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Article

Development and Modernization of Marketplace Logistics Infrastructure in Central Asian Countries, Azerbaijan and Russia

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Abstract: Purpose. To conduct a comparative analysis of the transformation of marketplace logistics infrastructure in Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan, Azerbaijan, and Russia, and to identify the main directions of the transition from a centralized warehousing model to a distributed network architecture.

Methods. A comparative descriptive-analytical study was conducted based on secondary data. Official statistical materials, government agency reports, publicly available marketplace and company data, and recent academic publications on e-commerce, cross-border logistics, and last-mile delivery were analyzed. The comparison was based on the level of e-commerce development, the characteristics of warehousing infrastructure, the prevalence of partner-based fulfillment, the Fulfillment by Seller (FBS) and Delivery by Seller (DBS) models, pickup points, and cross-border potential.

Results. Russia is accelerating logistics decentralization after the risks of concentrated warehouse capacity materialized in 2026, when the share of sellers storing goods in their own warehouses rose sharply on the largest platforms. Uzbekistan combines large centralized facilities with regional cross-docking centers and a broad network of pickup points. Kazakhstan, where e-commerce reached 14.3% of retail trade in 2025, is developing a mature distributed infrastructure. In Kyrgyzstan and Tajikistan, partner-based and cross-border models play a more prominent role, while Azerbaijan possesses significant transit potential.

Conclusion. A multi-level logistics system is emerging across the studied countries, and its resilience is determined not by the size of an individual logistics hub but by the ability to redistribute product flows among warehouses, sellers, cities, and countries.

Keywords: e-commerce, marketplaces, distributed logistics, fulfillment, last-mile delivery, cross-border trade, Central Asia, digital economy

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Introduction

The rapid growth of e-commerce has changed the requirements for warehousing and transportation infrastructure. For marketplaces, order processing speed, last-mile reliability, and the ability to rapidly redistribute inventory have become competitive parameters as important as price and product assortment. Recent literature shows that the choice of a logistics mode in cross-border e-commerce is shaped by a combination of cost, service, policy, and market factors [1], and that omnichannel retailers must redesign their distribution systems to serve both stores and online customers from an integrated network [2]. Warehouse operations and design must also be adapted to the specific requirements of omnichannel logistics, such as smaller order sizes, wider assortments, and shorter delivery times [3].

During the early stages of scaling large platforms, the logic of concentration dominated: a large fulfillment center provided economies of scale, a high degree of automation, and centralized inventory control. However, concentration also creates critical points of failure. Supply chain resilience research emphasizes that the ability to recover from disruptions depends on redundancy, flexibility, and visibility across the network [4], and that flexibility built into the network is often more valuable than simple redundancy [5]. Disruptions at a major facility can result in cascading delays, capacity shortages, and the need for emergency route adjustments. Research on last-mile logistics increasingly focuses on pickup points, parcel lockers, micro-depots, and other delivery concepts [6], as well as on the design of last-mile models driven by consumer requirements [7].

In Russia, the resilience of centralized warehouse architecture gained particular relevance in 2026. Since July 2026, drone strikes have damaged or destroyed more than 20 warehouses of Wildberries, the country's largest marketplace, which lost up to 40% of its warehouse space, and in August 2026 the strikes were extended to the logistics facilities of Ozon [8]. Against this background, interest in regional warehouses, partner-based fulfillment, seller-managed storage, and alternative delivery routes has increased. At the same time, the development of logistics infrastructure for Russian and regional platforms abroad cannot be interpreted simply as a transfer of capacity: the markets of Central Asia and Azerbaijan are themselves experiencing e-commerce growth and developing their own logistics infrastructure.

Academic studies on e-commerce extensively examine logistics mode selection, outsourcing, information exchange, and last-mile delivery. However, comparative analysis of how the broader trend toward decentralization is simultaneously manifested in Russia, Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan, and Azerbaijan remains limited. This research gap is particularly evident in relation to differences between mature and emerging markets, as well as the interaction between national and cross-border logistics infrastructure.

The aim of this study is to conduct a comparative analysis of the transformation of marketplace logistics infrastructure across six countries and to identify both common and country-specific directions in the transition from a centralized warehousing model toward a distributed network architecture. The research questions are as follows: (1) which elements of decentralization prevail in each country; (2) how the role of sellers and partner infrastructure is changing; (3) which factors determine cross-border

logistics potential; and (4) what economic consequences accompany improvements in logistics network resilience.

2. Materials and Methods

Research design. This study was conducted as a comparative descriptive and analytical study based on secondary data. The unit of analysis was the national e-commerce and marketplace logistics infrastructure in Russia, Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan, and Azerbaijan.

Data sources. The study used publicly available materials from government authorities and national statistical agencies, official reports and data provided by market participants, and peer-reviewed publications addressing e-commerce, cross-border supply chains, logistics model selection, outsourcing, supply chain resilience, and last-mile delivery. Priority was given to primary official data for national-level indicators and to peer-reviewed academic articles for theoretical interpretation.

Analysis criteria. The following dimensions were compared across the six countries: the scale and dynamics of e-commerce; the degree of warehouse capacity centralization; the development of regional warehouses, cross-docking facilities, dark stores, parcel lockers, and pickup points; the use of Fulfillment by Seller (FBS), in which the seller stores and prepares the order before transferring it to the platform, and Delivery by Seller (DBS), in which storage, order preparation, and delivery are handled by the seller; the role of partner-based fulfillment; the characteristics of last-mile delivery; and the potential for cross-border flows.

Method of analysis. Qualitative content analysis, structured cross-country comparison, and descriptive comparative assessment were applied. Quantitative indicators were reported in the original units used by the sources without currency conversion, as the purpose of the study was to identify differences in logistics architecture rather than to construct a cross-country ranking based on monetary values. Due to the heterogeneity of national statistical data, no meta-analysis or calculation of pooled effects was performed.

3. Results and Discussion

3.1. Russia: accelerating the transition from mega-hubs to a distributed network

The traditional logistics model of major Russian marketplaces relied on the concentration of inventory in interregional hubs ranging from approximately 100,000 to 250,000 square meters. This configuration provided economies of scale but concentrated a significant share of logistics capacity in individual nodes, and the physical damage to warehouse facilities in 2026 made the risks of such concentration particularly evident.

The response of sellers was rapid and measurable. According to bank data cited by the Russian business press, by the end of August 2026 the share of Wildberries sellers using the FBS model, in which goods are stored and shipped from the seller's own warehouse, had nearly doubled to 97.4%, while at Ozon it rose by 7.8 percentage points to 73.1%; the share of sellers relying on the marketplaces' own warehouses declined correspondingly [9]. Under this distributed model, part of the inventory remains at the seller's warehouse until an order is placed, while independent drop-off points and fulfillment centers complement the platforms' own infrastructure. At the same time, sellers using their own warehouses pay higher commissions and may lose part of the delivery-speed advantage of centralized storage for goods with steady demand.

The function of pickup points is also changing. In addition to supporting last-mile delivery, they may serve as temporary storage, return-processing, and local redistribution points for certain categories of goods. Parcel lockers, courier networks, and traditional retail stores are increasingly being used as well, expanding the number of interchangeable physical logistics points within the network.

3.2. Uzbekistan: combining large-scale capacity with regional infrastructure

Uzbekistan is one of the fastest-growing e-commerce markets in Central Asia. According to government data, the volume of e-commerce was estimated at approximately USD 1.2 billion in 2024 [10]. Market growth is supported by the expansion of digital payments, a growing internet user base, the development of national marketplaces, and the gradual formation of modern warehousing and transport-logistics infrastructure.

The e-commerce logistics model in Uzbekistan combines large centralized facilities with regional distribution. The Uzum ecosystem operates a central logistics hub in Tashkent and cross-docking facilities in regional centers, including Samarkand, Fergana, Bukhara, Karshi, and Navoi. As of early 2026, Uzum operated about 1,500 pickup points and approximately 125,000 square meters of warehouse capacity, and it planned to expand its pickup network to around 3,000 locations and its warehouse capacity to about 500,000 square meters through four new logistics centers; the company noted that building its own infrastructure was essential because third-party fulfillment providers in Uzbekistan remain limited [11]. In 2024, Uzum also launched a model that allows entrepreneurs to sell from their own warehouses, which corresponds to the FBS logic described above [12].

Korzinka is another important element in the development of omnichannel retail. The company combines its traditional store network with the Korzinka Go online supermarket and dedicated infrastructure for online orders. In 2024, Korzinka Go grew by 188%, and after the overhaul of its operations it accounted for more than 4% of sales in the Tashkent region, while the company added dark stores for online orders [13]. In 2025, Korzinka opened a new Class A distribution center with a total area of 49,000 square meters, implemented with long-term financing of USD 50 million from DEG and IFC to optimize logistics and ensure stable supply across the country [14]. This project illustrates the role of foreign direct and development-finance investment in building the physical infrastructure of the national economy [15], and it confirms that improving the mechanisms for attracting foreign investment is directly relevant to logistics modernization [16]. As a result, the Korzinka model represents a transition from predominantly store-based logistics toward an integrated omnichannel system comprising a distribution center, stores and dark stores, online orders, and the final consumer.

Major industrial companies represent a separate direction. Artel Electronics integrates manufacturing facilities, a central logistics hub, regional cross-docking facilities in Uzbekistan, its own freight fleet, service infrastructure, and export channels. This model is particularly important for large household appliances, where online sales must be integrated not only with warehousing but also with transportation, final delivery, and after-sales service. A similar, predominantly industrial and construction-oriented approach is used by AKFA, whose logistics network includes regional distribution centers and dealer warehouses. The implementation of a warehouse

management system at AKFA's warehouse complex replaced paper-based and largely manual operations and increased the accuracy and transparency of storage, accounting, and shipment [17]. According to company data, the distribution center at the Tashkent manufacturing site has an area of approximately 14,000 square meters, handles more than 8,000 stock-keeping units, and can dispatch more than 80 tons of products per day. Such digital planning systems increasingly rely on elements of artificial intelligence, which is becoming an important factor of efficiency in the national economy [18].

Marketplaces in Uzbekistan also use the FBS and DBS models. Under DBS, the seller independently manages the entire physical order-fulfillment cycle and uses the marketplace primarily as a digital sales channel. Overall, Uzbekistan's logistics infrastructure is developing along several interconnected directions: Uzum represents a large-scale national marketplace model with central and regional facilities; Korzinka is developing an omnichannel e-grocery model; Artel integrates manufacturing, warehousing, transportation, and service logistics; and AKFA demonstrates the digitalization of an industrial distribution network. Taken together, these models show a transition from individual warehouses and retail outlets toward multi-level logistics ecosystems.

3.3. Kazakhstan: a mature market and the scaling of distributed infrastructure

Kazakhstan has the most developed e-commerce market in the region. According to the national statistical service, retail e-commerce, including marketplaces, amounted to KZT 3,768.8 billion in 2025, and its share in total retail trade reached 14.3%; marketplaces accounted for 86% of online retail turnover [19]. In 2025, five dark-store projects were built in Almaty, Astana, Karaganda, and Aktobe, and marketplaces installed 2,300 new parcel lockers [20]. These facilities complement regional warehouses and pickup points and contribute to a more geographically distributed network. The country's vast territory increases the importance of distributed inventory, and Kazakhstan simultaneously serves as a large domestic market and a logistics hub connecting Russia, China, and other Central Asian countries.

3.4. Kyrgyzstan: partner-based and cross-border models

Kyrgyzstan is at an earlier stage of e-commerce development, but the market is expanding rapidly. The domestic e-commerce market was estimated at USD 525 million in 2025, 15% more than in the previous year, and about 1 million online transactions were completed in the first half of 2025, a 56% increase in value compared with the same period of 2024 [21]. At the beginning of 2025, the total area of modern Class A and B warehouse facilities was about 108,000 square meters, approximately 90% of which was located in the Chui region [22]. This strong territorial concentration of modern warehouses explains the importance of partner-based and cross-border models.

International marketplaces play an important role in the national market, enabling local entrepreneurs to reach customers in neighboring countries without establishing their own overseas retail infrastructure. The FBS model reduces the need to build a large centralized warehouse immediately, since inventory remains with the seller until an order is placed. At the same time, the seller assumes responsibility for inventory control, packaging, timely handover of the order, and part of the logistics costs.

3.5. Tajikistan: development of partner-based infrastructure

Tajikistan lags behind Kazakhstan and Uzbekistan in the scale of e-commerce, but it is gradually becoming integrated into regional and cross-border supply chains, in

which orders from foreign platforms and imports from China play a significant role. The entry model of international marketplaces is illustrative: in April 2025, Wildberries launched sales in Tajikistan together with a local partner, starting with two partner-operated pickup points in Dushanbe and one in Khujand and an average delivery time of 10–14 days [23]. In October 2025, a partner pickup point was opened in Khorog, the first in the Pamir region, serving the city's districts, four urban-type settlements, and more than 40 rural communities [24]. This approach makes it possible to begin serving the market without investing immediately in a large centralized hub.

Last-mile delivery outside the largest cities remains a major limiting factor. Under the current market structure, a network of small consolidation, drop-off, and pickup points connected to existing cross-border transport routes appears to be the most realistic and economically viable model [25].

3.6. Azerbaijan: domestic market and transit potential

Azerbaijan has a growing consumer market and a strategically advantageous location on trade routes connecting Central Asia, the Caucasus, Turkey, and Europe. In January–October 2025, retail trade turnover amounted to AZN 52.6 billion and increased by 3.8% in real terms, with non-food products growing faster (6.7%) than food products (1.3%) [26]. The development of digital export infrastructure creates additional channels for national producers to access international markets, and the combination of e-commerce and major transport corridors creates favorable conditions for warehousing, sorting, and cross-docking functions. At the same time, the available data do not confirm the presence of marketplace logistics infrastructure on a scale comparable to that of Kazakhstan or Uzbekistan; therefore, for Azerbaijan it is more appropriate to emphasize the formation of the conditions for such development and the country's transit potential [27].

3.7. Comparative analysis of the markets under study

Table 1 summarizes the key quantitative indicators identified for each country, and Table 2 presents a qualitative comparison of logistics architectures.

Table 1. Key indicators of e-commerce and logistics infrastructure (original units)

Country	E-commerce / market indicator	Logistics infrastructure indicator
Russia	Wildberries lost up to 40% of warehouse space in July–August 2026	FBS share of sellers: 97.4% (Wildberries), 73.1% (Ozon), end of August 2026
Uzbekistan	E-commerce ≈ USD 1.2 billion (2024); Korzinka Go growth 188% (2024)	Uzum: ≈1,500 pickup points, ≈125,000 m² of warehouses (plan: 3,000 points, 500,000 m²); Korzinka DC 49,000 m²
Kazakhstan	KZT 3,768.8 billion; 14.3% of retail trade; 86% via marketplaces (2025)	5 dark-store projects; 2,300 new parcel lockers (2025)
Kyrgyzstan	USD 525 million (2025), +15%	≈108,000 m² of Class A/B warehouses, ≈90% in the Chui region
Tajikistan	Entry of international marketplaces (2025)	3 partner pickup points at launch; delivery 10–14 days
Azerbaijan	Retail trade AZN 52.6 billion (Jan–Oct 2025), non-food +6.7%	Transit and cross-docking potential; marketplace infrastructure at an early stage

Source: compiled by the author based on the data presented in Sections 3.1–3.6.

Table 2. Comparative characteristics of marketplace logistics architecture

#	Country	E-commerce stage	Logistics model	Regional network	Role of seller	Cross-border potential
1	Russia	Mature	Transition toward a distributed model	High	Sharply increasing	High
2	Uzbekistan	Rapidly growing	Mixed, multi-level	Actively developing	Increasing	High
3	Kazakhstan	Mature regional market	Distributed	High	Significant	Very high
4	Kyrgyzstan	Growing	Partner-based / cross-border	Emerging, concentrated	High	High
5	Tajikistan	Emerging	Partner-based	Limited	Emerging	Medium
6	Azerbaijan	Growing	Mixed / transit-oriented	Developing	Emerging	High

Source: author's assessment.

3.8. Discussion

The results demonstrate a general transition from a hierarchical logistics model built around a limited number of large facilities toward a network-based architecture, although the drivers of this transition differ across countries. In Russia, the key factor has been the need to reduce the consequences of capacity concentration; in Kazakhstan, the country's geographical scale and market maturity; and in Uzbekistan, rapid demand growth and the need to bring infrastructure closer to regional markets. Kyrgyzstan and Tajikistan rely more on partner-based and cross-border solutions, whereas Azerbaijan stands out for its transit position. The Russian case also shows how a disruption at critical nodes propagates through the network, a "ripple effect" that has been extensively modeled in supply chain research [28].

These findings are consistent with recent research on e-commerce logistics strategies. Qian et al. showed that the choice between platform logistics, seller-managed logistics, and third-party logistics is determined by the combination of selling format and service costs [29]. Zhang et al. found that in cross-border e-commerce the choice between direct delivery and warehouse-based models depends on the tax environment, market uncertainty, and information sharing [30]. Together with the cross-country evidence of this study, these results confirm that there is no universally optimal logistics configuration for all markets.

The expansion of the FBS and DBS models reflects a redistribution of functions within the platform supply chain: marketplaces reduce the need to store the entire assortment in their own facilities, while part of the operational risk shifts to sellers. The Russian data show that this redistribution can happen within weeks once the risks of centralized storage materialize. Last-mile delivery is of particular importance, since it represents a distinct set of pre-delivery, delivery, and post-delivery processes [31]. Consequently, pickup points, parcel lockers, retail stores, local return points, and micro-logistics facilities should be regarded not as secondary components but as integral elements of network resilience.

The economic consequence of decentralization is greater managerial complexity. Multiple facilities require synchronized inventories, digital planning, alternative transport routes, additional insurance, and quality control of partner infrastructure, so that reducing the risk of a single critical point is achieved at the cost of higher

coordination and operating expenses. For sellers, the effect is dual: seller-managed inventory increases operational autonomy and reduces dependence on a single fulfillment center, but small sellers face additional costs for warehouse space, personnel, packaging, insurance, and inventory management, as well as higher marketplace commissions. Therefore, decentralization at the marketplace level does not necessarily reduce risk for every participant in the supply chain.

3.9. Limitations of the study

The study is based on publicly available secondary data that differ across countries in methodology, frequency, and level of detail, so some indicators are not directly comparable. Some infrastructure data are published by companies themselves and may reflect their internal classification of logistics facilities, and the rapid development of the market requires regular updating of quantitative characteristics. The study is descriptive and analytical and does not estimate the causal effects of decentralization on delivery costs, profitability, or order fulfillment times; these relationships require further econometric and panel-data research.

4. Conclusion

In Russia, Central Asia, and Azerbaijan, a transition is taking place from a predominantly centralized warehousing model toward a multi-level distributed logistics architecture, with the most developed elements of such infrastructure identified in Russia, Kazakhstan, and Uzbekistan, while Kyrgyzstan and Tajikistan rely more heavily on partner-based and cross-border mechanisms and Azerbaijan demonstrates significant transit potential. The FBS and DBS models, together with partner-based fulfillment, pickup points, parcel lockers, cross-docking facilities, and regional warehouses, increase the substitutability of logistics nodes, as confirmed by the rapid shift of Russian sellers to their own warehouses in 2026; at the same time, these models redistribute costs and risks between marketplaces and sellers, and the higher resilience of a distributed system is accompanied by higher costs of digital coordination, insurance, security, alternative routes, and inventory management. It is therefore advisable that marketplaces, investors, and governments designing regional e-commerce infrastructure assess not only the cost per square meter of warehouse space but also the substitutability of logistics nodes, last-mile accessibility, the share of inventory held by sellers, cross-docking capabilities, digital compatibility, and the availability of alternative cross-border routes, while public policy should give priority to customs digitalization, payment infrastructure, and conditions for independent logistics operators, including support for small sellers who bear a growing share of storage and fulfillment costs; future research should quantitatively assess the impact of the degree of decentralization on delivery times, logistics costs, disruption resilience, and the position of small sellers using comparable cross-country panel data.

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