Digitalization of Logistics in the Middle Corridor: Azerbaijan-China Collaboration

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Introduction

The Middle Corridor, as a key component of the international Belt and Road Initiative, is a vital trade route connecting China and Europe. Strategically located along this corridor, Azerbaijan has become a key player and plays a significant role in integrating digital solutions into transport and trade infrastructure in close cooperation with China. This issue is of particular importance in the context that global trade is increasingly dependent on digitalization, and the role of intelligent logistics and advanced digital infrastructure in ensuring efficient cross-border trade is becoming paramount. The digitalization of logistics along the Middle Corridor has the potential to increase trade efficiency, reduce transit times, and optimize customs procedures, making it extremely important for stakeholders in this international cooperation.

This study explores the role of digitalization in logistics within the Middle Corridor, emphasizing the Azerbaijan-China partnership in the implementation of advanced technologies and digitalization in logistics. It assesses the technological innovations shaping the future of digital trade, the challenges hindering seamless digital integration, and the prospects for future cooperation between Azerbaijan and China. It also examines the regulatory framework, investment strategies, and international cooperation mechanisms that support the digital transformation of logistics. By addressing these aspects, this study provides a comprehensive analysis of how digitalization is changing the logistics landscape along the Middle Corridor and its broader implications for the efficiency of global trade and economic development.

China and Digitalization Policy

During the last decade, China has made huge progress in digital development. Under the "Grand Strategy" three major economic initiatives became the most influential: The Belt and Road Initiative (BRI) (2013), the Digital Silk Road initiative (launched as a part of BRI in 2015), reached more than US$79 billion (Council of Foreign Relations, 2022) and the "Made in China 2025" strategic plan (Scobell et al., 2020). Following the "Made in China 2025" plan launched in 2018, "China Standards 2035", the AIIB Digital Strategy (2020), and the White Paper on Global Digital Economy (2022), the main blueprint plans of cooperation of the Chinese government and leading tech companies were set for emerging technologies, such as the Internet of Things (IoT), 5G, and Artificial Intelligence (AI).

Under the influence of COVID-19 on 14 May 2020 China proposed a "new development program of mutual benefit through domestic-international dual circulation" with purpose to boost domestic production, companies to expand their services and goods outside the country, at the same time make the economy more open to foreign companies in order to make them dependent on China (Wang, 2020). In an effort to facilitate the strategy by closing technology gaps, China spent 2.5% of its GDP on research and development during the Thirteenth Five Year Plan of 2016–2020. It was also a part of China's 14th five-year (2021-2025); the digital economy target was reached two years ahead of schedule (Xinhua, 2024).

In 2021 the digital economy of China reached US$7.1 trillion (RMB 47.94 trillion), ranking second after the United States. Statistics also show that the digital economy's share in the national GDP reached 39.8 % in 2021 in comparison to 20.9 % in 2012. The rapid growth is accompanied by the development of the Belt and Road Initiative and the expansion of digital infrastructure construction. Additionally, the country has accelerated the integration of big data, cloud computing, and artificial intelligence (Doing Business in China).

In July 2022, the National Standardization Development Action Plan was launched with road maps to the National Standardization Development (NSD) Outline. It provides details about the Chinese state's strategic approach toward technical standards and visions for technical improvements of companies (Wu, 2022).

In August 2022, the Joint Committee for Digital Economy Partnership Agreement (DEPA) commenced the accession working group for China. It was created by the Ministry of Trade and Industry Singapore and includes Singapore, Chile, and New Zealand (Ministry of Trade in Industry Singapore, 2023). This agreement is still in process. It is consistent with the aims of China of further strengthening domestic reform and promoting high-level opening-up. It should increase digital trade and would help China boost its digital economy collaboration with other members.

The White Paper on the Global Digital Economy, launched in 2022 in China, emphasized the necessity to cultivate new technologies for the creation of the innovation ecosystem as a defining feature in the country (China Academy of Information and Communications Technology, 2022). According to the White paper, China should become the core of developing new technologies and applications such as AI, IoT, and next-generation communication networks. These technologies will accelerate the transformation to artificial intelligence in various economic and social sectors (China Academy of Information and Communications Technology, 2022).

In August 2022, the Ministry of Transport of China promulgated regulations for encouraging the issuing of autonomous driving licenses for testing autonomous vehicles for commercial purposes – as a pilot version – in transportation services in Beijing, Guangzhou, Shenzhen, and Chongqing.

In October 2022, the Ministry of Industry and Information Technology announced that China had developed the first international autonomous driving standard ISO34501: Road vehicles - Test scenarios for automated driving systems, which provides a set of important basic testing standards for autonomous driving systems. As for Hong Kong in 2021, with the support of the Transport Department and the Innovation and Technology Commission, one of the world's largest Cellular Vehicle to Everything (CV2X) road trials with roadside systems were launched, and it drove all the way from the Hong Kong Science Park to Sha Tin Town Centre.

China's logistics industry continues to lead globally, and digital logistics market exhibited a revenue of US$2.74 billion in 2024, with projections indicating a market value of US$7.68 billion by 2030. This represents an anticipated Compound Annual Growth Rate (CAGR) of 19.1% for the period between 2025 and 2030. Segment analysis reveals that the 'solution' component generated the largest revenue share in 2024 and is also projected to be the most lucrative segment, demonstrating the fastest growth throughout the forecast period. In terms of global context, China's digital logistics market accounted for 8.1% of the total global revenue in 2024. Within the Asia Pacific region, China is projected to maintain its leading position in the digital logistics market revenue by 2030 (Horizon Databook, 2025).

2025 marks the final year of the 14th Five-Year Plan, signaling a critical phase in the country's development. China's government is expected to leverage fiscal, monetary, and industrial policies to steer growth in strategic sectors. The Chinese government's digitalization policy in 2025 centers on developing "New Quality Productive Forces" (NQPFs), with local governments actively introducing supporting initiatives. For instance, the Lingang New Area in Shanghai has implemented policies in 2024 to foster advanced computing power, which is considered crucial for enabling these NQPFs (Huld, 2025).

In 2025, China's policies are set to significantly influence its digitalization and logistics sectors. The government plans to enhance the digital economy by improving data systems and regulating cross-border data flows, aiming to boost domestic demand and innovation. Artificial intelligence development will be accelerated, particularly integrating AI into manufacturing and expanding applications of intelligent connected new energy vehicles. Additionally, the platform economy will receive support through better merchant protections and standardized promotion rules. In logistics, technological advancements like AI, blockchain, and the IoT are transforming supply chains, enhancing efficiency, transparency, and sustainability. These initiatives underscore China's commitment to leveraging digital technologies to modernize industries and stimulate economic growth (China Briefing, 2025).

Conducting business in China in 2025 may become increasingly complex due to the USA's aggressive stance on trade with China. Under "Trump 2.0," companies could face renewed tariffs, tighter export restrictions, and heightened scrutiny of U.S.-China tech cooperation. The possibility of decoupling in strategic industries such as semiconductors, green energy, and AI may pressure multinational firms to diversify supply chains or reconsider their market strategies. Uncertainty in U.S.-China relations would likely increase regulatory risks and costs for businesses operating across both economies (Huld, 2025).

In summary it is worth mentioning that digitalization of logistic is the key question for China and Hong Kong development. The questions of cooperation and synchronization with other countries requires further deep analysis.

The Belt and Road Initiative and the Middle Corridor

As part of China's ambitious Belt and Road Initiative, the Middle Corridor serves as a strategic trade route that facilitates economic linkages between China, Central Asia, the South Caucasus, and Europe. Unlike the Northern Corridor, which passes through Russia, and the Southern Corridor, which routes through Iran, the Middle Corridor offers a geopolitically viable alternative, especially amid shifting global trade dynamics. This section explores the historical background and strategic importance of the Middle Corridor, highlighting the infrastructural investments that have transformed it into a modern trade artery. It also examines the role of Azerbaijan as a transit hub and its efforts in enhancing multimodal connectivity through initiatives such as the Baku-Tbilisi-Kars railway and the Alat Free Economic Zone.

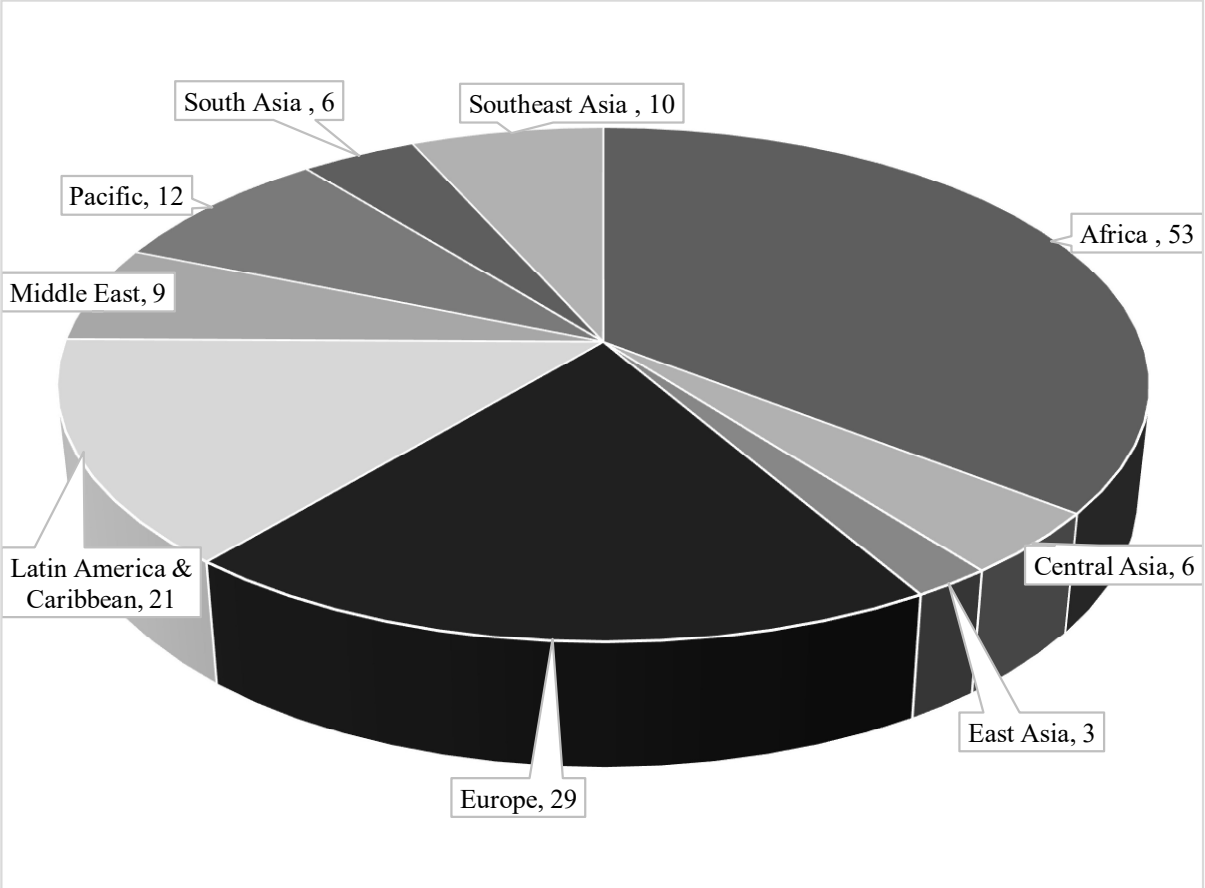
Historical Background and Strategic Importance of the Belt and Road Initiative

The Belt and Road Initiative (BRI) was launched by China in 2013 to revitalize trade across Eurasia by creating new economic corridors and infrastructure projects. It connects Asia, Europe, Latin America and Africa through a combination of railway networks, highways, and maritime routes, facilitating trade and investment flows between participating nations (Hoh, 2019). The initiative has led to significant investments in transport infrastructure, including in

Azerbaijan and Central Asia, where new corridors have been developed to ease the movement of goods and services (Egamberdiyev, 2023).

The countries of the Belt and Road Initiative (BRI) are spread across all continents (see Fig. 1). The biggest amount is in Africa – 53 countries, Europe – 29, Latin America and Caribbean region – 21 countries, etc. Two countries have exited the BRI: Italy in December 2023 and Panama in February 2025.

Fig. 1: Countries of the Belt and Road Initiative, 2024

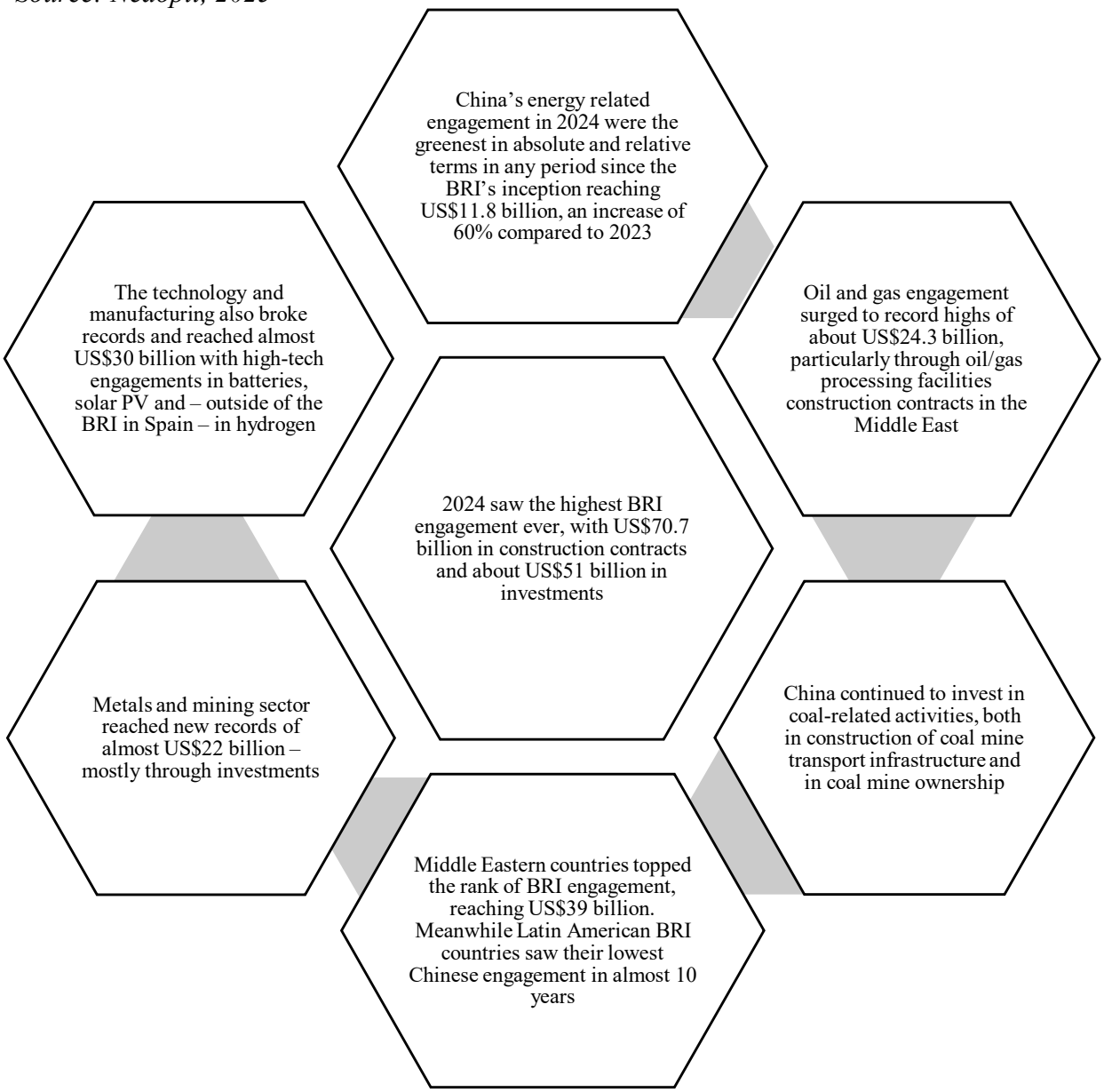


Source: Belt and Road Portal (2025)

As of 2025, the BRI encompasses over 152 countries and international organizations, collectively contributing to more than US$1 trillion in investments. These investments have significantly improved infrastructure, trade, and economic integration among participating nations. China's foreign exchange reserves have risen to $3.23 trillion, reflecting the country's robust economic performance and its role in global trade. The BRI has significantly increased foreign direct investment (FDI) in participating nations, with infrastructure development projects. 2024 saw a record year of Chinese BRI engagement with US$70.7 billion in construction contracts and about US$51 billion in investments (see Fig. 2). Cumulatively, Chinese BRI engagement has reached US$1.175 trillion since 2013 (Nedopil, 2025).

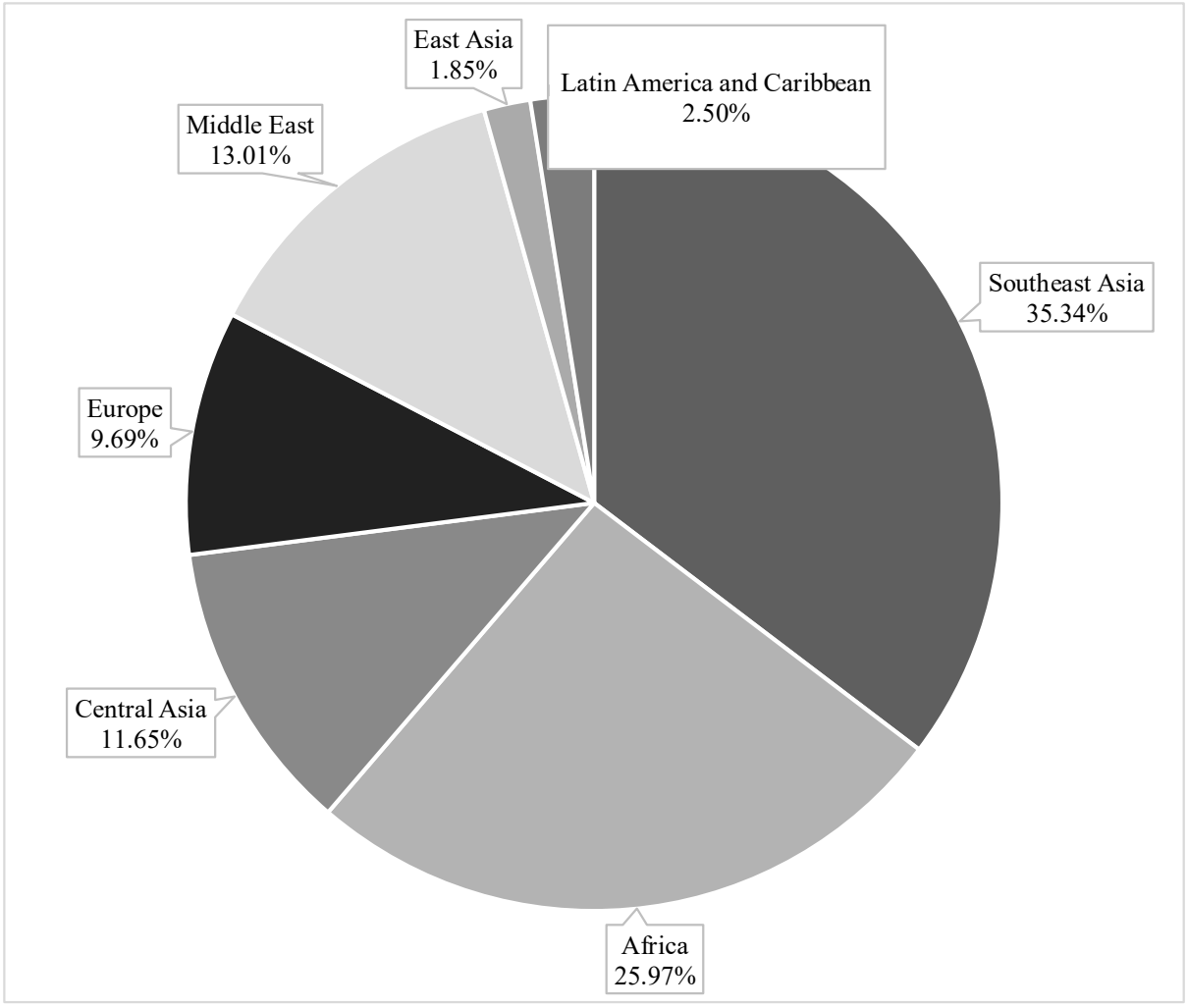
Fig. 2: China's finance and investments in the Belt and Road initiative key results in 2024

Source: Nedopil, 2025



China's financing and investment spread across 87 BRI countries in 2024 (up from 79 in 2023), with 53 countries receiving investments and 72 with construction engagement (Fig. 3). The country with the highest construction volume in 2024 was Saudi Arabia, with about US$18.9 billion (up from 5.9 billion in 2023), followed by Iraq (US$9 billion), United Arab Emirates (US$3.1 billion), and Liberia (about US$3 billion). While in 2022, Russia did not receive any Chinese engagement, China's engagement in the country remained low at about US$212 million (Nedopil, 2025).

Fig. 3: Chinese BRI investment in different regions, 2024 (%)



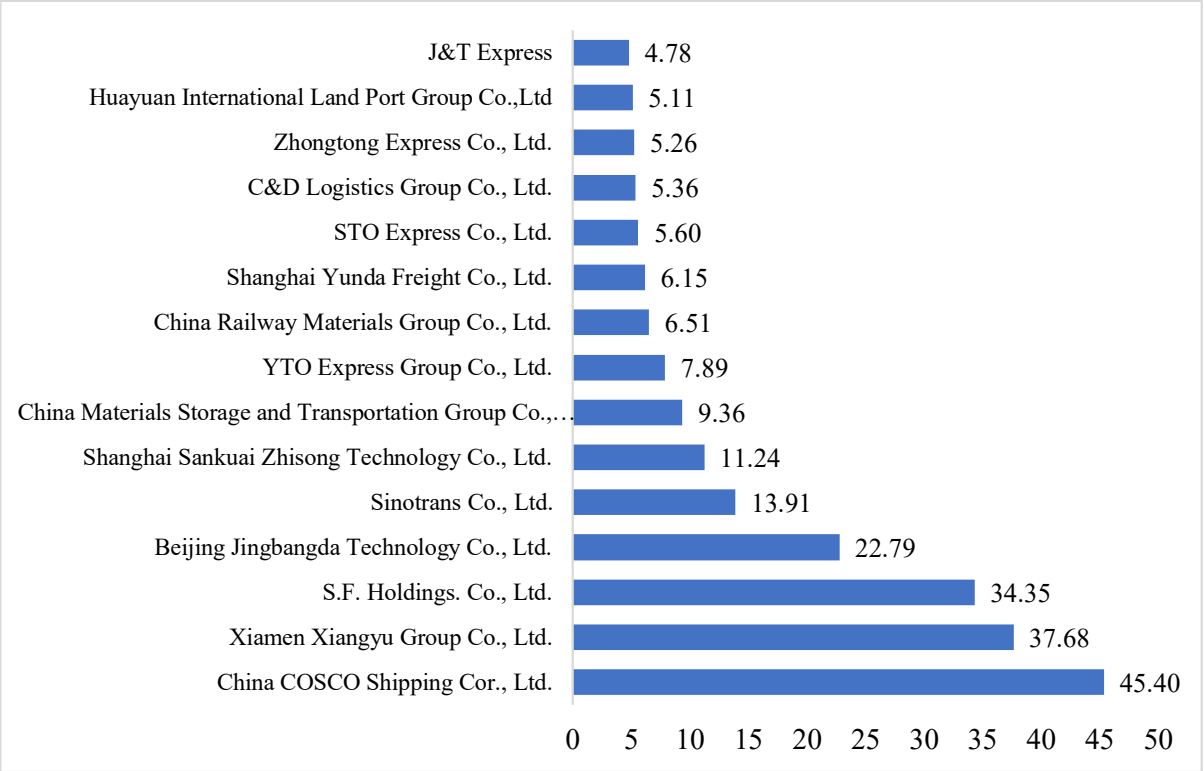
Source: Nedopil, 2025

Central Asia, including Azerbaijan, has benefited from these investments, particularly in transport infrastructure, enabling new economic opportunities (Hoh, 2019).

China's motivation behind the BRI includes boosting economic growth, securing supply chains, and expanding its geopolitical influence. The initiative has led to increased investments in transportation and logistics corridors, enhancing trade linkages between participating countries. With its vast scope, the BRI has reshaped regional trade dynamics and created new economic opportunities for transit countries like Azerbaijan.

The development of major infrastructure projects, including railway corridors, highways, and digital trade platforms, has further reinforced the significance of the BRI. This has led to increasing the role in trade with BRI participating countries and made Chinese companies like COSCO Shipping Holdings Co., Ltd. top global transportation and freight forwarding companies (see Fig.4)

Fig. 4: Top 15 logistics companies in China in 2024, based on 2023 revenue (in US$ bn.)



Source: Calculated by author based on (Statista, 2025)

Central Asia and Azerbaijan, as key transit regions, have experienced substantial economic transformation, with trade routes becoming more efficient and secure (Belt and Road Portal, 2025). These investments have facilitated the modernization of logistics networks, improving connectivity across the Eurasian region.

The Middle Corridor as a Key Route in the BRI Framework

The Middle Corridor, also known as the Trans-Caspian International Transport Route (TITR), serves as an important alternative to the Northern Corridor (via Russia) and Southern Corridor (via Iran). Due to geopolitical tensions and infrastructural limitations in these routes, the Middle Corridor has become an increasingly attractive option for cargo transportation between China and Europe. Initially conceptualized under TRACECA (Transport Corridor Europe-Caucasus-Asia) in the 1990s, the corridor has evolved significantly with China's Belt and Road Initiative (BRI), leading to enhanced investments and regional cooperation (Guliyev, 2024a).

The Middle Corridor passes through China, Kazakhstan, the Caspian Sea, Azerbaijan, Georgia, and Turkey, creating a multimodal logistics network. This corridor integrates railway, maritime, and road transport, allowing for faster and more cost-effective cargo shipments. Recent developments have seen the increased use of the Baku-Tbilisi-Kars (BTK) railway, improving interconnectivity between Central Asia and Europe (Aigerim, 2020).

Significant infrastructure investments have further strengthened the corridor's role in global trade. Initiatives such as the Nurly Zhol infrastructure program in Kazakhstan and Azerbaijan's Alat Free Economic Zone aim to improve logistical efficiency and attract international trade (Harutyunyan, 2022). Additionally, the Green Corridor initiative has been introduced to facilitate smoother customs procedures and increase the efficiency of cross-border trade operations (Humbatov & Sari, 2017).

The Middle Corridor's logistics efficiency continues to improve with ongoing digitalization efforts, including blockchain-based customs tracking systems and AI-driven supply chain management solutions. These enhancements further cement the corridor's role in the broader Belt and Road Initiative (BRI) by ensuring timely and secure transportation of goods across multiple regions (Nazarova, Dauen & Apakhayev, 2025).

The World Bank's (2023) report provides insights into the projected trade volume growth in the Middle Corridor by 2030. The data indicates that total flows via the Caspian Sea are expected to reach 11 million tons, marking a 209% increase from 2021 levels. This surge underscores the corridor's growing significance in facilitating trade between Asia and Europe (see Table 1).

Table 1: Traffic along the MC via the Caspian Sea by 2030

Category	**Trade Volume (Million Tonnes)**	**Growth (%) (2021-2030)**
Total Flows via Caspian Sea	11	+209%
MC Countries' Trade	7	+169%
- Kazakhstan	6.2	+186%
- Georgia	0.9	+52%
- Azerbaijan	0.7	+86%
Transit Trade	4.4	+303%
- China-Europe Trade	2.7	+5268%
- Uzbekistan-Europe Trade	1.3	+71%

Source: World Bank (2023)

This structured table provides a clear breakdown of the projected trade volumes and growth percentages for the Middle Corridor by 2030. Specifically, MC countries' trade is projected to grow by 169%, reaching 7 million tons. Kazakhstan is anticipated to contribute 6.2 million tons (+186%), Georgia 0.9 million tons (+52%), and Azerbaijan 0.7 million tons (+86%). This growth reflects the strategic importance of these nations in regional trade dynamics. Transit trade is expected to experience substantial growth, with total transit volumes projected at 4.4 million tons (+303%). Notably, China-Europe trade is forecast to increase by 5,268%, reaching 2.7 million tons, highlighting the Middle Corridor's emerging role as a viable alternative route for China-Europe trade. Similarly, Uzbekistan-Europe trade is anticipated to

grow by 71%, reaching 1.3 million tons (World Bank, 2023). In the context of Trump's tariffs, Europe faces a dilemma in its trade relationship with China. While the tariffs could push the EU and China closer as they both risk losing access to the US market. The EU is wary of China's potential to flood its market with cheap goods due to reduced access to American consumers, which could worsen existing trade tensions. Despite ongoing negotiations in specific sectors like logistic and digitalization, the overall outlook for China-Europe trade under these circumstances leans towards potential strain and increased trade friction. Europe is also actively pursuing trade partnerships with other regions as an alternative (Smialek, 2025).

These projections emphasize the Middle Corridor's potential to enhance regional connectivity and economic development, aligning with the objectives of initiatives like the Belt and Road Initiative. The expected growth in trade volumes underscores the need for continued infrastructure investments and policy reforms to fully capitalize on the corridor's strategic position in global trade networks (World Bank, 2023).

Table 2: Azerbaijan's Role as a Transit Hub Between China and Europe

Category	**Value**	**Importance of Indicator**
Azerbaijan's Middle Corridor Length	503 km	Represents Azerbaijan's direct land contribution to the Middle Corridor, showcasing its role as a critical transit state.
Intra-Regional Trade Growth (Azerbaijan-Kazakhstan-Georgia (AZ-KZ-GE)	Projected to increase significantly by 2030	Demonstrates Azerbaijan's increasing integration with Central Asian economies, improving trade flow efficiency.
Trade Growth (AZ-KZ-GE to EU)	Projected to increase significantly by 2030	Highlights Azerbaijan's function in linking Central Asia and the South Caucasus with European markets.
Middle Corridor Freight Volume Projection	Expected to increase substantially by 2030	Shows the growing importance of the corridor as an alternative to traditional routes like the Northern Corridor via Russia.
Baku-Tbilisi-Kars (BTK) Railway Capacity	5 million tons/year (current)	A key infrastructure component that enhances rail connectivity between Asia and Europe, reducing transit times.
Caspian Sea Cargo Transit (Azerbaijan)	4.3 million tons in 2023 (+65% from previous year)	Reflects Azerbaijan's ability to facilitate maritime trade between Asia and Europe, particularly through Baku's port facilities.
Alat Free Economic Zone (AFEZ) Investment	US$1.5 billion planned investment	Signals Azerbaijan's commitment to becoming a regional logistics and trade hub, attracting foreign investments.
China-Azerbaijan Trade Volume	US$1.3 billion (~6% of Azerbaijan's total trade)	Demonstrates Azerbaijan's strengthening economic ties with China under the Belt and Road Initiative framework.

Source: World Bank (2023); Guliyev (202

Azerbaijan's Role as a Transit Hub Between China and Europe

Azerbaijan's strategic location at the crossroads of Europe and Asia makes it a key transit hub in the Middle Corridor, serving as a bridge between China and Europe. The country plays a crucial role in the BRI by offering a stable, efficient, and geopolitically viable trade route (See Table 2).

To strengthen its transit capacity, Azerbaijan has made major infrastructure investments, notably in Baku International Sea Trade Port, which facilitates the movement of goods across the Caspian Sea. The Alat Free Economic Zone (AFEZ), adjacent to the port, has been established to attract foreign investment and modernize logistics operations, reinforcing Azerbaijan's role as a regional trade hub (Harutyunyan, 2022).

The Baku-Tbilisi-Kars (BTK) railway, inaugurated in 2017, has further increased Azerbaijan's connectivity with Turkey and Europe, significantly reducing transit times between China and the EU. The Middle Corridor route via Azerbaijan is approximately 2,000 km to 3,000 km shorter than the traditional Northern Corridor, making it an attractive alternative for international freight (Dusek, 2023; Urciuolo, 2024).

Azerbaijan has embraced digital transformation in logistics to improve efficiency. Blockchain-based customs tracking and AI-powered supply chain management systems have been integrated into its trade infrastructure. The Green Corridor initiative, implemented by Azerbaijan Customs, allows for streamlined border crossings, cutting processing times and improving trade flow efficiency (Humbatov & Sari, 2017).

Additionally, Baku International Trade Port has incorporated smart logistics hubs, utilizing IoT-enabled cargo tracking and predictive analytics to enhance supply chain reliability. These advancements position Azerbaijan as a forward-thinking logistics center for China-Europe trade (Nazarova, Dauen & Apakhayev, 2025).

Azerbaijan's participation in the BRI strengthens economic ties with China while also increasing connectivity with European markets. Through bilateral trade agreements and infrastructure collaboration, Azerbaijan ensures that the Middle Corridor remains competitive compared to alternative routes. With China's increasing focus on diversifying supply chains, Azerbaijan's modernized transit corridors and digitalized trade infrastructure continue to solidify its role as a key player in Eurasian trade networks (Aguiar, 2025).

Digitalization in Logistics: Key Concepts and Trends

Digital transformation is reshaping global supply chains, improving logistics efficiency, transparency, and cost-effectiveness. This section introduces the fundamental concepts of digitalization in logistics, including the integration of AI, big data analytics, blockchain, and IoT in freight transportation and inventory management. It discusses global trends driving the adoption of digital logistics, such as the rise of e-commerce, the development of 5G-enabled smart logistics, and the increasing role of sustainability in supply chain management. Special emphasis is placed on how these trends impact the Middle Corridor and Azerbaijan's evolving role in fostering digital trade.

Definition and Importance of Digitalization in Modern Logistics

Digitalization in logistics refers to the integration of advanced digital technologies such as the Internet of Things (IoT), artificial intelligence (AI), blockchain, and big data analytics to

optimize supply chain processes. This transformation improves efficiency, transparency, and cost-effectiveness in freight transportation and inventory management (Wang & Sarkis, 2021). Digital logistics enables real-time visibility, reducing inefficiencies and enhancing supply chain responsiveness (Queiroz et al., 2020).

A widely accepted definition describes digitalization in logistics as the process of replacing manual, paper-based, or disconnected operations with automated and data-driven systems, allowing for predictive analytics and intelligent decision-making (Heutger & Kückelhaus, 2019). Studies have shown that companies implementing end-to-end digital supply chain solutions can reduce operational costs and improve delivery accuracy (Wang et al., 2022).

A core element of logistics digitalization is the concept of Logistics 4.0, which aligns with Industry 4.0 and emphasizes real-time data exchange, autonomous systems, and predictive analytics to enhance supply chain operations (Jeble et al., 2018). The application of AI-driven forecasting models and blockchain-enabled smart contracts enhances decision-making and secures data exchange between stakeholders (Helo & Thai, 2024). IoT sensors and RFID tracking provide precise shipment monitoring, minimizing losses and improving cargo security (Ivanov & Dolgui, 2021).

Digitalization has also become a key driver of supply chain resilience, enabling businesses to adapt to market disruptions and geopolitical trade barriers. For example, during the pandemic, companies using AI-based risk assessment models experienced fewer supply chain interruptions than those relying on traditional systems. Furthermore, digital trade platforms have facilitated smoother customs processes, reducing border clearance times in digitally advanced logistics hubs (Chang & Chen, 2020).

In the context of the Belt and Road Initiative and the Middle Corridor, digitalization plays a crucial role in integrating smart logistics hubs, digital customs, and multimodal transport networks. Azerbaijan and Kazakhstan have been actively investing in digital solutions to enhance the efficiency of the Trans-Caspian International Transport Route (TITR). For instance, Azerbaijan Railways CJSC (ADY) is actively participating in the “Trans-Caspian International Transport Route” International Association of Legal Entities (TMTM) to improve coordination and efficiency along the corridor (NE Global News Service, 2024). Additionally, stakeholders of the Middle Corridor recognize the potential of digitalization to address logistical constraints, such as delays in cargo transfers and limited tracking capabilities. They view the digitalization of corridor logistics processes as a solution to these challenges, aiming to enhance overall efficiency (World Bank, 2023). These innovations contribute to the corridor's competitiveness against traditional Northern and Southern transport routes and enhance China-Europe trade connectivity.

In summary, the adoption of digital logistics solutions and Logistics 4.0 principles is transforming supply chain management. By leveraging automation, AI, and data analytics, businesses can achieve greater efficiency, adaptability, and resilience in a rapidly evolving global trade environment.

Technologies Shaping Logistics

Several emerging technologies are reshaping the logistics landscape:

1. Internet of Things (IoT): IoT enables real-time tracking of shipments through GPS sensors and RFID technology, improving supply chain visibility. Machine-to-machine

communication helps optimize warehouse operations, leading to a projected 30% reduction in logistics costs by 2030 (Richnák, 2022).

2. Artificial Intelligence (AI) & Big Data Analytics: AI-powered predictive analytics enhances demand forecasting and route optimization, reducing fuel consumption and delivery times. Big Data analytics uncovers hidden inefficiencies, leading to up to 20% cost savings in freight transportation (Paramesha et al., 2024).

3. Blockchain Technology: Blockchain offers tamper-proof documentation and enhances supply chain security through smart contracts, reducing fraud and shipment delays by 25% in major logistics networks (Koleshnia & Zhaldak, 2021).

4. Autonomous Vehicles and Drones for transportation and delivery: Offer reduced cost and improved safety. Autonomous trucks could decrease operating costs by about 45% (Nweje & Onuma, 2025).

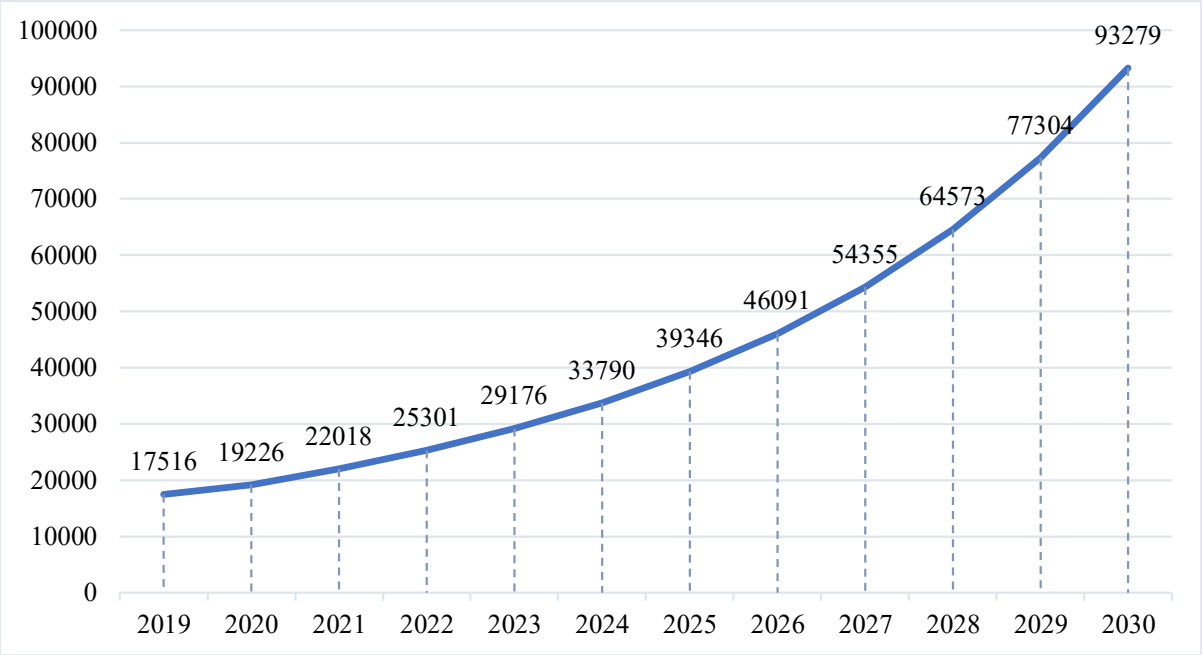
5. Digital Twins: Used for simulating real-world logistics operations, allowing companies to test scenarios, optimize supply chains without physical prototypes (Asorose & Adams, 2025).

Global Trends in Logistics Digitalization

The increasing complexity and globalization of supply chains necessitate advanced technological solutions to optimize logistics operations. Digitalization, characterized by the integration of data-driven technologies, is revolutionizing the logistics industry by enhancing efficiency, visibility, and agility. The global digital logistics market size was valued at US$32.44 billion in 2024. The market is projected to grow from US$37.64 billion in 2025 to US$120.33 billion by 2032, equivalent to a Compound Annual Growth Rate (CAGR) of 18.1% during the forecast period (Fortune Business Insights, 2025). The digital logistics industry worldwide is expected to reach a projected revenue of US$93,279.5 million by 2030. A compound annual growth rate of 18.8% is expected of the worldwide digital logistics industry from 2025 to 2030 (See Fig. 5).

This increase is largely driven by the spread of the Internet and the increase in online shopping among consumers. The increasing trend in intelligent automation and generative AI is also contributing to this growth. As the usage of automation in logistics increases, there is an estimated surge in cloud computing technologies, fostering a growing potential for the digital logistics market share. This growth is owed to rising need for digitalization and data analysis and technological developments. In addition, the demand in this market is increasing as organizations have invested in new logistics technologies following the pandemic. These trends underscore the critical role of digitalization in enhancing efficiency, reducing operational costs, and improving supply chain management in the logistics sector.

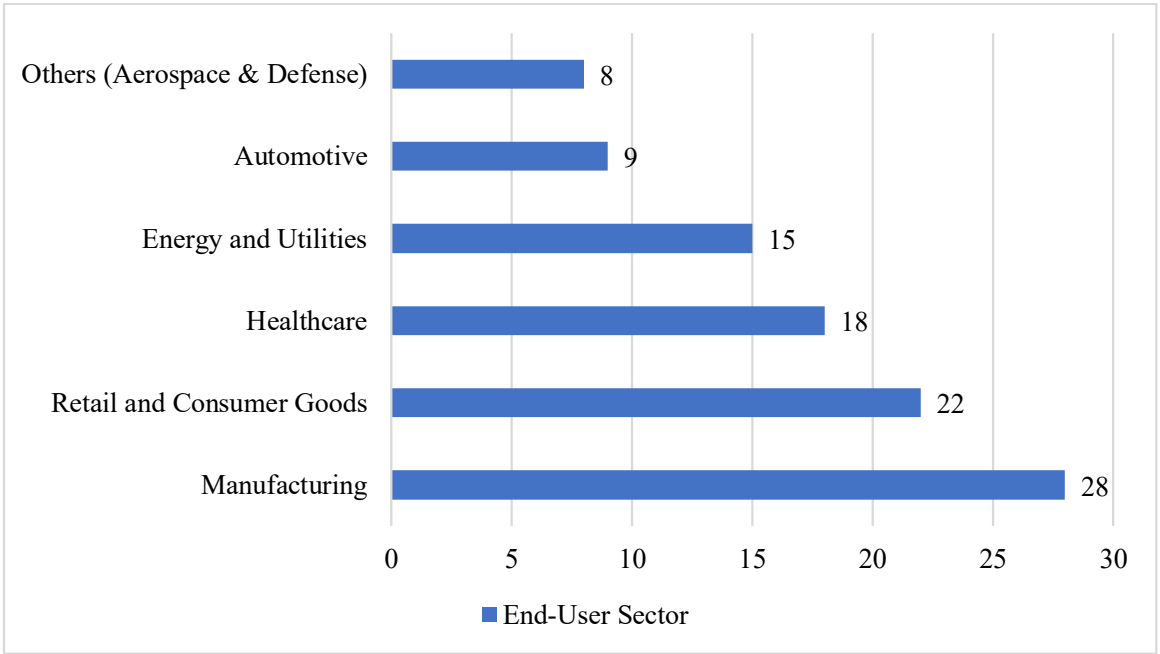
Fig. 5: Global digital logistics market, 2018-2030 (US$M)



Source: Horizon Databook (2025).

Figure 6 illustrates the distribution of digital logistics adoption across various end-user sectors, highlighting the dominance of manufacturing (28%) and retail & consumer goods (22%) in the market.

Fig. 6: Global Digital Logistic Market Share in 2024, by End-User (%)



Source: Fortune Business Insights (2025)

Manufacturing leads the adoption of digital logistics due to the growing need for automation, predictive analytics, and AI-driven supply chain management to improve operational efficiency. The retail and consumer goods sector rank second, driven by the rapid expansion of e-commerce, omnichannel logistics, and demand forecasting technologies. Healthcare (18%) is also a significant adopter, as digital logistics solutions enhance medical supply chain efficiency, particularly for temperature-sensitive goods like pharmaceuticals and vaccines. Energy & utilities (15%) and automotive (9%) sectors utilize digital logistics for asset tracking, predictive maintenance, and supply chain optimization. The aerospace & defense industry (8%) has the smallest share, but its reliance on secure blockchain-based documentation and AI-driven logistics planning is growing. This trend reflects the increasing importance of digitalization in optimizing supply chains, reducing costs, and enhancing efficiency across industries (Fortune Business Insights, 2025).

Recent studies identify three major global trends in logistics digitalization:

1. Automation and Robotics – The integration of autonomous delivery vehicles and robotic warehouse operations is expected to increase global supply chain efficiency by 40% by 2035 (Dong et al., 2021).

2. 5G and Smart Logistics – The adoption of 5G networks enhances real-time monitoring and fleet management for international shipping, reducing transit delays by 15-20% (Kalkha et al., 2023).

3. Sustainability and Green Logistics – The logistics industry is increasingly focusing on carbon footprint reduction through AI-driven route optimization and electric vehicle fleets, aiming to cut emissions by 30% by 2040 (Gábor et al., 2023).

The summary of the impact of digital technologies on logistics is presented in Table 3.

Table 3: Key Technologies and Their Impact on Logistics

Technology	**Key Benefits**	**Impact by 2030**
IoT	Real-time shipment tracking, predictive maintenance	30% reduction in logistics costs
AI & Big Data	Demand forecasting, supply chain optimization	20% cost savings in freight transport
Blockchain	Secure digital transactions, fraud prevention	25% reduction in shipment fraud
5G Networks	Faster and more reliable data exchange	15-20% decrease in transit delays
Automation	Self-driving trucks, AI-managed warehouses	40% increase in supply chain efficiency
Green Logistics	AI-based emissions reduction, electric fleets	30% lower carbon footprint by 2040

Source: Completed by author from Fortune Business Insights, 2025; Mărcuță, 2024; Dong et al., 2021; Kalkha et al., 2023; Gábor et al., 2023.

Azerbaijan-China Collaboration in Digital Logistics

Azerbaijan and China have strengthened their digital and logistics cooperation through bilateral agreements, collaboration and joint initiatives aimed at modernizing transport networks and improving trade facilitation. This section examines key developments such as the Digital Silk Way project, strategic investments in smart logistics hubs, and China's role in developing Azerbaijan's digital trade infrastructure. The discussion includes policy frameworks that facilitate Azerbaijan's integration into China's electronic trading networks, investments in blockchain-based customs systems, and the role of private sector partnerships in fostering digital trade.

Bilateral Agreements and Joint Initiatives for Digital Trade Facilitation

Azerbaijan and China have been strengthening their cooperation in digital trade and logistics, aligning with the objectives of the Belt and Road Initiative (BRI) to create efficient, technology-driven trade networks. As part of this effort, in April 2019, during the Second Belt and Road Forum for International Cooperation in Beijing, Azerbaijan signed ten agreements with Chinese companies totaling US$821 million to boost bilateral trade and expand digital trade infrastructure (Jafarov, 2019). These agreements focus on modernizing customs procedures, enhancing digital connectivity, and developing cross-border e-commerce platforms, ensuring smoother and faster trade flows.

A critical component of Azerbaijan-China collaboration is the Digital Silk Way, a project under Azerbaijan's Digital Hub initiative, aimed at developing a transcontinental telecommunications corridor. In this regard, AzerTelecom and China Telecom signed a Strategic Memorandum of Understanding (MoU) to facilitate the seamless transfer of digital content and internet services from European hubs to Asian markets through Azerbaijan. The Digital Silk Way seeks to position Azerbaijan as a leading internet transit hub, integrating high-speed fiber-optic networks, AI-powered logistics, and blockchain-driven trade verification systems (Zeynalli, 2024).

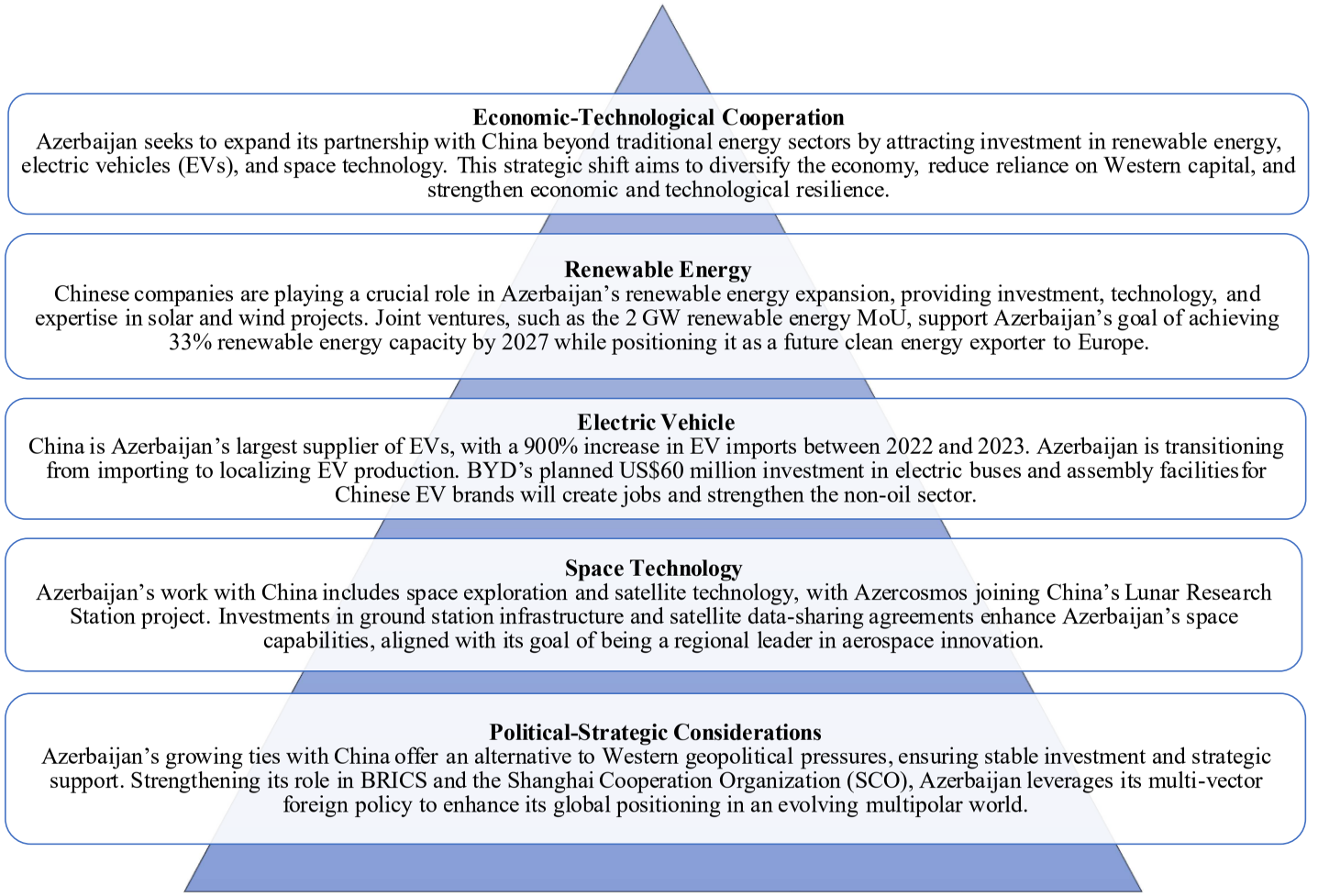
China has also expressed interest in investing in submarine fiber-optic infrastructure to enhance digital connectivity between Azerbaijan and Kazakhstan, a crucial segment of the Trans-Eurasian Information Superhighway (TASIM). This initiative aims to improve telecommunications security, expand cloud-based services, and support e-commerce and digital banking (Sharifli, 2024).

Beyond digital trade, China is actively investing in Azerbaijan's industrial sector, including the construction of a tire factory and greenhouse complex, expanding its role in Azerbaijan's logistics and manufacturing supply chains. Additionally, China is involved in the modernization of the Baku International Sea Trade Port, reinforcing Azerbaijan's strategic role as a regional logistics hub for the China–Central Asia–West Asia Economic Corridor (Bogdan & Najdov, 2020).

In 2024, Azerbaijan and China formally elevated their bilateral cooperation by signing a Strategic Partnership Declaration, which defines key sectors of collaboration, particularly in digital infrastructure, smart trade networks, and cross-border logistics (Hajiyeva, 2024).

Azerbaijan and China have expanded their cooperation in digital trade as part of a broader strategy to navigate shifting global dynamics. In 2024 Azerbaijan and China announced a new era of cooperation through a Strategic Partnership Declaration (see Fig. 7).

Fig. 7: Key Azerbaijan and China Strategic Partnership Areas



Source: Hajiyeva, 2024; President of the Republic Azerbaijan of Azerbaijan, 2024; Sharifli, 2024

This agreement also emphasizes integrating Azerbaijani enterprises into Chinese electronic trading networks, promoting national pavilions in China, and enhancing trade center establishments to strengthen e-commerce and B2B platforms.

Another significant development in 2024 was the exchange of international road haulage permits, which has expanded Azerbaijan's transport capabilities and facilitated direct freight movement between China and Azerbaijan. Agreements on intermodal freight terminals, logistics automation, and digital customs synchronization have further strengthened connectivity along the Middle Corridor, ensuring seamless cargo movement across rail, road, and maritime transport (Mammadov, 2025).

The collaboration between Azerbaijan and China is not limited to physical infrastructure but extends into digital and policy harmonization, ensuring regulatory alignment and efficient trade facilitation. The strategic investments in blockchain-based customs, AI-driven trade analytics, and cloud-integrated logistics platforms are expected to enhance Azerbaijan's competitiveness as a smart logistics hub along the Belt and Road Initiative (BRI).

These initiatives reinforce Azerbaijan's pivotal role in Eurasian trade, leveraging cutting-edge digital technologies to optimize supply chain operations, reduce transaction costs, and facilitate high-speed logistics. The future trajectory of Azerbaijan-China collaboration will likely see greater investments in smart logistics, AI-powered trade platforms, and cybersecurity-enhanced e-commerce ecosystems, ensuring sustained growth in digital trade integration.

Investments in smart logistics and e-commerce

The strategic partnership between Azerbaijan and China has led to significant investments in smart logistics hubs and e-commerce infrastructure, strengthening Azerbaijan's role as a critical transit point along the Middle Corridor. Mutual investment relations have expanded beyond traditional sectors, with China and Azerbaijan collaborating in industry, agriculture, ICT, transit, high technology, and logistics. As of 2024, 119 Chinese companies operate in Azerbaijan, with China investing over US$800 million, while Azerbaijan's investments in China exceed US$1.7 billion (Guliyev, 2024b). These growing financial flows reflect a shared commitment to developing digital trade, transport logistics, and smart infrastructure, making Azerbaijan a regional hub for China-Europe commerce.

Azerbaijan has decisively positioned itself as a central player in the Middle Corridor, attracting large-scale Chinese investments in transportation and logistics infrastructure. The Trans-Caspian International Transport Route (TITR) has become a focal point for bilateral cooperation, facilitating China-Europe trade and offering an alternative to traditional Northern and Southern corridors (Mammadov, 2025). The Port of Baku has undergone major upgrades to support higher cargo volumes and multimodal connectivity, integrating automated warehousing, blockchain-based trade verification, and AI-driven freight tracking to improve efficiency (Zeynalli, 2024).

A cornerstone of this collaboration is the Alat Free Economic Zone (AFEZ), which is being developed as a free trade zone and logistics hub. The AFEZ project integrates cutting-edge technologies such as IoT-enabled cargo tracking, predictive analytics for supply chain management, and digitalized customs clearance, ensuring faster and more transparent trade operations (Bogdan & Najdov, 2020). The involvement of Chinese investors in AFEZ

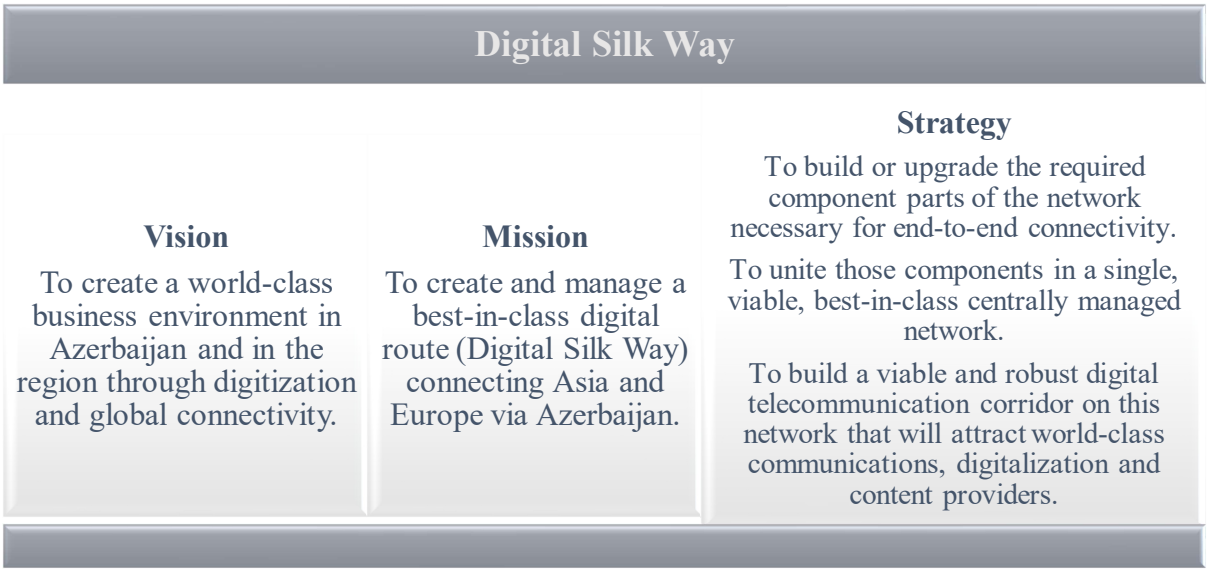
highlights a long-term commitment to strengthening Azerbaijan's logistics infrastructure, with particular emphasis on digital connectivity, e-commerce integration, and smart port operations.

China's growing influence in Azerbaijan's logistics modernization is also evident in projects such as the Intermodal Freight Terminal at Baku International Sea Trade Port, developed in collaboration with Kazakh and Chinese partners. The expansion of Caspian ports and the second phase of the Baku Port project will increase container handling capacity to 25 million tons, further facilitating China-Europe trade (Mammadov, 2025). The Baku-Tbilisi-Kars (BTK) railway, a critical component of the Middle Corridor, has also benefited from Chinese investment, ensuring enhanced rail connectivity and reduced transit times for freight shipments between Asia and Europe.

Azerbaijan's e-commerce market is projected to reach US$1.67 billion by 2024, with an annual growth rate of 10.47%, making it an attractive destination for Chinese e-commerce giants. Platforms such as Alibaba's Cainiao and JD Logistics have expanded their presence in Azerbaijan, facilitating digital freight forwarding, smart parcel distribution, and last-mile delivery solutions. Additionally, the planned Internet Exchange Centre in Baku will serve as a pivotal digital hub, supporting e-commerce, cloud computing, and high-speed data transfer across the region (Sharifli, 2024).

The Digital Silk Way initiative plays a crucial role in advancing Azerbaijan's digital trade infrastructure, integrating fiber-optic networks, AI-powered logistics management, and cybersecurity solutions (see Fig. 8).

Fig. 8: Digital Silk Way vision, mission and strategy



Source: Digital Silk Way, 2025.

This initiative aligns with China's Belt and Road Initiative by ensuring a seamless digital corridor connecting Europe and Asia. The strategic vision of the Digital Silk Way focuses on enhancing data sovereignty, reducing reliance on external internet transit, and establishing Azerbaijan as a regional leader in digital connectivity (Digital Silk Way, 2025).

China's involvement in Azerbaijan's logistics and digital economy extends beyond infrastructure and e-commerce into renewable energy, electric vehicle production, and smart city development. Investments in smart logistics hubs, AI-driven trade platforms, and cybersecurity-enhanced e-commerce ecosystems reinforce Azerbaijan's emerging role as a digital and logistics powerhouse, ensuring greater efficiency in China-Europe trade routes.

As Azerbaijan continues to modernize its transport and trade infrastructure, collaboration with Chinese stakeholders will remain vital in advancing technological integration, optimizing cross-border trade, and fostering innovation-driven economic growth. The next phase of Azerbaijan-China cooperation is expected to focus on blockchain-enabled logistics, AI-powered supply chain automation, and digital finance solutions, ensuring sustainable and technology-driven trade facilitation.

Role of Major Stakeholders: Government Agencies, Private Sector, and International Organizations

Azerbaijan's government, private sector, and international organizations play a crucial role in advancing digital logistics collaboration with China. Each stakeholder contributes to the development of smart infrastructure, policy harmonization, and investment in digital trade, reinforcing Azerbaijan's position as a key hub in the Middle Corridor and within the BRI.

The Azerbaijani government has been proactive in formulating policies that support digital trade, smart logistics, and cross-border e-commerce. As part of the 2024 Strategic Partnership Declaration, China has expressed support for Azerbaijan's integration into Chinese digital trade networks, including the establishment of trade centers and national pavilions in China to promote Azerbaijani goods (Sharifli, 2024). The Ministry of Digital Development and Transport plays a central role in aligning Azerbaijan's trade and logistics policies with China's Digital Silk Road strategy, ensuring regulatory compatibility and seamless trade flows. The State Customs Committee has also been actively implementing AI-powered risk assessment tools, blockchain-based customs procedures, and real-time cargo tracking systems, significantly reducing clearance times and enhancing supply chain transparency (Zeynalli, 2024).

The private sector is a driving force in digital trade and logistics transformation, fostering innovation and investment in AI-driven logistics solutions, smart warehousing, and automated freight tracking. Leading Azerbaijani firms, such as Azerbaijan Railways CJSC (ADY), Electrify Azerbaijan, and AzerTelecom, have forged partnerships with Chinese companies to develop EV production facilities, expand renewable energy projects, and integrate digital logistics solutions into the Middle Corridor's transport network (Mammadov, 2025).

The dispatch of the first export cargo train from Baku to China via the Middle Corridor marked a major milestone in bilateral economic and transport cooperation, underscoring Azerbaijan's role as a strategic bridge between East and West. The increase in China-Europe freight shipments via the TITR is a direct result of ongoing infrastructure development, streamlined customs processes, and investment in digital freight management systems (Guliyev, 2024). AzerTelecom's collaboration with China Telecom on the Digital Silk Way project highlights the private sector's role in expanding digital connectivity, which enhances trade, cybersecurity, and e-commerce operations along the Middle Corridor. Notably, the Asian Infrastructure Investment Bank (AIIB) signed a US$160 million financing agreement for a private-sector solar photovoltaic project in Azerbaijan, marking a significant step towards

expanding green infrastructure in the Caucasus region (Asian Infrastructure Investment Bank, 2024).

International organizations serve as critical platforms for expanding Azerbaijan-China cooperation in digital logistics. The World Trade Organization (WTO) and Shanghai Cooperation Organization (SCO) provide Azerbaijan with institutional mechanisms to secure Chinese support for global integration efforts and policy alignment with international trade standards. The World Economic Forum (WEF) has recognized Azerbaijan's progress in digital trade infrastructure, emphasizing the importance of improving internet connectivity, bridging the digital skills gap, and leveraging AI and blockchain for trade facilitation (World Economic Forum, 2024).

Additionally, China's involvement in Azerbaijan's digital economy aligns with broader international trade and development initiatives. The Asian Infrastructure Investment Bank (AIIB) has financed digital infrastructure upgrades, transport corridor modernization, and smart logistics projects, reinforcing Azerbaijan's role as a technologically advanced transit hub. The UN Conference on Trade and Development (UNCTAD) has also highlighted Azerbaijan as a model for digital trade facilitation in emerging economies, promoting AI-driven customs clearance and integrated digital payment systems to enhance cross-border trade efficiency (UNCTAD, 2024a). Additionally, UNCTAD's Trade and Development Report 2024 underscores the importance of rethinking development strategies amid global economic slowdowns, aligning with Azerbaijan's goals to enhance its role in global digital logistics (UNCTAD, 2024b).

The combined efforts of the Azerbaijani government, private sector, and international organizations have accelerated digital transformation in logistics and trade, making Azerbaijan a leading digital and transport hub along the Middle Corridor. As technology-driven trade facilitation becomes increasingly critical, further collaboration in 5G-enabled supply chain management, AI-powered trade analytics, and cloud-based logistics platforms is expected to strengthen Azerbaijan's strategic position within China's Belt and Road Initiative.

Technological Innovations, Challenges, and Future Prospects in Digital Logistics

While digitalization presents various opportunities for enhancing logistics efficiency, it also introduces technical, economic, and regulatory challenges. This section provides an in-depth analysis of the latest technological and digital innovations. It explores the barriers to digital transformation, such as cybersecurity risks, interoperability issues across national digital infrastructure, and the need for policy harmonization. Additionally, future prospects for Azerbaijan-China collaboration in digital logistics are assessed, highlighting strategic policy recommendations, potential technological advancements, and the long-term impact of digitalization on regional and global trade dynamics.

Infrastructure Development and Technological Advancements

Azerbaijan and China have been actively implementing smart logistics solutions to enhance trade efficiency along the Middle Corridor. The Middle Corridor's strategic development hinges on the integration of smart port technology and digital customs systems. The expansion of railway and multimodal transport corridors, including the Baku-Tbilisi-Kars (BTK) railway and the Trans-Caspian International Transport Route (TITR), has optimized

freight movement by ensuring greater interoperability between rail, road, and maritime networks.

To ensure seamless cargo flow and enhance competitiveness, stakeholders are actively implementing integrated logistics solutions, exemplified by the development of the "Digital Transport Corridor" platform, designed to facilitate data integration among railway operators, ports, and customs authorities. Furthermore, initiatives like "Test Customs," operational on the Kazakhstan-China border, signify progress in digital customs standardization (Report News Agency, 2025).

Azerbaijan, a central node in this corridor, is investing heavily in infrastructure, notably the modernization of the Port of Alat, which will adhere to contemporary logistics standards, emphasizing digital technologies and process standardization (Aze.Media, 2024; Report News Agency, 2025).

Plans to digitize customs clearance and implement smart tracking systems are underway to improve transparency and reduce transit times (Geopolitical Monitor, 2025). Moreover, the Port of Baku has implemented a Port Community System, integrating multiple operational systems, to streamline port activities (Hellenic Shipping News Worldwide, 2023). These digital advancements are essential for optimizing the Middle Corridor's efficiency and solidifying its position as a key trade route.

Challenges and Barriers to Digitalization

The digitalization of logistics along the Middle Corridor remains a complex endeavor, hindered by technical, economic, and geopolitical barriers. As Azerbaijan and China expand cooperation in digital trade, integrating AI-powered freight tracking, blockchain-based customs processing, and IoT-enabled cargo monitoring faces substantial challenges. Despite the MC's growing strategic role as an alternative to the Northern and Southern corridors (Aze.Media, 2024), its full digital transformation requires overcoming regulatory, technological, and infrastructural disparities across participating nations (Table 4).

A critical barrier to seamless Azerbaijan-China digital logistics cooperation lies in the fragmented regulatory landscape. Each country along the MC, including Kazakhstan, Georgia, and Turkey , maintains different digital trade regulations, customs procedures, and data protection laws, creating bottlenecks for cross-border interoperability. The harmonization of trade policies, particularly customs digitalization, remains essential for reducing transit times and ensuring real-time cargo visibility (UNCTAD, 2023).

To address regulatory inefficiencies, Azerbaijan has partnered with China's General Administration of Customs to implement paperless trade solutions and blockchain-based cargo clearance, reducing customs processing times by 35% (World Bank, 2023b). However, the lack of standardized e-documentation protocols between China, Azerbaijan, and Kazakhstan continues to slow real-time data exchange, requiring coordinated policy frameworks under the Belt and Road Initiative (BRI) (ADB, 2023).

Table 4: Key Challenges and Barriers to Digitalization Along the Middle Corridor

Category	**Specific Challenge**	**Example**	**Impact on China-Azerbaijan Cooperation**
Regulatory	Fragmented customs regulations, lack of harmonized digital trade standards	Inconsistent e-documentation protocols across China, Azerbaijan, Kazakhstan	Blockchain-based customs clearance; policy harmonization under BRI
Technological	Outdated cargo tracking systems; limited 5G and IoT coverage	Gaps in real-time tracking and multimodal coordination	Smart freight corridors; investments in AI-based terminals (AFEZ, Baku port)
Cybersecurity	Inconsistent data protection laws; high cyberattack risk	China has strict cybersecurity laws, Azerbaijan still developing standards	Need for cross-border cybersecurity agreements and regulatory convergence
Economic	High implementation costs for smart logistics systems	Expensive AI logistics platforms, blockchain integration, digital literacy gaps	Public-private partnerships (PPPs); development bank assistance; workforce training
Geopolitical	Trade rerouting from Northern Corridor; investor hesitation due to regional instability	War in Ukraine increases Middle Corridor relevance but adds security risk	Long-term investment through bilateral China-Azerbaijan cooperation

Source: Compiled by author

Furthermore, cybersecurity laws and data protection policies vary significantly across MC nations. While China has adopted strict cybersecurity regulations, Azerbaijan is still in the process of developing robust digital trade security frameworks. The absence of unified cybersecurity policies increases risks of cyberattacks, hacking, and trade fraud along the corridor, making it essential to establish cross-border cybersecurity agreements (ITU, 2023).

While Azerbaijan and China lead digital innovation along the MC, challenges remain in the full integration of smart logistics technologies. The Baku International Sea Trade Port has implemented automated cargo handling and AI-based logistics management, yet the broader corridor still suffers from uneven digital infrastructure (Mammadov, 2025). Railway connectivity gaps, outdated cargo monitoring systems, and limited 5G coverage in certain areas hinder real-time tracking and multimodal transport efficiency.

Azerbaijan and China have sought to overcome these barriers through investments in smart freight corridors and AI-driven logistics hubs, including the Alat Free Economic Zone (AFEZ) and the Intermodal Freight Terminal at the Baku International Sea Trade Port, co-developed

with Chinese and Kazakh partners (Sharifli, 2024). The integration of blockchain for supply chain verification has been a priority, yet high implementation costs and limited digital literacy among logistics operators slow adoption rates (OECD).

In addition, the Digital Silk Way initiative, a collaboration between AzerTelecom and China Telecom, aims to enhance Azerbaijan's role as a digital transit hub. However, fiber-optic infrastructure gaps and cybersecurity concerns remain significant obstacles. To fully capitalize on China's technological expertise, Azerbaijan must accelerate digital literacy programs, particularly in logistics workforce training and AI-driven supply chain management (World Economic Forum, 2024).

The economic feasibility of large-scale digitalization remains a major concern. Azerbaijan and China's joint logistics investments, including the Middle Corridor's smart port upgrades, require billions in infrastructure modernization. The high upfront costs of automated warehousing, AI-powered logistics, and blockchain-based trade finance demand sustainable funding models, including public-private partnerships (PPPs) and multilateral development bank assistance (ADB, 2023).

In addition to financial challenges, geopolitical instability poses risks to Middle Corridor digitalization efforts. The ongoing Russia-Ukraine war and shifting global trade alliances have redirected cargo flows from the Northern Corridor to the MC (Aze.Media, 2024). While this increases trade volumes, it also heightens competition for digital infrastructure investments. The strengthening of China-Azerbaijan trade ties offers an opportunity to secure long-term investment in digital infrastructure, yet regional security risks may deter private sector participation (Sharifli, 2024).

Despite these barriers, the Azerbaijan-China digital logistics partnership continues to expand, with blockchain-enabled trade facilitation, AI-driven risk assessment, and IoT-enhanced cargo tracking serving as key areas of collaboration. Overcoming regulatory, technological, and economic challenges is essential for realizing the full potential of the Middle Corridor, ensuring its role as a secure, efficient, and competitive Eurasian trade route.

Future Prospects and Strategic Cooperation

Transforming the Middle Corridor into a leading trade artery and securing regional economic resilience hinges on the robust digitalization of logistics and deepened strategic collaboration, notably between Azerbaijan and China (Aze.Media, 2024). This transformation requires a focus on regional integration and trade facilitation, including the harmonization and full digitalization of transit and border documents, as well as the reduction of non-physical barriers to trade. The MC's role extends beyond a mere land bridge between China and Europe, serving as a critical avenue for trade route diversification and enhanced connectivity for Azerbaijan, particularly amidst a volatile geopolitical context (Sharifli, 2024). The Russian war against Ukraine has significantly elevated the MC's strategic importance, providing a crucial alternative to traditional trade routes and enhancing economic resilience in a period of geopolitical instability (World Bank, 2023).

To realize this potential, strategic cooperation must prioritize the development of interoperable digital infrastructure, encompassing smart ports and digital customs systems. The Port of Baku's implementation of the Port Community System, which is essential for increasing the sustainability of seaport operations, enabling it to evolve into digital hubs and neutral data managers (Tijan et al., 2021), integrating diverse operational processes, exemplifies the

requisite technological advancements (Hellenic Shipping News Worldwide, 2023). Furthermore, the integration of digital customs clearance and smart tracking systems is essential for enhancing transparency and reducing transit times, thereby solidifying the MC's competitive advantage (Geopolitical Monitor, 2025). The World Bank projects that, with appropriate investments, the MC has the potential to handle a significantly increased volume of freight, offering substantial economic benefits to participating countries (World Bank, 2023). The tripling of container trains on the TITR and the development of direct road freight links between China and Azerbaijan further underscore the potential for deeper economic integration (Mammadov, 2025).

Future cooperation should focus on establishing a unified digital framework, facilitating seamless data exchange and operational coordination among MC stakeholders. This framework must incorporate advanced technologies such as AI-driven logistics optimization and blockchain-enabled customs procedures, building upon the foundational advancements already observed in the Port of Baku (Hellenic Shipping News Worldwide, 2023). Moreover, strategic partnerships must extend beyond technological implementation to encompass policy harmonization and regulatory alignment. The geopolitical significance of the MC, as a route born of new Eurasian geopolitics, underscores the need for collaborative governance structures that can address the complexities of cross-border digital logistics (Geopolitical Monitor, 2023). The World Bank (2023) highlights the importance of addressing both “hard” and “soft” infrastructure challenges, including improving border crossing efficiency, enhancing transport connectivity, and fostering competition among service providers.

Expanding economic ties with China offers Azerbaijan a chance to diversify investments beyond oil and gas, while strengthening its technological and industrial base. Further cooperation in green hydrogen, energy storage, and space technology could enhance Azerbaijan’s position in the global innovation landscape (Sharifli, 2024). Azerbaijan’s proactive engagement in BRICS and the SCO presents new diplomatic and economic opportunities that could redefine regional trade and strategic alliances. Future collaboration could focus on digitalizing trade processes, expanding rail freight corridors, and enhancing maritime transport capacity, positioning Azerbaijan as a strategic logistics hub for Eurasian trade.

The need for economic flexibility and autonomy drives Azerbaijan to strengthen its ties with China, especially in emerging sectors like renewable energy, electric vehicle production, and space technology (Sharifli, 2024). The ongoing expansion of the MC, driven by collaborative initiatives, demands a forward-looking approach to infrastructure development and digital integration (Aze.Media, 2024). Future strategic cooperation must prioritize the creation of a resilient and efficient digital ecosystem, capable of adapting to evolving trade dynamics and technological advancements. This includes investing in predictive analytics, real-time monitoring systems, and secure data exchange protocols, ensuring the MC's continued relevance as a pivotal component of global trade networks. By fostering a collaborative environment that prioritizes innovation and interoperability, Azerbaijan and China can effectively leverage the MC's digital potential, thereby enhancing regional connectivity and driving economic growth.

Conclusion

Cooperation between Azerbaijan and China within the Belt and Road Initiative in general and the Middle Corridor in particular, includes strategic investments in infrastructure, digitalization in logistics, policy coordination, and involves the participation of international organizations, the public and private sectors. The integration of advanced technologies has made Azerbaijan an important digital trade gateway between China and Europe, and the continuous expansion of digital logistics centers, e-commerce platforms, and intermodal transport corridors has not only increased Azerbaijan's logistics efficiency but also strengthened its role as a key player in the Middle Corridor.

Azerbaijan-China relationship in Digital Silk Road strategy continues to develop thanks to constant cooperation, joint projects and investment in digital infrastructure of both countries. The development of the Digital Silk Way project, together with the expansion of the Baku International Sea Trade Port, development of Alat Free Economic Zone underlines the country's ambition to become a major facilitator of Eurasian trade. As cooperation between China and other countries grows, Azerbaijan's digital transformations, trade policies development, and smart logistics solutions will play an increasingly important role in simplifying customs procedures, cumulative supply chain transparency, and reducing transportation costs.

In addition to logistics, digital transformation is transforming various industries, including manufacturing, healthcare, and e-commerce. The adoption of digital logistics is transforming supply chain management, enabling real-time tracking, predictive analytics, and automated freight forwarding. These innovations are critical to improving operational efficiency, mitigating risk, and optimizing cross-border trade flows.

Continued investment in cybersecurity and data protection will also be vital as Azerbaijan strengthens its position as a digital trade hub. Joint initiatives between government agencies, private enterprises, and international organizations will be essential to ensuring the security, efficiency, and resilience of digital trade networks.

In the coming years, regulatory harmonization and deeper integration with China's digital trade ecosystem will further strengthen Azerbaijan's status as a strategic transit and logistics hub under the Belt and Road Initiative. The ongoing modernization of railway networks, smart ports, and free trade zones will continue to improve the connectivity of the Middle Corridor, making it a more viable alternative for global trade. By implementing digital transformation in logistics, Azerbaijan is not only securing its economic future but also strengthening its role as a key link between Asia and Europe.

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