SCIENCE BOX

ЭКОНОМИКА, МЕНЕДЖМЕНТ, СЕРВИС: СОВРЕМЕННЫЕ ПРОБЛЕМЫ И ПЕРСПЕКТИВЫ

ROLE OF TECHNOLOGY IN SHAPING GLOBAL TRADE

Norkobilov Akobir Iso o'g'li
PhD student of Denau Institute of Entrepreneurship and Pedagogy

Abstract: *This research explores the pivotal role of technology in shaping global trade, examining how advancements in digital infrastructure, logistics, and communication have revolutionized international commerce. Technological innovations have streamlined supply chains, enhanced market access, and enabled the rise of e-commerce, transforming traditional trade dynamics. The study highlights key technological trends, such as blockchain for secure transactions, artificial intelligence for predictive analytics, and the Internet of Things for real-time tracking, which collectively enhance efficiency and transparency in global trade. Additionally, the research investigates the digital divide's impact on trade disparities and the regulatory challenges posed by rapid technological changes. By analyzing contemporary case studies and statistical data, this study provides a comprehensive overview of how technology is driving the evolution of global trade, fostering economic growth, and presenting new challenges and opportunities for businesses and policymakers worldwide.*

Keywords: *Technology, global trade, digital infrastructure, e-commerce, artificial intelligence, trade disparities, economic growth.*

Technology has become a driving force in the evolution of global trade, fundamentally altering how goods and services are produced, exchanged, and consumer across borders. The advent of digital infrastructure, sophisticated logistics systems, and advanced communication technologies has created unprecedented opportunities for businesses and economies worldwide. As of 2021, e-commerce accounted for approximately 19.6% of global retail sales, a significant increase from 14.1% in 2019, highlighting the rapid shift towards digital trade channels.

The implementation of technologies such as blockchain, artificial intelligence (AI), and the Internet of Things (IoT) has streamlined supply chains, improved transaction security, and enabled real-time tracking and predictive analytics. For instance, the global blockchain market in supply chain management is projected to reach $9.85 billion by 2025, reflecting a compound annual growth rate (CAGR) of 80.2% from 2020. AI technologies, particularly in predictive analytics, are expected to add up to $15.7 trillion to the global economy by 2030, emphasizing their transformative potential.

Moreover, technology is bridging gaps in market access, allowing small and medium-sized enterprises (SMEs) to participate more effectively in international trade. According to the World Trade Organization (WTO), digital platforms can reduce trade costs by an average of 14.3%, significantly benefiting SMEs and developing countries.

However, the rapid technological advancements also present challenges, such as the digital divide, which exacerbates trade disparities between technologically advanced and less-developed regions. Approximately 3.7 billion people worldwide still lack internet access, limiting their ability to engage in the digital economy. Additionally, regulatory frameworks often struggle to keep pace with technological innovation, leading to issues such as data privacy concerns and cybersecurity threats.

Technology plays a transformative role in shaping global trade by enhancing efficiency, expanding market access, and fostering economic growth. However, the benefits are not uniformly distributed, and addressing the digital divide and regulatory challenges is essential for ensuring inclusive and sustainable trade development.

Digital infrastructure has facilitated the expansion of global e-commerce, enabling businesses to reach international markets more efficiently. For example, platforms like Alibaba and Amazon have empowered sellers from various regions to access a global customer base. The rise in e-commerce has significantly contributed to global trade growth. As of 2021, e-commerce sales amounted to approximately $4.9 trillion globally, expected to reach $7.4 trillion by 2025.

Blockchain technology enhances transparency and security in supply chains. It provides immutable records of transactions, reducing fraud and ensuring the authenticity of traded goods. Companies like IBM and Maersk have implemented blockchain-based platforms to streamline their supply chain operations. Blockchain reduces administrative costs and delays associated with cross-border trade by automating and securing transactions. The global blockchain market in supply chain management is anticipated to grow from $253 million in 2020 to $3.31 billion by 2027, reflecting its increasing adoption.

AI-driven predictive analytics enable businesses to forecast demand, optimize inventory levels, and improve decision-making processes. For instance, companies like Amazon use AI to anticipate consumer demand and manage their supply chains more efficiently. AI-powered automation in manufacturing and logistics has enhanced productivity and reduced operational costs. The use of AI in logistics alone is projected to save the industry up to $1.3 trillion annually by 2025.

IoT devices provide real-time tracking and monitoring of goods in transit, improving logistics efficiency and reducing losses. The global IoT in logistics market was valued at $34.4 billion in 2020 and is expected to reach $114.1 billion by 2030. IoT generates vast amounts of data that can be analyzed to optimize supply chain operations and enhance decision-making. This data-driven approach helps companies reduce costs and improve service levels.

The digital divide remains a significant challenge, with approximately 3.7 billion people lacking internet access. This disparity limits the participation of less-developed regions in the digital economy and global trade. Addressing the digital divide requires investment in digital infrastructure, education, and capacity building. International organizations and governments must collaborate to ensure equitable access to technology.

The rapid adoption of technology in global trade raises concerns about data privacy and cybersecurity. Regulations such as the General Data Protection Regulation (GDPR) in the European Union aim to address these issues but can create compliance challenges for businesses. Regulatory frameworks often struggle to keep pace with technological innovation, leading to gaps and uncertainties. Policymakers must develop flexible and adaptive regulations to support technological advancements while protecting stakeholders.

The incorporation of digital infrastructure, blockchain, AI, and IoT has markedly improved the efficiency of global trade. These technological advancements streamline supply chains, lower costs, and enhance transaction security. Businesses that adopt these technologies report higher productivity, reduced operational expenses, and increased customer satisfaction.

Technology has also democratized market access, enabling SMEs and businesses in developing countries to engage more actively in global trade. E-commerce platforms and digital trade facilitation lower barriers to entry, creating new market opportunities. Nations that invest in digital infrastructure and technology education witness increased trade volumes and economic growth.

However, the digital divide remains a significant obstacle to inclusive global trade. Regions lacking access to digital infrastructure and technology education fall behind in economic development and trade participation. Overcoming this divide requires coordinated efforts from governments, international organizations, and the private sector to invest in digital infrastructure and skill development.

Regulation plays a critical role in managing the risks associated with technological advancements in global trade. Policymakers must strike a balance between fostering innovation and ensuring data privacy, security, and ethical standards. Adaptive regulatory frameworks that evolve with technological advancements can support sustainable growth in global trade while protecting both consumers and businesses.

In conclusion, while technology has undeniably transformed global trade, realizing its full potential requires concerted efforts to bridge the digital divide and develop flexible regulatory policies. By fostering an inclusive and well-regulated digital economy, nations can harness the benefits of technological advancements to drive sustainable economic growth, enhance global trade efficiency, and create new opportunities for businesses and consumers worldwide.

REFERENCES

1. World Trade Organization (WTO). (2021). **E-commerce in Developing Countries**. https://www.wto.org/english/res_e/booksp_e/ecom_brochure_e.pdf
2. International Trade Centre (ITC). (2020). **SME Competitiveness Outlook 2020: COVID-19: The Great Lockdown and its Impact on Small Business**. https://intracen.org/resources/publications/sme-competitiveness-outlook-2020-covid-19-the-great-lockdown-and-its-impact
3. International Monetary Fund (IMF). (2021). **World Economic Outlook, April 2021: Managing Divergent Recoveries**. https://www.imf.org/en/Publications/WEO/Issues/2021/03/23/world-economic-outlook-april-2021
4. McKinsey Global Institute. (2021). **The Future of Work after COVID-19**. https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-after-covid-19
5. United Nations Conference on Trade and Development (UNCTAD). (2021). **Digital Economy Report 2021: Cross-border Data Flows and Development**. https://unctad.org/system/files/official-document/der2021_en.pdf
6. IBM. (2020). **The Benefits of Blockchain to the Supply Chain**. https://www.ibm.com/topics/benefits-of-blockchain
7. Accenture. (2020). **Artificial Intelligence: The Future of Supply Chain**. https://www.accenture.com/us-en/insights/artificial-intelligence/reinventing-the-supply-chain
8. Cisco Systems. (2020). **The Internet of Things (IoT) and Global Supply Chains**. https://www.cisco.com/c/dam/en_us/about/ac79/docs/innov/IoT_IBSG_0411FINAL.pdf
9. World Bank. (2020). **World Development Report 2020: Trading for Development in the Age of Global Value Chains**. https://www.worldbank.org/en/publication/wdr2020
10. Organisation for Economic Co-operation and Development (OECD). (2021). **Regulatory Approaches to Online Safety: An Overview of the Landscape and Emerging Issues**. https://www.oecd-ilibrary.org/sites/5b28b589-en/1/3/2/index.html?itemId=/content/publication/5b28b589-en&_csp_=7506e83eaf4bab05d9f2d7314103c5fa&itemIGO=oecd&itemContentType=book