan's textile and knitwear sectors are important components of the national economy and have undergone substantial reforms in recent years. Nevertheless, opportunities remain to modernize production technologies, improve the reliability of

raw-material supply chains, and expand the adoption of innovative management methods.

On the basis of the experience examined, the following recommendations are proposed for Uzbekistan:

Develop a sector-specific policy framework: A national strategy informed by relevant elements of Pakistan's Textile Policy 2020–2025 could establish measures to encourage export-oriented production and support firms through financing and tax incentives.

Improve energy efficiency: Expanding renewable energy solutions, including solar power and biomass where feasible, could reduce operating costs and improve production resilience.

Adopt innovative technologies: ERP, IoT, and computer-aided design and manufacturing (CAD/CAM) systems can support production automation, reduce errors, and improve product quality.

Strengthen industrial clusters: Bringing textile enterprises together within territorial clusters could improve logistics coordination and supply-chain management.

Improve workforce skills and training: Specialized textile training centers could provide vocational education aligned with employers' needs and the requirements of modern production.

Diversify export markets: Uzbekistan could seek to expand its presence in major importing markets, including Europe, South Korea, and Türkiye, while maintaining established trading relationships.

Implement environmental and product standards: Adopting relevant frameworks and certifications, such as ISO 14001 and OEKO-TEX, could help enterprises meet international buyer requirements and strengthen competitiveness.

In conclusion, selected aspects of Pakistan's experience may offer a practical basis for improving production organization in Uzbekistan's garment and knitwear industry, accelerating technological modernization, strengthening export potential, and supporting sustainable industrial development.

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