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THE PLACE OF INNOVATIONS IN THE MODERN CONCEPT OF ECONOMIC DEVELOPMENT

Summary. Innovation occupies a central position in the modern concept of economic development by driving productivity, industrial competitiveness, and long-term economic growth. In contemporary economic theory, technological advancements and innovative processes determine the efficiency of production, resource allocation, and market expansion. Governments and enterprises integrate innovation-driven strategies to enhance industrial performance, optimize supply chains, and improve product quality, thereby increasing economic output and global competitiveness. Knowledge-based economies prioritize research and development (R&D), fostering technological progress that leads to industrial diversification and enhanced economic resilience. Digital transformation, automation, artificial intelligence, and biotechnology redefine traditional production models, reducing operational costs and improving efficiency across various sectors. Countries that invest in innovation infrastructure, education, and intellectual property protection achieve sustained economic progress and higher living standards. Innovation also influences macroeconomic policies, as governments implement fiscal and monetary measures to support entrepreneurship, technological startups, and knowledge-intensive industries. The shift towards sustainable development underscores the importance of green technologies, renewable energy, and resource-efficient solutions in addressing both environmental and economic challenges. Policies promoting sustainability encourage investment in eco-friendly innovations, reinforcing long-term economic stability. The global economy increasingly relies on innovation as a strategic factor for maintaining competitiveness. Nations that fail to integrate innovation into their economic models experience stagnation, diminishing their influence in international markets. It is impossible to talk about a sustainable and competitive economy of a state without implementing and promoting modern global innovations. Therefore, the dynamic development and application of innovations creates conditions for achieving effective results.

Keywords: innovative technology, sustainable economy, development, technological progress, stability, industrial modernization.

Introduction. Innovation is a fundamental driver of economic development, shaping the competitiveness of nations, industries, and enterprises. The modern economic paradigm emphasizes technological progress, digital transformation, and research-driven advancements as core elements in achieving sustainable growth. Economic theories have long recognized the role of innovation in productivity enhancement, structural transformation, and the creation of new market opportunities. The integration of scientific knowledge, industrial application, and entrepreneurial activity determines the pace and scale of economic progress.

The knowledge-based economy relies on continuous advancements in technology, automation, and artificial intelligence, which optimize resource allocation, reduce production costs, and enhance output quality. Governments and private sector entities allocate substantial resources to research and development (R&D), fostering an environment where innovation stimulates industrial modernization, market expansion, and job creation. The economic significance of innovation extends beyond technological breakthroughs, influencing institutional frameworks, business models, and policy strategies. Countries that prioritize innovation-driven policies achieve higher levels of economic diversification, global competitiveness, and long-term resilience to economic fluctuations.

Empirical evidence demonstrates that economies with robust innovation ecosystems experience accelerated GDP growth, increased labor productivity, and enhanced economic efficiency. Innovation clusters, supported by public-private partnerships and investment in human capital, strengthen industrial competitiveness and technological leadership. Furthermore, the digital economy, characterized by advancements in information and communication technologies (ICT), has redefined economic structures, enabling data-driven decision-making and global connectivity.

Innovation is a transformative force in contemporary economic development, shaping industrial landscapes and redefining economic policies. Understanding its role in fostering economic progress necessitates an examination of its impact on productivity, market dynamics, and institutional evolution. As global economies undergo rapid technological changes, innovation remains the cornerstone of sustainable economic growth and structural advancement.

The degree of development of the research problem. While numerous studies have examined innovation and economic growth separately, the integration of innovation as a fundamental concept within economic development strategies remains an evolving research area. Contemporary challenges such as digital transformation, climate change, and global competition necessitate renewed analysis of innovation's role. There

exists a growing, yet fragmented, body of literature calling for a more cohesive framework that embeds innovation at the core of economic policy discourse.

The foundational ideas of Schumpeter, J. A. (2018) emphasized the role of innovation as a key driver of “creative destruction,” positioning it as the central engine of capitalist development. This theoretical cornerstone has been substantially developed by contemporary economists, notably Aghion, P. (2021), who modernized Schumpeter’s view by analyzing how creative destruction fosters productivity and long-term growth in dynamic capitalist economies.

Romer, P. (2020; 2021) advanced this discussion through endogenous growth theory, integrating innovation and technological progress into the core of economic models. His work demonstrated that innovation is not an external force but a product of deliberate investment in research, education, and knowledge creation.

Fagerberg, J. (2016; 2017), Freeman, C. (2021), and Lundvall, B. (2020) further contributed by contextualizing innovation within institutional and policy frameworks. Their work on national innovation systems underscores the importance of systemic interactions between firms, governments, and educational institutions in fostering innovation-led development.

At the organizational level, Dosi, G. (2019) and Chesbrough, H. (2020) analyzed how firms absorb and deploy innovation, with Chesbrough introducing the concept of “open innovation” to explain how external ideas and collaboration play a crucial role in innovation strategies.

Baumol, W. (2022) reinforced the significance of market-based incentives in encouraging innovation, characterizing capitalism as an effective mechanism for sustaining technological progress. Drucker, P. (2018) similarly highlighted innovation as a function of entrepreneurship, emphasizing its application in solving real-world problems and creating value.

Nelson, R. (2019; 2020) provided an evolutionary perspective on innovation, viewing it as an adaptive process influenced by historical routines and institutional dynamics. Complementing this, Mokyr, J. (2019) and Arthur, W. (2019) explored the historical and technological evolution of innovation, offering insights into how technological creativity and complex systems evolve over time.

Mazzucato, M. (2018) challenged the conventional view by highlighting the state's entrepreneurial role in directing innovation toward public objectives. Perez, C. (2022) offered a long-wave theory linking technological revolutions with financial cycles, illustrating how periods of innovation can lead to broader economic transformations. Geroski, P. A. (2021) and Porter, M. E. (2016) also addressed the competitive and strategic dimensions of innovation, showing its impact on firm performance and national economic advantage.

Purpose and objective of the study. The purpose of the research is to explore the evolving role of innovation in shaping modern economic development models. It seeks to analyze how innovation has become a central

pillar in national and global economic strategies, driving competitiveness, productivity, and sustainable growth. Tasks of the research:

- To assess the theoretical foundations linking innovation and economic development;
- To identify key sectors where innovation has significantly influenced economic outcomes.

The concept of economic development. Economic development refers to the process by which a country or region improves the economic, political, and social well-being of its people. Unlike economic growth, which primarily focuses on the increase in a country's output of goods and services (GDP), economic development encompasses broader improvements in living standards, equality, and quality of life.

It is a multidimensional process that includes. One of the most basic components of this process is economic growth, measured through increases in gross domestic product (GDP) or national income. However, economic growth is not enough to provide a real improvement in living standards. While growth only refers to an increase in quantity, economic development is related to the quality of this growth [2, p. 18]. The sustainability and inclusiveness of growth are fundamental criteria for development. Sustainable economic growth not only meets the needs of current generations, but also creates the necessary conditions for future generations to meet these needs without depleting resources. This includes elements such as the adoption of nature and environment-friendly production processes and the efficient use of natural resources. In addition, inclusive growth ensures that all segments of society benefit equally from economic processes. This requires the reduction of income inequality and the provision of broader social welfare. The difference between economic growth and development is that growth mostly focuses on a quantitative increase, while development also takes into account qualitative criteria such as quality, equality and sustainability. In this context, economic development is not measured only by the increase in GDP, but it should also be remembered that this increase should be spread to large segments of society and should be achieved without disturbing the environmental balance [20, p. 106]. Therefore, the success of development is directly related to how growth is achieved.

Human development is a dimension of economic development that is not limited to material growth, but aims to improve the quality of life of individuals and increase social welfare. This perspective emphasizes the development of health, education and general quality of life, thus ensuring that economic development adopts a human-centered approach. Human development is directly related not only to economic growth, but also to the health and education levels of societies. In this context, indicators such as life expectancy, literacy rates, access to health services and basic education are of critical importance in measuring the human dimension of development [1, p. 21]. The Human Development Index (HDI), one of the primary indicators of human development, measures the economic development of a country, while also evaluating factors such as the

education levels of its people, life expectancy and per capita income. By combining these indicators, the HDI provides a measure that reflects not only the quantitative but also the qualitative dimensions of economic growth and development. The HDI reveals that societies with a high quality of life are characterized not only by their wealth levels, but also by social factors such as health and education.

These models provide different perspectives to explain the dynamics of development. Linear models, dependency theory and endogenous growth theory are the most prominent theories in the discussions on economic development.

Linear models argue that economies will go through certain stages in the development process. The most well-known linear model is the growth stages theory, which is especially known for the work of Walt Rostow. According to Rostow, countries go through five stages in the economic development process: traditional society, preparation stage, development stage, maturation stage and high mass consumption stage [4, p. 30]. This model suggests that each country's development journey is based on fixed and certain stages. However, critics argue that this approach is misleading in that it treats each country's development process homogeneously and ignores various cultural, social and economic factors.

Dependency theory provides an important framework for analyzing the obstacles to the development process of developing countries. This theory emphasizes that the economic growth of developing countries is based on structural dependencies shaped historically by colonialism and global trade patterns. Proponents of the dependency theory state that the economic systems of these countries often become dependent on external factors due to their relations with industrialized and wealthy countries. This dependency stands out as a factor that hinders development because developing countries cannot sustain their own internal development when they depend on external forces.

Endogenous growth theory argues that the driving force of development comes from internal elements, not external factors. This theory suggests that elements such as innovation, human capital, education, research and development, and entrepreneurship are the driving forces of development. Endogenous growth theory advocates directing development not only with external investments and aid, but also using the resources within a country [13, p. 95]. In this context, strengthening the country's human capital, investments in education and research and development activities stand out as the basic elements that will ensure sustainable development in the long term.

While these three models allow us to understand different aspects of economic development, each has various advantages and limitations. The dynamics of the development process can be addressed in various ways based on the perspectives offered by each model.

The place of innovation in the modern concept of economic development:

The role of innovations in the modern economic development process stands out as a decisive element,

especially in the context of technological advances. Innovation is considered a fundamental factor in the optimization of production processes, the efficiency of supply chains and the effectiveness of service delivery mechanisms. Since the Industrial Revolution, technological developments have been one of the main engines of economic growth. Today, innovative approaches such as artificial intelligence, automation and digital transformation are of strategic importance and in terms of the sustainability of economic development. Technological advances increase labor productivity in production processes and increase the efficiency of capital use [6, p. 53]. Robotic systems and automation technologies increase quality standards by minimizing error rates in production processes. In addition, artificial intelligence-based solutions such as data analytics and machine learning prevent resource waste by increasing the accuracy of demand forecasting. Thus, while the competitiveness of enterprises increases, more efficient use of economic resources is ensured. Innovative technologies in supply chain management contribute to the optimization of logistics processes and minimize time costs. Blockchain technology reduces transaction costs by increasing transparency in supply chains and ensures supply security. However, Internet of Things (IoT) applications contribute to increased efficiency by providing the opportunity to monitor and manage production and logistics processes in real time. Digital transformation in the service sector creates significant transformations in areas such as customer relationship management, financial services and e-commerce [18, p. 166]. Cloud computing, big data analytics and online platforms accelerate service delivery processes and provide cost advantages. Technological innovations are among the fundamental dynamics of economic development and are considered to be one of the critical factors determining the economic performance of countries in the global competitive environment.

In modern economic development processes, the development of the innovation ecosystem contributes to economic growth and cross-sector diversification by encouraging entrepreneurial activities. Enterprises play a central role in the creation of innovative business models, products and services, especially in knowledge-intensive industries. Technological advances such as digitalization, artificial intelligence and big data facilitate entrepreneurs' access to new markets and increase the efficiency of business processes.

Entrepreneurship plays a critical role in the sustainability of economic development. Innovative enterprises create competitive advantage by identifying gaps in the market and transform traditional production structures [11, p. 79]. Enterprises operating in high-tech sectors in particular contribute to the development of the knowledge economy and increase global competitiveness. University-industry collaborations, R&D investments and publicly supported entrepreneurship programs directly affect the success of innovation-based enterprises.

In knowledge-intensive industries, enterprises contribute to the dynamism of the market structure

by providing economic diversification. Technology-based enterprises accelerate the transformation of the economic system by offering innovative solutions not only in certain sectors but also in various areas such as finance, healthcare, energy and logistics [1, p. 66]. The innovation ecosystem plays a critical role in the growth processes of small and medium-sized enterprises (SMEs). Thanks to their flexibility and rapid adaptation capabilities, these enterprises can respond quickly to market conditions and are among the fundamental building blocks of economic development. The interaction between entrepreneurship and innovation ensures the sustainability of economic growth and maintains its importance as a fundamental component of development models based on the knowledge economy.

One of the most important elements of increasing competitiveness in global markets is investments in research and development (R&D) activities. Countries and companies that allocate strategic resources to R&D gain competitive advantage by developing innovative products and services [2, p. 77]. Economies that increase their innovation capacity in sectors such as technology, biotechnology and green energy achieve higher growth rates on a global scale and support sustainable development. Innovation-focused economies such as the US, Germany and South Korea are constantly increasing their competitiveness in global markets thanks to their R&D investments. The US is a leader in areas such as artificial intelligence, big data and semiconductors with the intensive R&D expenditures of technology companies. Germany is developing advanced technology-based production processes with its Industry 4.0 applications and strong infrastructure in engineering [5, p. 100]. South Korea, on the other hand, is increasing its global competitiveness in sectors such as electronics, biotechnology and renewable energy thanks to its high R&D expenditures and state-supported innovation policies.

R&D activities shape competition in global markets by accelerating the commercialization of innovative products and services. The increase in the number of patents, high-tech exports and the development of a qualified workforce embody the contribution of R&D investments to economic growth. Innovative economies gain a stronger position in global supply chains thanks to their knowledge-based production structures [19, p. 80]. Investments in R&D provide global competitive advantage and support the sustainability of economic development. Innovative economies strengthen their leadership positions in global markets by continuously encouraging technological developments.

In the modern economic development process, innovation forms the cornerstone of sustainability and green growth strategies. Innovative technologies play an important role in ensuring environmental sustainability by accelerating the transition to renewable energy sources, circular economies and environmentally friendly industrial practices. In particular, concepts such as green technology, smart grids and electric mobility are transforming traditional production and consumption models and minimizing negative impacts

on the environment. Investments in renewable energy sources significantly reduce greenhouse gas emissions by reducing fossil fuel dependency [14, p. 50]. Resources such as solar energy, wind energy and hydroelectricity shape the energy production processes that form the basis of sustainable development. These innovative energy solutions ensure that economic growth occurs in an environmentally friendly manner and increase energy efficiency. In addition, electric vehicles and charging infrastructures create a sustainable transformation in the transportation sector. Electric mobility reduces carbon emissions by replacing fossil fuel vehicles and offers environmentally friendly transportation solutions.

The circular economy model ensures more efficient use of natural resources by encouraging the recycling and reuse of waste. This model reduces environmental impacts and creates economic value with innovative approaches based on waste minimization in production processes. Smart grids offer systems that increase energy efficiency and manage renewable energy sources more effectively [8, p. 79]. These technologies allow energy production, distribution and consumption to be done more sustainably. Innovation is at the heart of sustainable development and stands out as a determining factor in the implementation of green growth strategies. Innovative technologies harmonize economic development with environmentally friendly practices, ensuring long-term sustainability goals are achieved.

In modern economic development processes, innovation is based on a strong and skilled workforce. An innovative economy is shaped by the need for a qualified workforce and continuously developing human capital. The development of human capital is of critical importance to ensure the sustainability of economic growth and to gain a competitive advantage. In this context, investments in education, especially in STEM (science, technology, engineering and mathematics) fields, lay the foundations of an innovation-oriented economic structure. Investments in STEM education accelerate the adaptation of the workforce to technology and innovation and create the skill sets required for economic development. Individuals trained in STEM fields have the knowledge and skills necessary to understand technological developments and transform them into practical applications [15, p. 181]. This provides significant benefits in terms of increased productivity, efficiency and innovation. STEM education prepares individuals not only for the demands of the workforce but also for changing market conditions

For the development of an innovative economy, the quality of human capital directly affects a country's competitiveness. Technology, engineering and scientific research stand out as driving forces for economic growth. The workforce educated in these fields plays an important role in R&D activities, development of new products and improvement of existing processes. In addition, individuals trained in STEM fields are in a strategic position in achieving digital transformation and sustainable development goals. Educational institutions should collaborate with sectors to create STEM-focused curricula and equip the workforce with

the skills to produce innovative solutions [3, p. 151]. At the same time, the support of governments and the private sector for such educational programs will be an important factor in ensuring economic development in the long term. In order to promote an innovation-focused economy, the continuous development and education of human capital emerges as one of the basic elements of economic development.

The digital economy is one of the fundamental dynamics of modern economic development and is radically transforming traditional economic structures. Digital platforms, e-commerce and fintech solutions are reshaping the way of doing business and laying the foundations for a rapidly growing, data-driven economic structure. This transformation has not only accelerated economic transactions, but also increased financial participation, allowing wider audiences to be involved in economic processes [16, p. 91]. E-commerce, as one of the most important elements of the digital economy, facilitates access to global markets and offers businesses efficient sales channels. Consumers shopping on online platforms offers lower costs and a wider range of products compared to traditional retail trade. The rise of e-commerce enables innovative approaches in supply chain management and makes economic activities more flexible.

Fintech solutions, on the other hand, are reshaping the financial sector and expanding access to financial services. Innovations such as digital banking, mobile payment systems and cryptocurrencies provide access to financial services for individuals and businesses outside of traditional financial institutions. Low-cost, fast and transparent financial transactions offered by Fintech increase financial inclusion and provide wider access to economic opportunities [7, p. 144]. The proliferation of digital platforms encourages data-driven decision-making processes. Businesses can make more accurate strategic decisions by analyzing customer data through digital tools and artificial intelligence-supported systems. This process ensures more efficient use of resources and increased economic performance. The digital economy has become one of the fundamental elements of modern economic development by increasing financial inclusion and accelerating economic transactions. Digitalization has transformed traditional business models and created a faster, more flexible and more efficient economic structure.

Public policy and institutional support play an important role in encouraging innovation. Governments increase innovative capacity through policies that support R&D activities, protection of intellectual property rights, and incentives for start-ups. Investments in these supportive policies contribute to accelerating economic growth and ensuring technological progress. Public support for R&D is a critical element in increasing the innovation capacity of the private sector [17, p. 154]. Governments encourage the private sector to invest in innovative projects through tax breaks, subsidies, and grant programs that encourage research and development activities. Such incentives increase the participation of

the private sector, especially in high-risk and capital-intensive R&D projects, and enable the development of innovative technologies. In addition, the protection of intellectual property rights allows innovative entrepreneurs and companies to commercialize the technologies they develop. Intellectual property laws encourage companies to make long-term investments by trusting their R&D activities.

Government support for start-ups contributes particularly to the development of the entrepreneurial ecosystem. Innovation centers, accelerator programs, and policies that provide entrepreneurial support are critical to ensuring the growth and sustainability of new businesses. Public-private partnerships play an important role, especially in infrastructure and large-scale R&D projects [4, p. 180]. These partnerships support the private sector's ability to develop innovative solutions, while the public sector ensures that these projects benefit society. Public policy and institutional support stand out as key factors in increasing an economy's innovative capacity. The support provided by governments through policies that support R&D, intellectual property rights, and incentives for start-ups is becoming a key element of sustainable economic development.

Conclusion. Innovations play a decisive role in shaping the modern concept of economic development by driving productivity, fostering competitiveness, and ensuring long-term economic sustainability. The integration of technological advancements into economic systems enhances efficiency across industries, leading to optimized resource allocation and increased output. Innovation serves as a catalyst for economic growth by enabling businesses to develop new products, improve production processes, and expand market opportunities. The contemporary economic landscape is characterized by rapid technological transformations, necessitating continuous investment in research and development. Countries that prioritize innovation establish a strong foundation for economic resilience, minimizing dependence on traditional growth factors. The application of digital technologies, artificial intelligence, and automation increases production efficiency, reduces operational costs, and creates high-value employment opportunities. Knowledge-based economies, supported by robust innovation ecosystems, demonstrate superior economic performance and higher living standards.

Innovation not only accelerates industrial progress but also plays a fundamental role in addressing global economic challenges. The development of sustainable energy solutions, advanced manufacturing techniques, and digital financial services contributes to environmental sustainability, resource conservation, and financial inclusivity. Economic policies that support innovation-driven development facilitate structural transformations, enabling economies to remain competitive in the global market. Governments, businesses, and academic institutions play a strategic role in fostering an innovation-driven economy. Policies that encourage investment in education, technological

research, and entrepreneurship strengthen the innovation infrastructure, ensuring continuous progress. The transition toward a knowledge-intensive economy depends on the effective collaboration between public and private sectors in facilitating technological diffusion and creating favorable conditions for innovative enterprises.

The modern concept of economic development is inseparable from innovation, as technological progress determines the pace and direction of economic transformation. Economies that systematically integrate innovation into their development strategies achieve higher productivity, sustainable growth, and long-term economic stability.

References:

1. Aghion P. *The Power of Creative Destruction: Economic Upheaval and the Wealth of Nations*. Cambridge, Harvard University Press, 2021. 500 p.
2. Arthur W. *The Nature of Technology: What It Is and How It Evolves*. New York, Free Press 2019. 256 p.
3. Baumol W. *The Free-Market Innovation Machine: Analyzing the Growth Miracle of Capitalism*. Princeton, Princeton University Press, 2022. 318 p.
4. Chesbrough H. *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Boston, Harvard Business School Press, 2020. 272 p.
5. Dosi G. *Innovation, Organization and Economic Dynamics*. Cheltenham, Edward Elgar Publishing, 2019. 348 p.
6. Drucker P. *Innovation and Entrepreneurship: Practice and Principles*. New York, HarperBusiness, 2018. 288 p.
7. Fagerberg J. *Innovation, Economic Development and Policy: Selected Essays*. Cheltenham, Edward Elgar Publishing, 2017. 368 p.
8. Fagerberg J. *Innovation, Knowledge, and Economic Growth*. Oxford, Oxford University Press, 2016. 392 p.
9. Freeman C. *Technology, Growth and Development: An Induced Innovation Perspective*. Cheltenham, Edward Elgar Publishing, 2021. 301 p.
10. Geroski P. A. *Innovation, Technological Change, and Economic Growth*. Oxford, Oxford University Press, 2021. 400 p.
11. Lundvall B. *National Systems of Innovation: Toward a Theory of Innovation and Interactive Learning*. London, Anthem Press, 2020. 410 p.
12. Mazzucato M. *The Entrepreneurial State: Debunking Public vs. Private Sector Myths*. London, Penguin Books, 2018. 288 p.
13. Mokyr J. *The Lever of Riches: Technological Creativity and Economic Progress*. New York, Oxford University Press, 2019. 368 p.
14. Nelson R. *An Evolutionary Theory of Economic Change*. Cambridge, Harvard University Press, 2020. 457 p.
15. Nelson R. R. *The Sources of Economic Growth*. Cambridge, Harvard University Press, 2019. 461 p.
16. Perez C. *Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages*. Cheltenham, Edward Elgar Publishing, 2022. 232 p.
17. Porter M. E. *Competitive Advantage: Creating and Sustaining Superior Performance*. New York, Free Press. 2016.
18. Romer, P. *Endogenous Technological Change*. Chicago, University of Chicago Press, 2020. 234 p.
19. Romer P. M. *Endogenous Technological Change*. Cambridge, MIT Press, 2021. 386 p.
20. Schumpeter J. A. *The Theory of Economic Development*. Cambridge, Harvard University Press, 2018. 451 p.