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STRATEGIES FOR BUSINESS DEVELOPMENT IN THE GARMENT INDUSTRY UNDER HIGH COMPETITION

Summary. This article explores key factors for enhancing the competitiveness of Kazakhstan's garment industry in the context of Industry 4.0 and intensifying global competition. Against the backdrop of digital transformation and emerging economic trends – such as offshoring, reshoring, *flexible employment models, and the rise of e-commerce – the author analyzes* the current state of the garment sector and outlines future development prospects. Special attention is given to the need for production modernization through automation, robotics, and the implementation of smart factory concepts. The study also emphasizes the importance of strengthening cooperative ties within the Eurasian Economic Union (EAEU) and fostering a technology-driven environment that supports digital nomads and freelance platforms. The objective of the article is to identify strategies for advancing the garment business in Kazakhstan under the pressures of Industry 4.0 and growing competition in both regional and global markets. The scientific novelty lies in proposing a new approach to business development in Kazakhstan's garment sector, grounded in an extensive review of existing literature. This work will be of interest to researchers in strategic management and industrial development, as well as to practitioners focused on optimizing business processes in a highly competitive garment industry. The insights presented may serve as a valuable resource for

investors, government agencies, and entrepreneurs seeking to adapt innovative management models to the specific conditions of Kazakhstan's market.

Key words: garment industry, Republic of Kazakhstan, Industry 4.0, digital employment, e-commerce, competitiveness.

Introduction. The modern global economy is undergoing profound transformations driven by digital technologies, automation, and the emergence of what is now referred to as Industry 4.0. These shifts are reshaping nearly all sectors, including light industry – of which the garment industry is a core component. In the Republic of Kazakhstan, the garment sector plays a meaningful role in employment generation and the growth of non-resource-based exports. However, it faces intense competition both domestically and globally. This landscape introduces new challenges, including a widening technological gap, shifts in global supply and distribution chains, and heightened demands for sustainability and environmental compliance [2].

A review of the literature on business development in the garment industry under high competition reveals two main strands of research. The first focuses on macroeconomic and technological factors influencing business evolution. For instance, Davydova M.S. [1] examines reinsurance strategy as a tool for supporting export activities and investment cooperation within the framework of EAEU integration, highlighting the need to enhance financial stability in an era of global uncertainty. Mahmudov R. [2] analyzes the transformative impact of innovative technologies on international relations, the economy, and society, underscoring technological innovation as a critical driver of global competitiveness. Rakhmatullaeva D.Zh. and co-authors [3] assess the accessibility of infrastructure in Kazakhstan, identifying key enablers and barriers for entrepreneurial development – an essential factor in shaping a favorable investment climate.

The second group of studies centers on the specifics of garment production and the fashion industry within Kazakhstan. Zhigalova V.N. and Temurova M.M. [4] emphasize the localization of garment manufacturing within regional economic spaces as a way to reduce production costs and strengthen competitive advantages by optimizing logistics and production processes. Yepanchintseva S.E., Ashimova Zh.R., and Sakhanova G.B. [5] explore current trends in the fashion industry, highlighting evolving consumer preferences and the need for business models to adapt to a rapidly changing market – opening new opportunities for apparel-related entrepreneurship. In a related vein, Yepanchintseva S.E., Ashimova Zh.R., and Momynkulova S.M. [6] focus on risk assessment for garment manufacturers, proposing an integrated approach to risk mitigation – essential for business sustainability in a highly competitive environment.

Contradictions in the literature emerge around the degree of emphasis placed on integrating innovative technologies directly into garment production modernization, and the absence of unified standards for assessing infrastructure capabilities necessary to support industry development.

The aim of this article is to explore strategies for developing Kazakhstan's garment industry in the context of Industry 4.0 and intensifying regional and global competition.

The scientific contribution of the study lies in proposing a novel approach to garment sector development in Kazakhstan, informed by an in-depth literature review.

The author's hypothesis is that successful digital transformation and a partial shift toward smart manufacturing in Kazakhstan's garment sector – combined with a strategic reorientation toward nearshore markets and deeper cooperative ties within the Eurasian Economic Union (EAEU) – will enhance the competitiveness of domestic firms by lowering logistics costs and improving delivery speed and quality.

The methodology is based on a literature review and analysis of relevant research.

1. The Impact of Industry 4.0 Technological Shifts on the Competitiveness of the Garment Sector

The emergence of advanced technologies associated with Industry 4.0 is transforming virtually all economic sectors, including the garment industry. The Fourth Industrial Revolution is defined by accelerated digitalization, automation, the Internet of Things, and artificial intelligence. In the garment sector, these developments offer both opportunities for competitive advantage and a host of new challenges – particularly in transitional economies such as the Republic of Kazakhstan [2].

A defining feature of Industry 4.0 is the concept of smart factories, where all production and logistics processes are digitally connected. In the garment business, this translates into automated pattern design, 3D apparel prototyping, RFID-tag tracking across all stages (warehouse, cutting, sewing), and the use of big data analytics for inventory management and demand forecasting [1].

Traditionally, cutting and sewing were labor-intensive processes not easily automated due to the delicate nature of tasks and the variety of fabrics used. However, recent advancements by industrial equipment manufacturers (e.g., SoftWear Automation) in developing fine-stitch robots have reduced manual labor requirements by 40–60% at certain stages. For manufacturers in Kazakhstan, this offers potential gains in both speed and quality – but requires investment in equipment upgrades and workforce training [1; 3].

In an increasingly competitive global environment – where, as Mahmudov R. [2] notes, technological hubs are expanding rapidly – companies must integrate into smart logistics chains that allow flexible supplier switching and reduced time-to-market. For Kazakhstan's garment industry, this means digitizing not only sewing workshops but also associated services such as warehousing, transportation, and marketing. High supply chain transparency – from fabric

procurement to final delivery – has become a competitive advantage and aligns with rising ESG and sustainable fashion standards [4].

Two technological trajectories can be identified in industrial revolutions: replacement technologies and reinforcement technologies. Replacement technologies displace traditional jobs, while reinforcement technologies enhance existing skills and productivity.

In the garment industry, replacement technologies include:

• Fine-stitch sewing robots and automated cutting systems that reduce reliance on manual labor;

• Automated packaging and labeling lines that may eliminate the need for operators altogether.

Reinforcement technologies include:

• CAD/CAM software that enables designers to develop and adjust patterns more quickly and accurately, preserving the creative aspect of the process;

• Digital collaboration platforms where sewers, technologists, and designers can work together remotely [2].

Table 1

Comparative Analysis of Replacement and Reinforcement Technologies in the Garment Industry [2; 3; 6]

Criterion	Primary Role	Application Examples	Workforce Effect	Risks	Opportunities
Replacement Technologies	Full or partial automation aimed at replacing manual labor	•Robotic sewing lines for mass production •Automated cutting, stitching, and	•Decreased need for highly skilled manual labor •Shift toward machine maintenance roles	•High capital investment• Dependence on technological infrastructure •Potential job losses	 Significant productivity gains Lower production costs Product standardization

Criterion	Primary Role	Application Examples	Workforce Effect	Risks	Opportunities
		quality control systems			and quality enhancement
Reinforcemen t Technologies	Enhancing human capabilitie s through digital tools	•CAD/CAM systems for digital pattern making •AR solutions for quality control and staff training	 Professional skill development Boosted creativity and responsibility 	•Continuous need for skill upgrades• Integration challenges with legacy processes •Resistance to change	 Increased production flexibility Customized orders Quality improvement through optimized workflows

As shown in Table 1, replacement technologies may lower operational costs in the short term, while reinforcement solutions yield longer-term productivity improvements. For Kazakhstan, it is essential to adopt a hybrid approach, integrating both types of technologies while tailoring them to local conditions.

Strengthening regional industrial cooperation within the Eurasian Economic Union (EAEU) could support technology and knowledge transfer – particularly from Russia and Belarus – and stimulate joint development programs for light industry, including funding mechanisms via the Eurasian Development Bank. There is also growing interest in developing new formats of educational collaboration (e.g., internships, joint university programs) aimed at training a workforce equipped with digital competencies specific to garment manufacturing.

2. Offshoring and Reshoring in the Garment Sector: Opportunities and Constraints

For decades, relocating production to countries with lower labor costs – offshoring – was considered a key strategy for enhancing competitiveness. However, in the context of Industry 4.0 and the growing need for rapid product

turnover in the garment sector, reshoring (bringing manufacturing back to the country of origin) and nearshoring (moving production closer to target markets) are becoming increasingly relevant [2]. For Kazakhstan, which is aiming to diversify its economy and strengthen its light industry, understanding the potential and limitations of these strategies is vital.

Offshoring expanded significantly in the 1980s and 1990s, when major Western brands – especially from the U.S. and EU – moved production en masse to countries in Asia and Latin America [1]. The main incentive was to reduce labor costs and gain access to inexpensive resources, enabling producers to:

- Lower the cost of final goods,
- Rapidly scale up output,
- Use flexible supply chains involving subcontractors.

However, in the age of the Fourth Industrial Revolution, offshoring is no longer a universal solution:

- Rising wages in countries like China have eroded cost advantages,
- Growing automation is reducing the need for low-skilled manual labor,

• Increasing pressure for environmental compliance and supply chain transparency is pushing global brands to reconsider where and how they manufacture [4; 6].

For Kazakhstan, this shift signals a departure from the race to the bottom for cheap labor. Local companies now have an opportunity to compete not just on cost, but on delivery speed, quality, and customer service.

Reshoring refers to relocating production back to the home country, while nearshoring involves moving factories to neighboring countries closer to target markets.

As Mahmudov R. [2] notes, major sportswear brands like Adidas and Nike are launching robotic production lines in Europe and the U.S. to enable "ondemand" manufacturing and shorten time-to-market. For instance, Adidas' Speedfactories in Germany have been designed to quickly produce capsule collections tailored to European consumers. However, such initiatives demand substantial investments in robotics, CAD/CAM systems, data analytics, and skilled personnel.

Table 2

Comparative Advantages and Limitations of Reshoring and Nearshoring in the Garment Industry [2]

Criterion	Distance to Target Market	Quality and Standards Control	Investment in Equipment	Labor Costs and Workforc e	Time to Market	Example Use Case
Reshoring	Close to the consume r base → reduced logistics costs and delivery time	Direct process control and compliance with national standards	High-tech equipment investments tailored to local conditions	Skilled workforce, easier to train and retain	Streamlined logistics and faster market response	U.S. brands bringing productio n back for faster delivery and quality control
	May face export- related logistics and customs burdens	Regulatory adaptation may be required	High capital expenditures, risk of underutilizatio n	Higher wage levels compared to offshore hubs	Limited scalability due to domestic capacity	
Nearshorin g	Proximity (e.g., between Western and Eastern Europe) → moderat e	Cultural and regulatory alignment simplifies coordinatio n	Lower capital needs by leveraging existing capacity	Balanced labor cost and skills → efficiency	Regional logistics enable fast delivery	European brands shifting productio n to Eastern Europe

tr co	ransport osts					
L di th re in ca	Longer listance han eshoring n some ases	Inter- country regulation differences may complicate processes	Limited access to cutting-edge technology	Savings may be smaller than traditional offshoring	Possible border/custo m delays and regional risks	

Reshoring and nearshoring improve responsiveness to demand and enhance quality control but require investments in automation and modernization.

Kazakhstan offers a number of strategic advantages for developing its garment sector, including:

• Favorable geographic positioning – as a natural bridge between Europe, Russia, and China.

• Government support programs – including subsidized interest rates and tax incentives in special economic zones.

• Regulatory harmonization under the EAEU – which provides unified customs and technical standards, making Kazakhstan increasingly attractive to manufacturers targeting regional markets.

In conclusion, while reshoring and nearshoring demand a higher degree of operational and technological sophistication, they also open new opportunities for countries like Kazakhstan to integrate into regional supply chains – not only as low-cost producers but as value-driven players in a rebalanced global garment industry.

3. The Digital Economy and Emerging Employment Models in the Garment Sector

The rapid development of digital technologies in recent years has not only transformed production methods but also redefined how labor is organized – especially in the garment industry. Within the framework of Industry 4.0, a

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growing number of companies are embracing flexible employment models, expanding into e-commerce, and adapting to the dynamics of the gig economy. Trends such as the rise of digital nomads and freelance platforms are becoming increasingly relevant, broadening the talent pool and unlocking creative potential [5; 6].

The gig economy involves workers completing short-term contracts or project-based tasks through digital platforms. In the context of the garment sector, this model may manifest as:

• Remote tailoring: Independent seamstresses or micro-studios receive orders via crowdsourcing platforms or specialized marketplaces.

• Design and styling services: Freelance designers develop collections for various brands or offer consultations on visual aesthetics.

• Creative and marketing support: Content production, digital promotion, and e-commerce management for online clothing shops [2].

Digital nomads are professionals who, enabled by cloud and online technologies, can live and work from anywhere. In the garment industry, this model applies to:

• Remote designers creating digital patterns and 3D garment models for global clients,

• Technical consultants advising factories online on materials, workflow, or machinery,

• Marketers and brand managers executing international campaigns and scaling brands on global marketplaces [4].

The sector is moving rapidly into digital commerce, with virtual storefronts and presence on platforms like Wildberries, AliExpress, Ozon, and Amazon [2]. The key drivers behind e-commerce growth in fashion include:

• Geographic independence: Online stores reach buyers across regions and countries without the need for physical retail space.

• Scalability: As demand rises, businesses can quickly onboard freelancers and contractors.

• Consumer demand for convenience: Many customers now favor integrated digital shopping experiences with fast delivery options [2].

Alongside traditional e-commerce, direct-to-consumer sales via social media and crowdfunding platforms (e.g., Kickstarter, Indiegogo) are gaining momentum. This allows emerging designers and small ateliers to connect directly with their audience and secure pre-launch funding for specific collections [2]. While these formats lower market entry barriers and encourage creativity, they also require strong marketing and transparency.

Modern 3D modeling software such as CLO 3D and Browzwear enables designers to produce digital clothing prototypes, reducing the need for physical samples and saving both time and materials. Online services are also introducing virtual fitting rooms, where customers can try garments using avatars – an increasingly relevant tool in the booming world of e-commerce [4,5].

The role of the digital economy and flexible employment in the garment sector can be assessed through a comparison of traditional and digital business models, as presented in Table 3.

Table 3

Criterion	Traditional Model	Digital Model		
Production Setup	 Centralized production in fixed locations Established, standardized processes Manual labor and limited automation 	Decentralized and flexible systemsIntegration of IT and smart factoriesHigh digital automation		
Labor Structure	 Long-term formal contracts Fixed schedules, hierarchical structures Stability with low flexibility 	 Freelance and remote project work Digital coordination platforms Agile workforce and rapid reallocation 		

Comparison of Traditional and Digital Employment Models in the Garment Industry [2]

Criterion	Traditional Model	Digital Model	
Technology Use	 Basic sewing machines and manual tools Minimal digital systems Low innovation uptake 	 Automated equipment, CAD/CAM systems IoT, robotics, digital QA tools Continuous tech upgrades 	
Markets & Channels	 Local or regional focus Retail/wholesale distribution, trade shows Limited online presence 	 Global reach Multi-tiered online channels: stores, marketplaces, social media Direct-to-consumer sales 	
Strengths	Time-tested processesStrong quality controlLocal relationships	Speed and scalabilityAdvanced analyticsCost reduction, broader market access	
Weaknesses	 Rigid and slow to adapt Reliance on outdated technology High change costs 	 Requires major IT investment Cybersecurity risks Constant staff upskilling and cultural shifts 	

The digital model offers companies greater integration with the global economy and access to geographically diverse talent. However, it also demands a fundamental transformation in management, a shift in corporate culture, and updates to legal frameworks that account for the unique characteristics of gigbased employment.

Conclusion. The analysis confirms that Kazakhstan's garment industry stands at the threshold of structural transformation, driven by the forces of Industry 4.0. Global technological shifts – including robotics, automation, and the Internet of Things – along with growing demands for sustainability and transparency in supply chains, are reshaping the competitive landscape and offering both challenges and opportunities.

Offshoring, once a cost-cutting strategy based on access to cheap labor, is becoming less viable due to rising wages in Asia and accelerating digitalization. In contrast, reshoring and nearshoring are gaining traction, encouraging the relocation of production closer to end markets. For garment manufacturers in Kazakhstan, this creates a window of opportunity to attract international companies interested in regional production, provided that infrastructure is improved, skilled labor is developed, and state support is strengthened.

The rise of the digital economy and flexible employment models – such as remote work, digital nomadism, and gig-based contracting – offers businesses new ways to boost efficiency and expand their distribution channels. At the same time, these trends require the adoption of modern IT systems and the training of specialists in digital fashion design, online marketing, and supply chain management.

However, gaps remain. There is limited statistical data on SMEs within the garment sector, as well as difficulties in tracking informal employment and the lack of comprehensive metrics for flexible forms of work.

Future research should focus on the development and pilot implementation of digitalization models tailored to Kazakhstani enterprises – including 3D design tools and cloud-based production platforms – as well as the analysis of local industrial clusters to identify and scale successful reshoring cases within Kazakhstan.

In sum, a shift toward high-tech, digital garment production – supported by government policy and integration within the Eurasian Economic Union – will enable Kazakhstan to strengthen its position in global value chains and build a competitive, sustainably developing light industry sector.

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