THE DIGITAL SILK ROAD WITHIN THE BELT AND ROAD INITIATIVE: NEW OPPORTUNITIES AND CHALLENGES IN DIGITAL ECONOMY COOPERATION

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Abstract: *As global digitalization accelerates, the Digital Silk Road has emerged as a vital part of the Belt and Road Initiative, fostering international cooperation and development. This paper examines the opportunities and challenges in digital economy cooperation, focusing on cross-border e-commerce, digital payments, smart cities, data security, and the digital divide. Through literature review and case studies, it argues that the Digital Silk Road enhances economic integration and digital transformation among participating nations. However, issues such as uneven digital infrastructure, differing regulations, and cybersecurity risks require further international collaboration and innovation.*

Keywords: *Digital Silk Road; Belt and Road Initiative; digital economy; cross-border e-commerce; digital payment; smart city; data security; digital divide*

1. Introduction.

The Digital Silk Road represents an expansion of the Belt and Road Initiative into the digital economy era, aiming to strengthen economic cooperation and digital transformation through technological interconnectivity. By 2025, China had established "Silk Road E-commerce" partnerships with 35 countries, supporting digital leapfrogging via infrastructure exports, technology transfer, and regulatory coordination. While the initiative emphasizes both "hard connectivity" (infrastructure) and "soft connectivity" (rules and standards), challenges like the digital divide and data security remain. This paper analyzes current developments, opportunities, and obstacles to inform future strategies.

2. New Opportunities. 2.1 Cross-Border E-Commerce

Cross-border e-commerce is a major driver of the Digital Silk Road. In the first half of 2025, China’s cross-border e-commerce import-export volume reached 1.32 trillion yuan, a 5.7% year-on-year increase. The global cross-border e-commerce market is projected to reach $4.2 trillion by 2025. Innovations like smart customs clearance and blockchain traceability have streamlined trade, enabling products

from Yiwu to reach Africa and Southeast Asian fruits to enter China efficiently. Pilot zones have introduced institutional innovations such as "single declaration, bilateral clearance," enhancing logistics and data exchange.

2.2 Digital Payment Innovations

Digital payments facilitate financial interconnectivity. Traditional cross-border payments are slow and expensive, with settlement taking 3-7 days and fees of 3%-6%. The digital yuan (e-CNY) offers programmable, instant, and secure transactions. China is promoting e-CNY through projects like the Multi-Central Bank Digital Currency Bridge. In Kenya, a Sino-African cooperative "mobile wallet" serves over 30 million users. These innovations reduce costs and support the yuan's internationalization.

2.3 Smart Cities and AI

Smart cities are key to the Digital Silk Road. China exports 5G, cloud computing, and IoT technologies to optimize urban management in countries like Saudi Arabia and Malaysia. AI drives industrial transformation, with companies like ZTE providing digital solutions that promote technical interoperability and new business models.

2.4 Hard and Soft Connectivity

Hard connectivity includes building 5G networks, fiber optics, and data centers. China collaborates on cross-border cables and promotes the BeiDou system in agriculture and transportation. Soft connectivity involves technology transfer, regulatory alignment, and talent development. China has signed Digital Silk Road MOUs with 17 countries and e-commerce mechanisms with 23 countries. Training programs have covered 150 countries, benefiting 2.28 million people.

3. Challenges. 3.1 Digital Divide

Uneven digital infrastructure is a significant barrier. Many developing countries suffer from low internet penetration, inefficient logistics, and underdeveloped payment systems, limiting e-commerce growth. Although China assists with technology exports, long-term investment is needed to balance digital development.

3.2 Data Security and Cyber Risks

Cross-border data flow raises concerns over data sovereignty, privacy, and cybersecurity. The EU's Cyber Resilience Act and AI Act, and Singapore's Cybersecurity Labeling Scheme, reflect growing regulatory efforts. However, divergent national policies complicate cooperation.

3.3 Rule Differences and Fragmented Governance

The absence of a unified digital governance framework leads to regulatory fragmentation. Some countries impose barriers against foreign digital tools and

currencies. Although China promotes initiatives like the "China+Central Asia Data Security Cooperation Initiative," alignment with Western standards remains challenging.

3.4 Digital Payment Integration

Technical hurdles hinder payment system integration. The digital yuan's cross-border application is still experimental, with immature multi-currency architectures and insufficient interoperability between payment and e-commerce platforms. Standardizing data formats and security protocols is essential.

4 .China's Practices and Explorations. 4.1 Silk Road E-Commerce Pilots

China has established e-commerce pilot zones with 36 partner countries, including Kenya and Bangladesh. Initiatives like "Silk Road E-Commerce Benefits the World" have hosted nearly 20 matchmaking events, boosting sales of products from Kazakhstan and Kenya.

4.2 Digital Yuan Innovation

The e-CNY is being tested in cross-border settings via the "Currency Bridge" project. China Unicom's command center in Hong Kong supports a cross-border data space serving 24,000 customers, providing practical experience for payment integration.

4.3 Technology Export and Capacity Building

Companies like Huawei and ZTE help build digital infrastructure in partner countries. Huawei's open lab in Egypt collaborates with universities to train digital talent, enhancing local capabilities.

5 .Future Pathways and Policy Recommendations. 5.1 Deepening Infrastructure Connectivity. China should promote shared digital infrastructure, including 5G base stations, data centers, and BeiDou applications, especially in under-connected regions. Cross-border cable projects can improve communication quality.

5.2 Collaborative Digital Governance

China should engage in global digital governance, advance the Global Data Security Initiative, and establish a Cybersecurity Alliance with partner nations. Implementing product security certification, inspired by Singapore's model, can build trust.

5.3 Integrating Digital Payments

Accelerating e-CNY pilots in cooperative regions like the UAE and Singapore is crucial. Enhancing technical compatibility between payment and e-commerce systems will streamline transactions. Strengthening risk prevention mechanisms is also needed.

5.4 Strengthening Talent and Technical Cooperation

Digital skills training, online seminars, and university-enterprise partnerships can cultivate talent. Joint labs and R&D centers will foster inclusive digital development.

Conclusion.

The Digital Silk Road advances the Belt and Road Initiative into the digital age, promoting economic integration and technological transformation. Despite progress in e-commerce, payments, and smart infrastructure, challenges like the digital divide, data security, and regulatory fragmentation persist. Through sustained cooperation, infrastructure sharing, regulatory harmonization, and innovation in digital payments, China and its partners can foster a shared digital future.

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