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THE ROLE OF INNOVATION IN ECONOMIC TRANSFORMATION: A THEORETICAL PERSPECTIVE

Summary

Given the ongoing instability in the global economy, there is growing interest in how economic systems will evolve in the coming years—particularly in relation to technological advancement and innovation. As past experience has shown, the emergence and adoption of technological innovations often serve as key drivers of economic growth by improving productivity, creating new markets, and reshaping industries. This paper reviews various theoretical approaches to defining the concepts of "innovation" and "innovation activity," drawing on a range of academic sources and offering a retrospective analysis of significant contributions in the field. The analysis reveals that for enterprises operating in knowledge-intensive sectors, success increasingly depends on the effective implementation of comprehensive innovation management strategies. These strategies must go beyond the development of new technologies and include scientific research, skilled personnel, human capital development, and effective commercialization processes. In this context, innovation management is not a one-dimensional effort, but a complex, integrated system that requires coordination across multiple areas. A systematic and well-supported approach to innovation allows enterprises to remain competitive, adapt to changing market demands, and contribute to long-term economic development, even amid global uncertainty.

Key words: Innovation, Economic Transformation, Innovation Activities, R&D.

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Introduction

Ongoing developments in both the global economy and the economy of the Republic of Azerbaijan show that innovation, driven by rapid advancements in science and technology, plays a crucial role in shaping all aspects of societal progress and supports economic recovery. Today, the innovative model of economic development is seen as one of the most promising and suitable paths for Azerbaijan's national economy-especially in light of the current global economic challenges. According to Kondratiev's theory of long economic cycles (long waves), recovery from economic downturns and the beginning of new growth phases often stem from a breakthrough innovation that triggers further innovations across various sectors. Therefore, boosting innovation is essential for initiating sustainable economic growth [13].

In an era marked by global economic transformation and increased price fluctuations in natural resources and raw materials, modernization and breakthrough innovations have become key drivers of socio-economic development. By actively adopting innovative approaches, companies can enhance competitiveness, enter new markets, and strengthen their positions both globally and locally. Building a strong innovation infrastructure also gives firms a strategic edge-an increasingly vital factor in today's global business environment.

Conceptual and Methodological Framework of the Study

In this study, both methodological and theoretical frameworks were applied, combining system-based and theoretical analyses to outline key research directions within innovation theory, define relevant conceptual models, and explore

how they are connected. Throughout the research process, a range of methods was used, including system and behavioral approaches, comparative and grouping techniques, analogies, logical reasoning, scientific assumptions, and economic-statistical analysis.

For Azerbaijan to further advance its innovation-driven economic development model, it is essential to strengthen and expand innovation infrastructure, prioritize the advancement of innovative technologies and scientific research, and invest in training programs that build skills and expertise in technology and innovation. Enhancing collaboration between research institutions, universities, and private enterprises will also accelerate the adoption of innovations and boost the competitiveness of Azerbaijan's economy on the global stage.

Additionally, better legal frameworks related to innovation can encourage more innovation activity and attract investments into high-potential projects. The formation of strong public-private partnerships and the establishment of specialized R&D centers are also critical for turning new technologies into practical products and services.

Adopting an innovation-oriented development model not only drives economic growth but also leads to new employment opportunities, more efficient work systems, and increased productivity. Expanding the innovation ecosystem can reduce Azerbaijan's reliance on fossil fuels and support greater environmental sustainability. In summary, fostering innovation is vital for the long-term success and resilience of Azerbaijan's economy.

In today's evolving economy, where knowledge and technology are key drivers of competitiveness, innovation and creative activity are gaining even greater importance. Numerous researchers and experts emphasize that innovation plays a vital role in shaping the emerging global economic landscape. This review focuses on the theoretical foundations of how innovation and innovative efforts contribute to economic transformation.

1. The Impact of Innovation on Economic Transformation and Development

Innovation plays a vital role in driving economic development. As highlighted by Schumpeter (1934) [26], innovation serves as the core engine of economic growth by boosting labor productivity, conserving resources, and generating new products and services to meet market needs. Similarly, Porter (1990) [23] emphasized that innovation is a fundamental factor in enhancing the competitiveness of firms and entire industries. Exploring various dimensions of innovation is therefore essential to fully understand its impact on economic progress.

Innovation activities encompass the full cycle-from the creation and implementation to the spread of innovation throughout the economy. According to Drucker (1986) [6] and Nelson (1993) [20], innovation should be at the core of every company's strategic approach. These activities involve entering new markets, developing cutting-edge products and services, advancing innovative technologies, and improving production processes. To successfully carry out an innovation strategy, organizations must have skilled professionals and adequate financial resources to support such initiatives.

Economic transformation involves a shift from traditional goods production toward knowledge, cultural outputs, and advanced technologies. Freeman (1987) [10] emphasized that in such an evolving economy, innovation becomes a central force in building competitiveness. This transformation opens up fresh opportunities for innovation-not only by increasing the quantity of new products, but also by improving their quality. At the same time, it presents new challenges, as businesses must adapt to fast-changing market dynamics and conditions.

The innovation system serves as an economic framework that drives scientific and technological progress, supporting overall economic growth. According to Christensen (1997) [4], this system comprises elements such as scientific research, technological advancements, innovative business models, and more. In today's shifting economic landscape, strengthening the innovation system is essential to stimulate renewed economic development and sustain long-term progress.

Developing and implementing innovation strategies is a key step toward building a company's competitiveness. Chesbrough (2003) [3] and Mitra (2021) [17] highlight the crucial role these strategies play in fostering innovation. Effective innovation strategies should align both

economic and social goals while remaining flexible to adapt to evolving market conditions. Key priorities in this process include setting clear objectives, creating a detailed action plan, allocating the necessary resources, and identifying and managing potential risks. In today's environment, collaboration with other businesses and government institutions is also essential for advancing innovation efforts.

Lundvall (1992) [15] and Freeman & Soete (1997) [11] emphasize the importance of connecting innovation with corporate social responsibility. Innovation should not only drive economic progress but also address social challenges, enhance quality of life, and support environmental sustainability. This highlights the need for innovation to go hand in hand with ethical and moral principles in business practices, ensuring that progress benefits society as a whole.

Innovation has become a key driver of economic development for countries. As noted by Fogel (2000) [7] , innovation contributes to higher living standards, job creation, and enhanced global competitiveness. Freeman and Soete (1997) [11] also emphasized that innovation can be a crucial factor in national prosperity, particularly for developing economies. Advancing innovation requires substantial investment from both businesses and the government, along with the presence of supportive infrastructure.

Overall, the analysis confirms that innovation plays a central role in economic transformation. It enables companies to strengthen their competitiveness and develop new products and services that respond to evolving market demands. However, for innovation activities to thrive, adequate infrastructure and consistent investment are essential. Among the most promising areas for innovation today are information technologies, as well as advancements in healthcare and environmental solutions.

2. Discussions

There is a growing global focus on the role of innovation in national economic development. The Organisation for Economic Co-operation and Development (OECD) has created several frameworks for collecting and analyzing data on science, technology, and innovation. The Frascati Manual [9] defines innovation as the final outcome of innovative efforts, reflected in a new or improved product introduced to the market, a new or enhanced technological process in use, or a novel approach to delivering social services. Similarly, the Oslo Manual expands the definition of innovation to include any scientific, technological, commercial, organizational, or financial activity that leads to or is intended to lead to innovation. This manual also identifies four main types of innovation: product, process, marketing, and organizational.

Although there is no single universal definition of "innovation activity," the descriptions provided by the Frascati and Oslo Manuals are widely accepted in practice and capture the core purpose and value of innovation in the modern world. Recent research shows that companies with highly skilled staff, economic stability, and strong infrastructure are generally more successful in their innovation efforts. Foundational theoretical works in this field explore the roots of innovation, challenges in managing scientific and technological progress, and broader innovation systems.

Unlike traditional views of economic growth-focused mainly on increasing the efficiency of production factors-today's perspective recognizes innovation as a crucial element for achieving competitive advantage and meeting customer needs. In this light, greater attention should be paid to the adoption of new technologies, research and development (R&D), marketing strategies, and innovative organizational models. It's also important to remember that innovation is not an end in itself-it must be designed to address real-world social and economic challenges.

Currently, there is a pressing need to strengthen the innovation base in developed economies while creating favorable conditions to nurture innovation in developing countries. A successful innovation strategy requires not only goal setting, but also effective management of processes and resources. Moreover, building collaborative networks between businesses, government bodies, and academic institutions is essential for sharing knowledge, experiences, and technological advancements.

Innovation has thus become a vital driver of economic development, helping solve real problems and improve quality of life. A supportive environment, strategic innovation management,

and strong partnerships are all key components for success in this area. In today's competitive world, innovation activities are central to achieving sustainable growth and responding to societal needs.

Managing innovation effectively is one of the major challenges in a market economy. Van Wulfen (2011) [28] introduced the FORTH method (Full Steam Ahead, Observe & Learn, Raise Ideas, Test Ideas, Homecoming), which outlines a step-by-step framework for innovation. However, this method emphasizes the psychological development of innovators more than concrete mechanisms. Pisano (2015) [22] highlights the difficulties of aligning innovation strategies with broader organizational goals and the challenge of prioritizing among innovation projects. He advocates for tools that ensure harmony between strategy, structure, and resource allocation. Foster and Kaplan (2011) [8] argue that innovation activities are highly dependent on external environmental dynamics. They suggest adapting strategic planning methods and considering alternative approaches to innovation. Barancheev, Maslennikova, and Mishin (2014) [2] point out that innovation management is unique in that it centers on the innovation life cycle and often relies on concentrated expertise and knowledge. In this view, innovation is the result of designing new knowledge, not just new products. Various models of innovation processes have been proposed in economic literature. The "technology push" model, supported by Tugan-Baranovsky [27], Schumpeter [26], and Mensch [16], emphasizes innovation initiated by scientific discovery. On the other hand, the "market pull" model, backed by Freeman and Soete (1997) [12] and Kuzma et al. (2020) [14], highlights demand-driven innovation. Aoki and Patrick (1995) [1] proposed the integrated innovation model, while Rothwell (1994) [25] and Mowery (1995) [18] developed the coupled model, which merges both push and pull factors. Additionally, Cooper (1979) [5] and Oppenländer (1977) [21] introduced the strategic network innovation model, focusing on collaborative innovation within interconnected systems.

The "technology push" model views innovation as stemming from advancements in science and technology, while the "demand pull" model emphasizes market needs and how firms in knowledge-intensive sectors respond to consumer demands. The coupled model integrates both perspectives, recognizing the non-linear nature of innovation processes. Meanwhile, the integrated innovation model focuses on bringing together expertise from multiple disciplines to speed up the creation of new products. Despite their differences, all these models share a common emphasis on generating and utilizing new knowledge to achieve organizational goals.

The active integration of innovative technologies into production not only reduces costs but also enhances product quality and improves overall productivity. Managing innovation, however, is a complex and multifaceted task that requires a mix of strategic tools and flexible approaches. Crucially, it involves engaging the entire workforce-since innovation often emerges not just from individual talent but through collaboration and teamwork.

To foster a culture of innovation, companies should build an environment that encourages creative thinking and supports new ideas. This can be achieved by organizing regular brainstorming sessions, creating incentives for meaningful contributions, and promoting a culture that embraces experimentation and fresh perspectives. In addition, having a clear innovation strategy and an efficient project management system is key. These elements help identify high-potential projects, allocate resources effectively, troubleshoot issues, and accelerate decision-making.

Innovation management should be an ongoing and adaptive process that allows businesses to stay responsive to market shifts and emerging challenges. Moreover, innovation should not be confined to internal efforts alone; external collaborations with universities, research institutions, and business partners are equally valuable. Companies can explore various forms of cooperation such as joint ventures, project partnerships, and technology licensing.

A crucial component of innovation management is the ability to measure and assess performance. Establishing clear key performance indicators (KPIs) and evaluating project outcomes regularly enables companies to refine their

processes and make more informed decisions over time.

All of these elements are essential for companies striving to maintain competitiveness and achieve sustainable growth in an ever-evolving marketplace. Strong leadership support is also critical-management must recognize the strategic importance of innovation, commit resources, and create the right conditions for ideas to be realized. This includes fostering a workplace culture where employees feel empowered to share their ideas, work collaboratively, and contribute to a diverse and inclusive innovation environment.

In conclusion, effective innovation management requires a holistic approach. Companies that succeed in cultivating a strong innovation culture and applying comprehensive management strategies will be better positioned for long-term success. A review of academic literature confirms that firms engaged in knowledge-intensive production must adopt a wide array of innovation management methods-spanning technological, scientific, human resource, and commercial strategies. This approach enables businesses to adapt more successfully to economic transformation and secure long-term growth.

3. Conclusion

One of the pressing challenges today is to create an environment that supports innovation and to better understand how ideas can be transformed into final products. While much has been written about innovation, less attention has been given to the obstacles that hinder successful outcomes. Among the key risks in innovation activities is market risk, but external economic factors can also strongly influence the viability of innovative projects.

Although economic literature includes numerous studies on innovation and related fields, there remains a gap in methodological tools to support effective innovation management within enterprises. Similarly, while many papers focus on knowledge-intensive industries, there is no universally accepted framework for identifying and classifying these sectors. Establishing clear criteria for defining knowledge-intensive industries is essential for advancing research and practice in this area.

In the context of ongoing economic instability, industries are undergoing significant modernization, particularly through the restructuring of enterprises in knowledge-intensive sectors. This transformation demands greater efficiency in innovation activities. Productive and well-managed innovation in these enterprises is expected to play a central role in shifting the economy from a resource-based model to one driven by innovation.

However, the reorganization and modernization of knowledge-intensive firms require substantial investment, and poor planning or decision-making in innovation management can lead to costly mistakes. As such, there is a clear need to enhance the methodological tools used in managing innovation within these industries. Strengthening this framework would support more informed and effective managerial decisions. Drawing on an analysis of current innovation management practices, it is recommended to establish a unified methodological approach to guide and support innovation processes in these sectors.

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РОЛЬ ИННОВАЦИЙ В ЭКОНОМИЧЕСКОЙ ТРАНСФОРМАЦИИ: ТЕОРЕТИЧЕСКИЙ ВЗГЛЯД

Разюме

С учётом продолжающейся нестабильности в мировой экономике растёт интерес к тому, как экономические системы будут развиваться в ближайшие годы, особенно в контексте технологического прогресса и инноваций. Исторический опыт показывает, что появление и внедрение технологических инноваций часто выступает ключевым фактором экономического роста, способствуя повышению производительности, созданию новых рынков и трансформации отраслей. В данной работе рассматриваются различные теоретические подходы к определению понятий «инновация» и «инновационная деятельность», проводится ретроспективный анализ значимых научных трудов по данной теме. Анализ показывает, что для предприятий, работающих в наукоемких отраслях, успех всё чаще зависит от эффективной реализации комплексных стратегий управления инновациями. Такие стратегии должны включать не только разработку новых технологий, но и научные исследования, подготовку квалифицированных кадров, развитие человеческого капитала и эффективную коммерциализацию. В этом контексте управление инновациями представляет собой не одностороннюю задачу, а сложную и интегрированную систему, требующую координации в различных сферах. Системный и обоснованный подход к инновациям позволяет предприятиям сохранять конкурентоспособность, адаптироваться к изменяющимся условиям рынка и вносить вклад в долгосрочное экономическое развитие даже в условиях глобальной неопределённости.

Ключевые слова: Инновации, экономическая трансформация, инновационная деятельность, НИОКР (научно-исследовательские и опытно-конструкторские разработки).

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İNNOVASİYANIN İQTİSADİ TRANSFORMASİYADAKI ROLU: NƏZƏRİ PERSPEKTİV

Xülasə

Qlobal iqtisadiyyatda davam edən qeyri-sabitlik fonunda iqtisadi sistemlərin yaxın illərdə necə inkişaf edəcəyi, xüsusilə texnoloji tərəqqi və innovasiyalar kontekstində, getdikcə daha çox maraq doğurur. Tarixi təcrübə göstərir ki, texnoloji innovasiyaların meydana çıxması və tətbiqi çox vaxt iqtisadi artımın əsas amili kimi çıxış edir, bu da məhsuldarlığın artmasına, yeni bazarların formalaşmasına və sahələrin transformasiyasına səbəb olur. Bu məqalədə "innovasiya" və "innovativ fəaliyyət" anlayışlarının müxtəlif nəzəri yanaşmaları araşdırılır, bu sahədəki mühüm elmi işlərin retrospektiv təhlili aparılır. Təhlil göstərir ki, bilik-intensiv sahələrdə fəaliyyət göstərən müəssisələrin uğuru getdikcə daha çox kompleks innovasiya idarəçiliyi strategiyalarının səmərəli tətbiqindən asılıdır. Belə strategiyalar yalnız yeni texnologiyaların hazırlanmasını deyil, həm də elmi tədqiqatları, ixtisaslı kadr hazırlığını, insan kapitalının inkişafını və səmərəli kommersiyalaşdırmanı əhatə etməlidir. Bu kontekstdə innovasiya idarəçiliyi birtərəfli fəaliyyət deyil, müxtəlif sahələr arasında koordinasiya tələb edən mürəkkəb və inteqrasiya olunmuş sistemdir. Sistemli və əsaslandırılmış yanaşma müəssisələrə rəqabət qabiliyyətini qorumağa, dəyişən bazar şərtlərinə uyğunlaşmağa və qlobal qeyri-müəyyənlik şəraitində belə uzunmüddətli iqtisadi inkişafa töhfə verməyə imkan yaradır.

Açar sözlər: İnnovasiya, iqtisadi transformasiya, innovativ fəaliyyət, elmi-tədqiqat və təkmilləşdirmə (ETT).