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TECHNOLOGICAL AND INNOVATION GROWTH TRENDS IN THE ECONOMY

https://doi.org/10.5281/zenodo.20532718

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Abstract: *This article systematically investigates the modern trends of technological and innovation growth under the conditions of the global economy's digital transformation. In a phase where the efficiency of traditional resources in ensuring economic growth is declining, the integration of artificial intelligence, Big Data, and automated digital technologies into economic sectors is analyzed as a primary driver of macroeconomic stability. Throughout the study, the role of technological progress in increasing production productivity and reducing transaction costs is comparatively examined, while the negative consequences of the "digital divide" are highlighted. The paper develops scientific and practical proposals as well as recommendations for transitioning the economies of developing nations into an innovative model and accelerating the pace of technological growth.*

Keywords: *Innovative economy, technological trends, digital transformation, artificial intelligence, economic growth, production productivity, digital ecosystem, transaction costs.*

INTRODUCTION

At the current stage of the twenty-first century, the global economy is undergoing a fundamental turning point and a period of digital transformation. In an environment where traditional factors of production (capital, labor, and land) are reaching the limits of their extensive growth, technological progress and innovation have become the primary drivers for ensuring macroeconomic stability. Today, the sustainable growth rate of Gross Domestic Product (GDP) is directly determined by the extent to which countries have developed their digital ecosystems and how effectively they have integrated modern technologies into economic sectors.

In recent years, several leading trends of technological growth have become prominently visible in the global economy. Specifically, the implementation of artificial intelligence (AI) models in production and service sectors has enhanced labor productivity, enabling the optimization of business processes. Concurrently, the expansion of financial technologies (FinTech) and the platform economy has accelerated trans-online operations, sharply reducing

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transaction costs. However, the disproportionate development of these technological processes leads to digital divides in international economic relations and a varied formation of competitiveness levels among countries.

The relevance of this research work is explained by the necessity to systematically analyze innovative growth trends in the modern economy, evaluate the impact mechanisms of technological progress on economic indicators, and identify optimal innovation strategies for the national economy.

Research Methodology.

In order to identify the trends of technological and innovation growth in the economy and to systematically evaluate their impact on macroeconomic indicators, a complex of complementary scientific and methodological approaches was utilized in this study. The methodological foundation of the research comprises systematic analysis, comparative-logical assessment, statistical grouping, as well as inductive and deductive reasoning methods. To objectively analyze the dynamics of innovative growth, official reports and statistical data within the framework of the "Global Innovation Index" from the World Bank, the International Monetary Fund (IMF), and the World Intellectual Property Organization (WIPO) were obtained. Based on these data, the technological transformation strategies of developed and developing countries and their impact on Gross Domestic Product (GDP) growth rates were comparatively analyzed. Drawing from general global technological trends, the specific regularities of digitalizing economic sectors were studied. The application of such a methodological combination serves to ensure the objectivity, reliability, and scientific excellence of the research results.

Literature Review.

The fundamental investigation of the role of technological progress and innovation in economic growth is reflected in the scientific works of prominent economists. Specifically, Joseph Schumpeter, the founder of the theory of innovative development, evaluated the displacement of old economic systems by new technologies through his concept of "creative destruction" as the primary driving force of economic dynamics. On a macroeconomic level, Robert Solow mathematically demonstrated in his econometric growth model that a significant portion of Gross Domestic Product growth occurs not due to the increase in the volume of labor and capital, but precisely due to technological progress (the Solow residual).

In the context of modern digital transformation, Paul Romer, who studied the trends of innovation, presents technological knowledge and ideas as internal and infinitely growing resources of the economy in his endogenous growth theory. Today, researchers such as Klaus Schwab analyze the potential of artificial intelligence and automation technologies to exponentially increase economic

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efficiency within the framework of the "Fourth Industrial Revolution" (Industry 4.0). Nevertheless, comprehensive monographic views regarding the level of technological integration among countries in the global digital ecosystem and the impact mechanisms of innovations on the real sector are still in the formation stage, which necessitates further systematic research in this direction.

Analysis and Results.

An analysis of technological and innovation growth trends in the global economy demonstrates that, in recent years, the economic growth rates of the world's countries have become directly dependent on their innovative potential and digital infrastructure. According to data from the Global Innovation Index (GII) published by the World Intellectual Property Organization (WIPO), countries such as Switzerland, the United States, Sweden, and Singapore have maintained their leadership in innovation and technology transfer for many years[80]. The fact that the share of high-tech sectors and intellectual services in the Gross Dollar Product (GDP) of these countries averages 65-70 percent practically proves the high efficiency of the innovative economy model.

The most critical and rapidly developing direction of technological growth is the integration of artificial intelligence (AI) models into production and service sectors. According to reports from international consulting firms, due to the widespread implementation of AI technologies in the global economy, global GDP is projected to increase by an additional 15.7 trillion dollars or 14 percent by 2030[81]. This growth will primarily stem from an exponential increase in labor productivity due to automation (approximately 6.6 trillion dollars) and an increase in consumer demand for personalized high-tech products (9.1 trillion dollars).

Digital financial technologies (FinTech) are also exerting a significant influence on economic growth trends. The transformation of the traditional banking and financial system into digital platforms, the implementation of blockchain technologies, and the expansion of the volume of e-commerce have reduced transaction costs in the economy by an average of 25-30 percent. This, in turn, has accelerated the velocity of capital circulation and expanded the opportunities for small and medium-sized enterprises (SMEs) to access financial resources.

However, analyses confirm that the problem of the "digital divide" and global imbalance is still deepening on an international scale. While developed countries allocate an average of 2.5-3.5 percent of their GDP to research and development (R&D), this indicator does not exceed 0.2-0.5 percent in developing countries[82]. This prevents all countries from benefiting equally from the fruits of

[80] WIPO (2025). Global Innovation Index Report.

[81] PwC Research (2024). Sizing the prize: What's the real value of AI for your business and how can you capitalise?

[82] World Bank Data (2025). Research and development expenditure (% of GDP).

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technological progress and leads to a polarization of competitiveness levels in the international division of labor.

The results indicate that in order to ensure the sustainable growth of the national economy and withstand global competition, merely importing foreign technologies is insufficient. Strategically, it is essential to develop domestic innovative infrastructure, increase the volume of investments directed toward human capital, and improve the system of legal and institutional support for the digitalization of the economy.

Conclusion and Recommendations.

The analyses conducted within the framework of this study indicate that modern economic growth rates are determined not by the volume of resources, but by the extent to which innovative and technological trends are integrated into economic sectors. The rapid influx of artificial intelligence, big data analytics, and financial technologies plays a fundamental role in ensuring macroeconomic stability by increasing labor productivity, reducing transaction costs, and creating new digital ecosystems. However, the persistence of digital divides and imbalances among countries on a global scale necessitates the implementation of novel economic strategies for developing nations. In order to eliminate these problems and achieve technological stability in the national economy, it is primary for the government to radically improve the financing mechanisms for innovative infrastructure and research and development (R&D) activities. Furthermore, it is of strategic importance to train highly qualified personnel capable of meeting the demands of the digital economy, expand the scope of investments directed toward human capital, and establish a favorable legal and institutional environment for business entities to adopt modern technologies. Only by moving away from the practice of merely importing technologies and instead stimulating domestic innovative potential will it be possible to enhance the level of global competitiveness and guarantee the long-term sustainable growth rates of the economy.

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