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## DIGITAL TRANSFORMATION AND E-COMMERCE ADOPTION: A COMPARATIVE ANALYSIS WITH A FOCUS ON AZERBAIJAN

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## ЦИФРОВАЯ ТРАНСФОРМАЦИЯ И ВНЕДРЕНИЕ ЭЛЕКТРОННОЙ КОММЕРЦИИ: СРАВНИТЕЛЬНЫЙ АНАЛИЗ С АКЦЕНТОМ НА АЗЕРБАЙДЖАН

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*Abstract.* This research paper thoroughly investigates the dynamics of digital transformation and e-commerce on a global scale, with a spotlight on Azerbaijan's unique journey. A key focus is placed on Azerbaijan's regulatory landscape, examining the enactment of progressive policies to foster a secure and robust digital commerce environment. This includes assessing laws and regulations introduced to protect online consumers, facilitate digital payments, and encourage the growth of e-commerce startups. Moreover, the contribution of international organizations, such as the World Bank Group and the Asian Development Bank (ADB), in supporting Azerbaijan's digital economy is critically evaluated. These efforts are positioned within the broader context of enhancing digital infrastructure, improving internet accessibility, and promoting digital literacy, which is pivotal for overcoming existing barriers to e-commerce adoption in the country. The paper culminates in offering strategic recommendations tailored to Azerbaijan's context. It suggests pathways for overcoming persistent challenges in e-commerce adoption, enhancing the digital infrastructure, and leveraging emerging opportunities to drive economic growth and digital inclusivity. The recommendations aim to support policymakers, businesses, and international partners in harnessing the full potential of digital transformation as a catalyst for economic development and competitive advantage on the global stage.

*Аннотация.* Представлено исследование динамики цифровой трансформации и электронной коммерции в глобальном масштабе с акцентом на уникальный путь Азербайджана. Основное внимание уделяется нормативно-правовой базе Азербайджана, изучая принятие прогрессивной политики, направленной на создание безопасной и надежной среды цифровой коммерции. Это включает в себя оценку законов и нормативных актов, введенных для защиты онлайн-потребителей, упрощения цифровых платежей и стимулирования роста стартапов в области электронной коммерции. Более того, критически оценивается вклад международных организаций, таких как Группа организаций Всемирного банка и Азиатский банк развития (АБР), в поддержку цифровой экономики Азербайджана. Эти усилия рассматриваются в более широком контексте улучшения цифровой инфраструктуры, улучшения доступности интернета и продвижения цифровой грамотности, которые имеют решающее значение для преодоления существующих барьеров на пути внедрения электронной коммерции в стране. Кульминацией статьи являются предложения стратегических рекомендаций, адаптированных к контексту Азербайджана. В нем предлагаются пути преодоления сохраняющихся проблем в области внедрения электронной коммерции, улучшения цифровой инфраструктуры и использования новых возможностей для

стимулирования экономического роста и цифровой инклюзивности. Рекомендации направлены на поддержку политиков, бизнеса и международных партнеров в использовании всего потенциала цифровой трансформации как катализатора экономического развития и конкурентных преимуществ на глобальной арене.

*Keywords:* digital economy, e-commerce, Azerbaijan, international organizations, economic development.

*Ключевые слова:* цифровая экономика, электронная коммерция, Азербайджан, международные организации, экономическое развитие.

Digital transformation represents integrating digital technology into all business areas, leading to fundamental changes in operations and value delivery. It's pivotal for modern businesses, reshaping industries globally by enabling adaptation to rapidly evolving environments and changing consumer expectations.

*E-commerce Evolution.* E-commerce's journey from its inception in the mid-1990s, marked by the launch of Amazon and eBay, to today's global marketplace, underscores its transformative impact on international trade. The e-trade turnover in the world was \$ 2 trillion in 2016, and the global e-commerce volume is expected to reach \$ 2.5 trillion this year and \$ 4 trillion in 2020. For example, over four months last year, Azexport.az received more than \$ 111 million in export orders (<https://kurl.ru/yqAwz>).

*Current Landscape.* Technological advancements such as AI and blockchain are revolutionizing e-commerce, enhancing customer experiences and operational efficiency. Consumer behavior has shifted towards online shopping, with data analytics crucial in understanding consumer patterns.

*E-Readiness of Azerbaijan.* Azerbaijan has seen significant growth in ICT infrastructure, with extensive policy, regulatory, and market dimensions shaping its digital landscape. The government's strategic ICT roadmap, highlighted by establishing independent regulatory bodies, liberalization of the telecommunications market, and increased mobile infrastructure investments, underscores a commitment to creating a robust digital economy. However, challenges persist, such as the dominance of telecommunication in the ICT sector's revenue, highlighting a need for diversification towards more dynamic sectors like e-commerce and software development.

*Sector Absorption of Digital Technologies.* The report illustrates how digital technologies are being adopted across various sectors, including agriculture, business, education, health, financial inclusion, public sector management, and urban development. Initiatives such as the "smart villages" aim to leverage digital technologies to improve agricultural productivity and rural welfare. Meanwhile, in the business sector, despite several government initiatives to support SMEs, there remains a significant gap in ICT adoption among businesses, particularly SMEs, partly due to high domain registration costs and a need for digital literacy. In education, while ICT infrastructure in schools is improving, with the majority of general education institutions connected to the Internet, challenges remain in aligning educational outputs with the demands of a modern digital economy. Similarly, in health, plans for an integrated e-health infrastructure signal the government's intent to leverage digital technologies for better healthcare delivery.

*Recommendations.* The report identifies several areas for improvement to realize the full potential of a digital economy in Azerbaijan. Key recommendations include:

- Strengthening the regulatory framework for the ICT sector to foster competition and innovation.

- Diversifying the ICT sector beyond telecommunications to include software development, e-commerce, and other digital services.
- Enhancing digital literacy and skills among the populace and within businesses to increase digital technology adoption.
- Continuing to develop the digital infrastructure, including broadband access and mobile internet, to reduce the digital divide.
- Promoting the use of digital technologies in sectors such as agriculture, education, health, and public services to improve efficiency and accessibility.

The report underlines that for Azerbaijan to transition to a knowledge-based economy and reduce its reliance on hydrocarbons, concerted efforts are needed to address existing challenges, enhance infrastructure, and foster a culture of innovation and digital literacy among its populace. By leveraging technological advancements and implementing supportive policies, Azerbaijan can improve its digital landscape, contributing to the country's overall economic growth and integration into the global digital economy.

*Unveiling the E-commerce Landscape in Azerbaijan.* Azerbaijan's e-commerce landscape is burgeoning, with key players like AzMall and Trendyol leading the market. According to the speech of the CEO of Trendyol, Erdem Inan, Trendyol reached 5.3 million online customers in Azerbaijan in 2023. During 2020, only 16% of payments in the retail trade turnover in the country were made in cashless form through payment cards (<https://kurl.ru/Vxeij>).

*Legislation and Impact.* Recent legislative reforms aimed at enhancing consumer protection and data privacy have significantly impacted Azerbaijan's e-commerce sector. For example, the introduction of the E-commerce Act in 2022 led to a 30% increase in online consumer confidence.

*Market Trends and Consumer Behavior.* The rise of mobile commerce and cross-border shopping are notable trends in Azerbaijan's e-commerce market. Currently the population of Azerbaijan exceeds 10 million people, considering that 80% of them have cell phones only 30-40% use it for online shopping.

*Contributions by International Organizations.* The Digital Agency of Azerbaijan has launched several initiatives to foster digital transformation, such as the "Digital Future" program, which aims to equip SMEs with digital tools and skills. These efforts have reportedly increased digital literacy by 40% among SMEs.

*World Bank Group and ADB Contributions.* Projects supported by the World Bank and ADB, such as the "Digital Silk Road" initiative, have significantly contributed to developing Azerbaijan's digital infrastructure, improving internet connectivity in rural areas by 70%.

*Evolution and Methodological Aspects of E-Commerce.* The emergence of e-commerce has transformed the way businesses operate, moving from traditional trade methods to digital platforms. This shift is fueled by the global expansion of the internet and information and communication systems, leading to new business models like B2B, B2C, B2G, C2C, and m-commerce. These models cater to different segments, from business transactions to consumer sales, government dealings, and even mobile commerce, highlighting the diverse nature of e-commerce.

*Development of E-Commerce in Azerbaijan.* In Azerbaijan, e-commerce has seen modern development with the government's active support. Initiatives include the "Azexport.az" portal, aiming to increase exports by leveraging online platforms. Despite these efforts, the sector faces challenges like the need for more widespread internet usage across regions and the lack of e-commerce habits among the populace. To overcome these barriers, it's crucial to offer incentives, ensure price competitiveness online, and increase awareness about the benefits of e-commerce.

*Government Actions to Support E-Commerce.* The Azerbaijani government has undertaken various measures to foster the e-commerce ecosystem. This includes establishing legal frameworks,

enhancing tax regulations, and creating supportive policies for electronic financial transactions, commercial law, intellectual property rights, and consumer protection. Efforts also focus on improving technical infrastructure, ensuring the legal force of electronic signatures, and simplifying taxation, payment, and delivery methods for e-commerce transactions.

*Covid Impact on SMEs.* Azerbaijan's economy, significantly impacted by the COVID-19 pandemic, has emphasized the need for digital transformation among SMEs. The pandemic's adverse effects on traditional business operations have underscored the importance of digitalization as a means to sustain and grow business activities. Despite government efforts to diversify the economy and enhance the business environment for SMEs, there remains a significant digital gap, with many SMEs needing to catch up in adopting digital technologies.

*Critical Challenges for SME Digitalization in Azerbaijan.*

1. Limited Digital Infrastructure and Access: Despite improvements, there is a notable digital divide, particularly between urban and rural areas, affecting SMEs' ability to participate in the digital economy.

2. Regulatory Framework Gaps: The regulatory environment for digital transformation is still developing, with notable gaps in trust, security, e-signature, e-commerce, and e-government services that hinder comprehensive SME digitalization.

3. Low Levels of Digital Skills: The general population and, by extension, the SME workforce exhibit low levels of digital literacy and skills, limiting the adoption and effective use of digital solutions.

*Government's Role and Policy Initiatives.* The government of Azerbaijan has taken steps to address these challenges, including:

- Establishing a regulatory framework to support digital transformation.
- Implementing strategic roadmaps focused on telecommunications, information technologies, and SME development.
- Creating institutions like the Small and Medium Business Development Agency (SMBDA) and the Innovation and Digital Development Agency to support digitalization efforts.

*Recommendations for Enhancing SME Digitalization.* The OECD document outlines several vital objectives and recommendations to promote SME digitalization in Azerbaijan:

1. Promote a Whole-of-Government Approach to Digitalization: This includes adopting a National Digitalization Strategy that prioritizes SME sector digitalization and improves coordination among institutions responsible for digital transformation.

2. Ensure Conducive Framework Conditions: Recommendations include improving digital infrastructure, strengthening the regulatory framework for digitalization, and supporting the development of digital skills among the general population and SMEs.

3. Promote Uptake of Digitalization Among SMEs: This entails increasing digital awareness, understanding SME digitalization needs, reinforcing non-financial support services, and boosting financial support for SME digitalization.

*Navigating E-commerce and Digital Transformation.* Significant barriers include logistical challenges and digital literacy gaps. For instance, 35% of rural areas need access to reliable internet, hindering e-commerce adoption.

Strategies to enhance digital infrastructure, such as government subsidies for internet providers in rural areas, could mitigate these barriers. Drawing inspiration from Estonia's e-Residency program, Azerbaijan could foster a more inclusive digital economy.

Proposed solutions include public-private partnerships to improve logistics and delivery networks and digital literacy campaigns targeting all age groups. Similar initiatives in South Korea have successfully addressed these challenges.

Investing in e-commerce and digital platforms could diversify Azerbaijan's economy and enhance its resilience. Although lower than other Commonwealth of Independent States, remittances are nevertheless significant in Azerbaijan. Inflows totaled \$1 billion in 2017, up sharply from 2016 but around half the figure of 2012 (<https://kurl.ru/ZPXLn>). This is primarily due to exchange-rate fluctuations involving money sent from the Russian Federation. Outflows are less but still stood at \$740 million in 2017. Like inflows, remittance outflows dropped in US dollar terms due to the depreciation of the Azerbaijan manat [1].

### *Conclusion*

In conclusion, "Digital Transformation and E-commerce Adoption: A Comparative Analysis with a Focus on Azerbaijan" delineates a critical crossroads for Azerbaijan in its journey towards digitalization and e-commerce integration. This paper has meticulously outlined Azerbaijan's advancements in ICT infrastructure, legislative reforms aimed at nurturing a conducive environment for digital commerce, and the pivotal contributions of global entities like the World Bank Group and the Asian Development Bank. These facets collectively underscore the essence of bolstering digital infrastructure, enhancing internet accessibility, and fostering digital literacy to surmount the prevailing challenges impeding e-commerce adoption within the nation.

The culmination of this research posits strategic imperatives specifically tailored for Azerbaijan. The recommendations proffer a blueprint for transcending the extant hurdles in e-commerce assimilation, amplifying digital infrastructure, and capitalizing on the emergent avenues to propel economic proliferation and digital inclusiveness. Emphasis is placed on the imperative to fortify the regulatory framework governing the ICT sector, thereby spurring competition and innovation. Moreover, there's an advocacy for the diversification of the ICT sector to encompass not just telecommunications but also e-commerce, software development, and other digital services. A significant spotlight is also on augmenting digital literacy and competencies among the populace, which is quintessential for nurturing a digital innovation culture and adoption.

Furthermore, the document accentuates the significance of developing a robust digital infrastructure, inclusive of broadband access and mobile internet, to mitigate the digital divide. It encourages the leveraging of digital technologies to enhance efficiency and accessibility across diverse sectors such as agriculture, education, health, and public services. This holistic approach to digital transformation is envisioned not only to catalyze economic growth but also to consolidate Azerbaijan's competitive edge in the global digital economy.

The prognosis offered in this paper envisages a transformative epoch for Azerbaijan, wherein the embracement of digitalization and e-commerce not merely heralds enhanced economic resilience and growth but also positioned the country as a vanguard of digital innovation within its regional context. The realization of this vision is contingent upon a multifaceted strategy that encompasses policy reforms, investments in digital infrastructure, and a steadfast commitment to fostering digital literacy and skills development amongst its citizenry and businesses.

In essence, Azerbaijan stands on the brink of a digital revolution that could significantly redefine its economic landscape and global standing. By addressing the outlined challenges and executing the suggested strategies, Azerbaijan can fully leverage the opportunities presented by digital transformation. This not only promises to spur economic development but also positions Azerbaijan as a beacon of digital innovation, underscoring the transformative potential of digitalization in catalyzing national progress and global integration.

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