

UDC 658.8

DOI 10.30546/JIECM.2026.01.343

THE ROLE OF STATE POLICY IN THE DEVELOPMENT OF INNOVATION FACTORS IN MODERN MANAGEMENT

Aysel Rustamzade , Matanat Ahmadova, Aybeniz Allahvediyeva

Azerbaijan Technological University

a.rustamzade@atu.edu.az

Summary. *Innovation is a key driver of economic growth, competitiveness, and sustainable development, encompassing not only the creation of new products and technologies but also organizational, managerial, and marketing innovations. Its effectiveness depends on the interaction of various factors, including financial resources, human capital, institutional capacity, government policy, legal environment, market conditions, and research infrastructure. State support, the development of innovation infrastructure, and close cooperation between science, education, and business sectors play an important role in strengthening innovation capacity and ensuring the successful commercialization of new ideas and technologies. Innovation contributes significantly to increasing productivity, reducing production costs, improving the quality of goods and services, creating new employment opportunities, and enhancing overall economic competitiveness. In the case of Azerbaijan, important steps have been taken toward building an innovation-friendly environment; however, further efforts are needed to develop innovative entrepreneurship, expand venture financing mechanisms, improve the commercialization of scientific research, and strengthen human capital. Overall, the systematic development of innovation policies and effective management of innovation processes are essential for long-term socio-economic growth, sustainable development, and the formation of strong national competitive advantages.*

Keywords: *innovation, innovation factors, innovative development, innovation policy, competitiveness, human capital, innovation infrastructure, sustainable development.*

1. INTRODUCTION. Innovation plays a key role in the formation of an innovative, knowledge-based economy. The creation and application of scientific knowledge, the adoption of technological advancements, the improvement of production processes, and the efficient use of resources all contribute to enhancing economic competitiveness. Historical scientific achievements have laid the foundation for inventions, mechanization, automation, and the widespread use of innovative technologies. In the modern era, especially since the Industrial Revolutions, scientific and technological progress has led to major structural changes in economic activity, higher productivity, and more efficient production systems. Today, innovation is considered not only a sign of scientific and technological development but also a fundamental condition for sustainable economic growth and social welfare. In the modern era, organizational agility and the continuous evaluation of management structures are essential to adapt to globalization and rapid technological progress [1-2].

In the context of globalization and digitalization, innovation strengthens the flexibility and resilience of economic systems by improving productivity, product quality, market opportunities, and competitive advantage. It also helps reduce costs, optimize management processes, and adapt to changing consumer demands. Innovation includes not only new products and technologies but also organizational, managerial, and marketing improvements that increase efficiency and support growth. At both enterprise and national levels, innovation policies, government support, research and development, and cooperation between science, education, and business are essential for building a strong innovation ecosystem. Therefore, innovation is a key instrument for sustainable and competitive economic development, and studying its.

2. LITERATURE REVIEW
2.1. Concept and Role of Innovation in Economic Development. In contemporary scientific literature, innovation is regarded as one of the main

determinants of economic development, competitiveness, and sustainable progress. It is defined not only as the creation of new products and technologies but also as a comprehensive approach to improving the efficiency and performance of enterprises and organizations. Innovation supports the modernization of production processes, improves product and service quality, ensures efficient resource use, and strengthens market positions. In today's global economy, it is a key tool for achieving competitive advantage and maintaining long-term sustainability.

2.2. Structure and Stages of the Innovation Process. Researchers explain that the innovation process includes several interconnected stages, starting from scientific research and ending with commercialization. These stages involve idea generation, project design, financing, implementation, and evaluation. In addition, modern approaches include market analysis, risk assessment, technology adoption, and performance monitoring. Effective management of each stage is crucial for achieving successful outcomes. Therefore, innovation is not only a technical process but also includes strategic planning, financial management, marketing, and human resource organization.

2.3. Organizational and Managerial Dimensions of Innovation. Scientific studies emphasize that innovation success depends on the coordination of organizational, economic, and managerial factors. The flexibility of management systems, workforce professionalism, and an innovation-oriented mindset significantly influence results. Innovation management is therefore considered a core element of enterprise strategy. It allows organizations to respond quickly to market changes, improve efficiency, and use new opportunities more effectively in a competitive environment. The implementation of innovative approaches in corporate governance structures significantly enhances decision-making agility and firm efficiency [3]. Furthermore, creating a robust marketing strategy is recognized as a key driving factor for the successful market development of innovative products [4].

2.4. Internal and External Factors Influencing Innovation. Innovation activity is shaped by internal and external factors. Internal factors include human resources, organizational structure, financial capacity, technological infrastructure, and corporate culture. Human capital, skills, creativity, and motivation systems are especially important for innovation performance. External factors include government policy, legal frameworks, market demand, competition, scientific infrastructure, foreign investment, technology transfer, and global integration. The interaction between these factors determines the overall efficiency of innovation processes.

2.5. Role of the State and Innovation Ecosystem. The literature highlights the critical role of the state in creating a favorable innovation environment. Governments support innovation through policies, tax incentives, grants, subsidies, and investment programs. Protection of intellectual property rights and a strong legal framework are also essential. In addition, industrial parks, technology incubators, and innovation funds support the commercialization of scientific results. Cooperation between science, education, and business strengthens the innovation ecosystem and improves overall system performance. Building a sustainable innovation ecosystem requires stronger integration between academia and industrial and university prosperity [5].

2.6. Economic and Social Impact of Innovation. Research confirms that innovation positively affects economic growth, productivity, competitiveness, and social welfare. It contributes to job creation, production modernization, and improved living standards. Innovation also supports environmental sustainability by improving resource efficiency and reducing energy consumption. Overall, studying innovation factors and improving their management mechanisms is a key priority in modern economic science, as it ensures sustainable development and strengthens national economic competitiveness.

3. METHODOLOGY. In contemporary scientific literature, innovation is regarded as a key determinant of economic development, competitiveness, and sustainable progress. It is defined not only as the creation of new products and technologies but also as a broad management approach aimed at improving the efficiency of enterprises and organizations. Innovation enables the modernization of production processes, enhances the quality of goods and services, improves resource utilization, and

strengthens market positions. It also helps enterprises adapt to changing market conditions, meet new consumer demands, and develop long-term strategies, serving as a major source of competitive advantage in the global economy. The evaluation and strategic structuring of innovation processes rely on advanced project management methodologies and systemic planning frameworks [6]. To mitigate risks during the selection phase, the development and application of specialized program tools for the expert assessment of innovation projects within scientific technoparks provide highly reliable quantitative results [7].

The innovation process consists of interconnected stages ranging from scientific research to commercialization, including idea generation, design, financing, implementation, and evaluation of results. Additional elements such as market research, risk assessment, technology adoption, and monitoring are also important. Effective management of all stages is essential, meaning innovation also involves strategic planning, marketing, financial management, and human resource organization. Its success depends on the coordination of organizational, economic, and managerial factors, as well as the flexibility of management systems, employee professionalism, and innovative thinking. Internal factors include human capital, organizational structure, financial resources, technological base, and corporate culture, while external factors involve government policy, legal environment, market demand, competition, technological infrastructure, foreign investment, and global integration.

The state plays a crucial role in developing innovation by creating supportive legal and institutional environments, funding research, and encouraging innovation-oriented projects through tax incentives, grants, and subsidies. Intellectual property protection and strong regulatory frameworks are also essential. Innovation ecosystems, including industrial parks, incubators, and innovation funds, support commercialization and entrepreneurship, while cooperation between science, education, and business strengthens system efficiency. Overall, innovation positively affects productivity, economic growth, competitiveness, employment, and social welfare, while also contributing to environmental sustainability and efficient resource use. Therefore, improving innovation management and studying its factors remain priority areas in modern economic research.

4. DISCUSSION. The development of innovation factors plays a crucial role in accelerating economic growth, strengthening competitiveness, and improving the efficiency of management systems. In contemporary economic conditions, innovation is not limited only to the creation of new products and technologies; it also includes the modernization of organizational structures, management approaches, and business processes. Through innovative activity, enterprises are able to optimize production processes, reduce operational costs, enhance the quality of goods and services, and respond more effectively to rapidly changing market demands. As a result, innovation becomes a fundamental driver of sustainable development at both the enterprise and national levels, while also contributing to the formation of high value-added economic sectors and the long-term modernization of the economy.

The effectiveness of innovation processes depends largely on the interaction between internal and external factors. Internal factors include the availability of financial resources, the quality of human capital, organizational capacity, and managerial competencies. At the same time, the development of innovative thinking within enterprises, the improvement of employees' professional skills, the support of creative initiatives, and the application of modern management methods significantly increase innovation efficiency. The alignment of strategic objectives with innovation activities, the effective use of information and communication technologies, and the formation of an organizational culture that encourages creativity are also key elements. External factors such as government policy, legal regulation, market conditions, scientific and technological infrastructure, investment climate, and international cooperation shape the overall innovation environment and determine the potential success of innovation-driven development.

Table 1

State Policy and Innovation Development Factors: Relative Importance Index

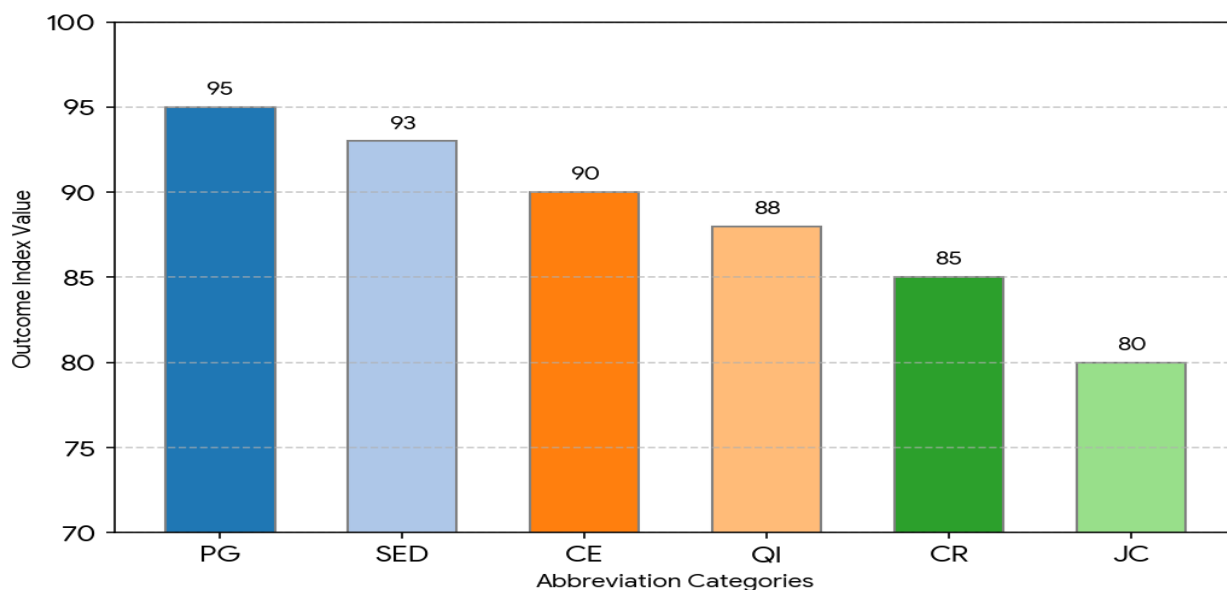
Innovation Factors	Relative Importance Index (%)
Government Policy	90
Human Capital	85
Financial Resources	80
R&D Infrastructure	78
Innovation Infrastructure	75
Market Conditions	70
International Cooperation	65

The results presented in Table clearly indicate that government policy is the most influential factor in innovation development, with a relative importance index of 90%. This highlights the central role of the state in shaping and regulating the innovation ecosystem. Human capital (85%) and financial resources (80%) also represent highly critical components, emphasizing that innovation cannot develop without skilled professionals and sufficient investment capacity. Furthermore, R&D infrastructure (78%) and innovation infrastructure (75%) demonstrate the importance of institutional and technological support systems, while market conditions (70%) and international cooperation (65%) show that innovation success is also strongly influenced by external economic integration and global collaboration.

In this regard, the role of the state is particularly significant in establishing a stable and effective innovation ecosystem. Government institutions contribute through the implementation of targeted innovation policies, provision of financial incentives, creation of legal frameworks, and development of strategic programs aimed at supporting research and technological advancement.

The strategic management of technoparks under the conditions of digital transformation is imperative for accelerating the development of the national innovative economy [8]. Recent empirical evidence underscores those infrastructural adjustments, specifically the enhancement of transport infrastructure, act as catalyst for regional development and economic integration [9]. Moreover, modern technoparks optimize their internal processes by integrating modern supply chains; thus, logistics management functions as an essential component of the national economy [10] and plays a decisive role in directly enhancing the overall operational efficiency of technoparks [11]. In the context of Automation 4.0, the technological capability of these ecosystems is further demonstrated through advanced engineering applications, such as the modeling and applications of innovative mobile industrial robots within the technology park environment [12].

Instruments such as tax reductions, grant programs, subsidies, and public investment initiatives help reduce risks associated with innovation and encourage businesses to invest in new technologies and research activities. The experience of Azerbaijan demonstrates that notable progress has been achieved in recent years through digital transformation initiatives, expansion of innovation infrastructure, establishment of technoparks, and implementation of state-led high technology programs. However, further efforts are needed to strengthen venture capital mechanisms, improve commercialization of scientific research, and enhance integration into global innovation networks.



Abbreviations:

- PG – Productivity Growth
- SED – Sustainable Economic Development
- CE – Competitiveness Enhancement
- QI – Quality Improvement
- CR – Cost Reduction
- JC – Job Creation

Figure. Impact of Innovation on Economic Performance: Innovation Outcome Index

The results shown in Figure demonstrate that innovation has the strongest impact on productivity growth (95) and sustainable economic development (93), confirming that innovation is a primary driver of long-term economic stability and efficiency. Competitiveness enhancement (90) also reflects the importance of innovation in strengthening the position of firms and economies in global markets. Additionally, improvements in product quality (88), cost reduction (85), and job creation (80) indicate that innovation contributes not only to economic efficiency but also to social development by generating employment opportunities and improving living standards.

Overall, innovation-driven development requires a coordinated and systematic approach involving government institutions, the private sector, and scientific research organizations. Strengthening human capital, expanding innovation infrastructure, and ensuring effective collaboration between academia and industry are essential conditions for achieving sustainable economic growth. In the modern era of digital transformation, technologies such as artificial intelligence, big data analytics, cloud computing, and the Internet of Things significantly expand innovation potential and reshape traditional production and management systems. Therefore, innovation policy should be continuously updated, flexible, and results-oriented in order to ensure long-term competitiveness, economic modernization, and sustainable development.

5. CONCLUSION. The conducted research demonstrates that the development of innovation factors plays a significant role in enhancing the competitiveness of the modern economy, improving management systems, and ensuring sustainable development. In the context of globalization, digitalization, and rapid technological change, innovation has become one of the main driving forces of economic growth. Today, innovation is not limited to the creation of new products and technologies; it also includes the modernization of organizational, economic, and managerial processes. Innovative approaches enable enterprises to optimize resource use, increase production efficiency, reduce costs, and respond more flexibly to market dynamics. Therefore, innovation is considered a key prerequisite for sustainable economic development and for building long-term competitive advantages in both national and global markets.

The effectiveness of innovation development is closely linked to the quality of government policy, the legal and institutional environment, access to financial resources, the level of human capital, and scientific research potential. The implementation of effective innovation policies requires the creation of a favorable business environment, expansion of financing mechanisms, and strengthening of incentives for innovative activity. In addition, the development of innovation infrastructure, investment in research and development (R&D), tax incentives, and the establishment of technology parks, innovation centers, and business incubators play an essential role in strengthening innovation capacity. At the same time, cooperation between government, business, and research institutions is critically important, as it ensures the transformation of scientific knowledge into practical economic value and accelerates the commercialization of innovative solutions through the effective functioning of the “science–education–business” model.

The development of innovation activities also contributes to productivity growth, job creation, and the emergence of high value-added industries, while enhancing competitiveness in international markets. Innovation supports not only economic efficiency but also social welfare, environmental protection, and the sustainable use of resources through the application of green technologies, digital solutions, and artificial intelligence-based systems. The experience of Azerbaijan shows that significant progress has been made in developing innovation infrastructure and digital transformation processes; however, further improvements are still required in venture financing, commercialization of research outcomes, expansion of human capital, and integration into global innovation networks. In conclusion, the systematic development of innovation factors and the strengthening of innovation policy are essential for achieving long-term sustainable economic growth, improving national competitiveness, and ensuring continuous socio-economic development.

REFERENCES

1. Shahbazov, K., Hasanov, H., & Mammadov, M. (2007). *Management*. Textbook. Baku: Adioglu Publishing House, 214 p.
2. Rustamova, H., Akhmedova, M. (2016). *Research of organizational management structures*. Bulletin of the Tajik National University. Series of socio-economic and social sciences №2/10, pp. 171-173.
3. Ahmadova, M., Gahramanova, G. (2026). *Application of innovative approaches in corporate governance*. Science Bulletin, Vol. 4, №4(97), pp. 63-68.
4. Kerimova, M., Gurbanova, X., Mammadova, A., Karimova, I., Yusubova, Sh., Hasanzade, Z., Pasha, A. (2024). *Marketing strategy as a key factor of innovative products' market development*. Journal of Law and Sustainable Development. Vol. 12, issue 7, pp. 3755-3775.
5. Huseynov, Y., Ahmadova, M., Mammadova, G. (2025). *One Belt-One Road: Logistics management for university prosperity*. IV international conference PLMO. 5 p.
<https://plmo.cyber.az/2025/papers/4.05.pdf>
6. Tagiyev, A.H., & Safarov, Q.A. (2013). *Management of Innovation Projects*. Baku: Elm Publishing House, 365 p.
7. Mammadov, J., Huseynov, E., Talibov, N., Ahmadova, T., Ganjaliyeva, G. (2018). *Development of program tool for expert assessment of innovation projects in the scientific technopark*. IFAC-PapersOnLine, vol. 51, №30, pp. 571-574.
8. Ahmadova, M. *Strategic management of technology parks in the context of digital transformation and development of an innovative economy*. Ministry of Science and Higher Education of the Republic of Kazakhstan Kyzylorda «Bolashak» University. Materials of the international scientific and practical conference. «Achievements of science and technology is the key to sustainable development». April 10, 2026, pp. 21-26.
9. Akhmedova, M., Aliyev, E. (2026). *Improving transport infrastructure and regional development*. Science Bulletin, Vol 4, №1(94), pp. 20-25.
10. Ahmadova, M., Mammadova, G., Askerov, A. (2025). *Logistics management: an integral part of the national economy*. Journal of Innovative Economics and Management №2, pp. 10-16.
11. Ahmadova, M.I., Aliyeva, G.E., Asgarov, A.T., Babazade, A.F. (2026). *The role of logistics in enhancing the efficiency of technoparks*. Journal of science. №76, Lyon, France. P. 15-19.

12. Orujova, G., Agayev, U., Genjeliyeva, G., Huseynov, Y., Ahmadova, M., Ahmadzada, A. (2025). *Modeling of the innovation construction mobile industrial robot applied in technology park*. International Conference Automatics and Informatics (ICAI). Varna, Bulgaria, pp. 75-79.

Received : 20.02.2026

Accepted for publication: 15.04.2026

