

Innovative R&D management during instability and multi-crisis

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Abstract. *Innovation management is key for modern organizations, contributing to increased efficiency and competitiveness. Research and development (R&D) is the fundamental basis of innovative development, providing the technological basis for new products. During crises, innovation management becomes critical for survival, helping organizations remain adaptive and resilient. Investments in R&D during this period contribute to the development of new products and technologies, which ensures long-term growth and competitive advantages.*

Keywords: *innovation, management, R&D, crisis.*

Introduction.

Innovation management is a critically important component of the modern strategic development of organizations, enterprises and government agencies [1]. It encompasses planning, organization, motivation and control of processes aimed at the creation, implementation and commercialization of new products, technologies, processes and business models [2]. The main goal of innovation management is to increase the efficiency, competitiveness and adaptability of organizations in a dynamic economic environment, where technological changes occur at a rapid pace, and market requirements are constantly evolving [3].

Research and development (R&D) is the fundamental basis of innovative development. They include conducting fundamental and applied scientific research, developing new technologies and prototypes, experimental testing and implementing innovations in production and service processes. R&D results not only create new knowledge, but also provide a technological basis [4] for commercial innovations and increasing productivity.

Effective integration of innovation management and R&D creates a synergistic effect: organizations are able to simultaneously generate new ideas, adapt them to market needs, optimize processes and improve the quality of products and services. In today's world, characterized by globalization, digitalization and rapid technological change, such a combination is a decisive factor in the long-term development, economic sustainability and competitiveness of enterprises.

The Main Part.

Innovation management in modern economic conditions is becoming a key factor in the survival and development of organizations in periods of instability and crises [5], [6]. The main goal of innovation management in a crisis period [7] is to ensure the adaptability, stability and competitiveness of the organization, while optimizing costs and minimizing risks [8].

Research and development (R&D) during crises acquire special importance. They provide a technological and intellectual basis [9] for the development of new products and services, as well as the adaptation of existing business processes to crisis conditions [10]. R&D results allow enterprises to quickly respond to economic, social and technological challenges, implement innovative solutions to reduce costs, increase productivity and attract new markets.

The effective combination of innovation management and R&D during crisis periods creates a synergistic effect: the organization gains the ability to simultaneously generate new knowledge [11], [12] transform it into practical solutions, adapt to an unstable environment and ensure economic stability and long-term growth. In the context of globalization, rapid technological progress and unpredictable market changes, such a combination becomes a critical factor for survival and competitive advantage.

Conclusions.

1.1. Innovation management and R&D are interrelated processes, where management determines strategic priorities for scientific developments, and R&D provides a technological and scientific basis for the implementation of innovations.

1.2. Coordination of management decisions and research and development activities allows enterprises to effectively respond to market changes, increase productivity and maintain competitive advantages.

1.3. Investments in R&D and support for innovation processes are key to the development of new products, technologies and business models that ensure long-term economic growth and sustainable development of organizations.

1.4. Effective innovation management contributes to the formation of highly qualified human capital, the development of a corporate culture of innovation and the creation of prerequisites for business scaling and the integration of the latest technologies into production and service.

1.5. The combination of innovation management and R&D provides a balance between scientific potential, market needs and economic results, which makes the organization more flexible, resilient and ready for future challenges.

2.1. Innovation management and R&D are critically important for ensuring the stability and adaptability of organizations in periods of economic instability and crises.

2.2. Coordination of strategic management and research and development activities allows for a rapid response to market changes, optimize resources and minimize risks associated with crisis situations.

2.3. Investments in R&D during instability contribute to the development of new products, technologies and business models that provide organizations with long-term economic growth and competitive advantages.

2.4. Innovation management in crisis conditions forms highly qualified human capital, strengthens the corporate culture of innovation and creates conditions for a flexible response to external challenges.

2.5. The combination of innovation management and R&D allows organizations to transform crisis threats into opportunities, increasing the efficiency, profitability, and sustainability of the business in the long term.

Discussion.

Hybrid information technologies (HIT) [13] combine classic digital systems, modern analytical platforms and artificial intelligence [14] to ensure effective management of complex processes. In the field of innovation management, they become a key tool for optimizing planning, control, analysis and decision-making, especially in the context of a dynamic economy and technological change.

Research and development (R&D) is the fundamental basis of innovation. The use of hybrid information technologies allows you to automate the collection and processing of large volumes of data, model development scenarios, assess risks and predict the results of the implementation of new products, technologies and processes.

The integration of HIT into innovation management and R&D processes creates a synergistic effect: enterprises are able to quickly adapt to market changes, increase productivity, optimize resources and reduce the likelihood of erroneous management decisions. In the context of globalization, digitalization and instability, hybrid technologies are becoming a critical component of ensuring the competitiveness and sustainable development of organizations.

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