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CONTACTS

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MODERN APPROACHES TO MANAGING INNOVATIVE ACTIVITY IN THE DIGITAL ECONOMY

Saipova Dilnoza Shuxratovna

Lecturer, Tashkent University of Applied Sciences

Abstract: This article analyzes modern approaches to managing innovative activity in enterprises under the conditions of the digital economy from both theoretical and practical perspectives. The study examines classical and contemporary concepts of innovation management, including Schumpeter's theory of innovation, open innovation, dynamic capabilities, agile management, platform-based management, and data-driven decision-making mechanisms. It is substantiated that the effectiveness of innovation management in the digital economy depends on the enterprise's technological adaptability, organizational flexibility, quality of human capital, digital infrastructure, and market integration capacity. The paper proposes an integrated model for improving innovation management, systematizing its structural elements, implementation stages, and performance indicators. The findings suggest that effective innovation management in the digital economy enhances enterprise competitiveness, market sustainability, and long-term economic efficiency.

Keywords: digital economy, innovative activity, innovation management, open innovation, dynamic capabilities, agile, platform approach, digital transformation, enterprise competitiveness.

Annotatsiya: Ushbu maqolada raqamli iqtisodiyot sharoitida korxonalarda innovatsion faoliyatni boshqarishning zamonaviy yondashuvlari nazariy va amaliy nuqtayi nazardan tahlil qilingan. Tadqiqotda innovatsiyalarni boshqarishning klassik va zamonaviy konsepsiyalari, jumladan Schumpeter innovatsiya nazariyasi, ochiq innovatsiya, dinamik imkoniyatlar, agile boshqaruv, platformaga asoslangan boshqaruv hamda ma'lumotlarga asoslangan qaror qabul qilish mexanizmlari o'rganilgan. Raqamli iqtisodiyot sharoitida innovatsion boshqaruv samaradorligi korxonaning texnologik moslashuvchanligi, tashkiliy moslashuvchanligi, inson kapitali sifati, raqamli infratuzilma va bozor integratsiyasi darajasiga bog'liq ekanligi asoslab berilgan. Maqolada innovatsion boshqaruvni takomillashtirishga qaratilgan integrallashgan model taklif etilib, uning tarkibiy elementlari, joriy etish bosqichlari va samaradorlik ko'rsatkichlari tizimlashtirilgan. Tadqiqot natijalari shuni ko'rsatadiki, raqamli iqtisodiyot sharoitida samarali innovatsion boshqaruv korxonalarining raqobatbardoshligini, bozor barqarorligini va uzoq muddatli iqtisodiy samaradorligini oshiradi.

Kalit so'zlar: raqamli iqtisodiyot, innovatsion faoliyat, innovatsiyalarni boshqarish, ochiq innovatsiya, dinamik imkoniyatlar, agile, platforma yondashuvi, raqamli transformatsiya, korxonalar raqobatbardoshligi.

Аннотация: В данной статье с научно-теоретических и практических позиций проанализированы современные подходы к управлению инновационной деятельностью предприятий в условиях цифровой экономики. В исследовании рассмотрены классические и современные концепции управления инновациями, в частности теория инноваций Й. Шумпетера, модель открытых инноваций, подход динамических способностей, agile-управление, платформенный подход и механизмы принятия решений на основе данных. Обосновано, что эффективность управления инновационной деятельностью в условиях цифровой экономики зависит от технологической адаптивности предприятия, организационной гибкости, качества человеческого капитала, уровня цифровой инфраструктуры и возможностей интеграции с рынком. В статье предложена комплексная модель совершенствования управления инновационной деятельностью, систематизированы ее структурные элементы, этапы и показатели оценки. Сделан вывод о том, что эффективная организация инновационного управления в условиях цифровой экономики способствует повышению конкурентоспособности предприятий, устойчивости на рынке и долгосрочной экономической эффективности.

Ключевые слова: цифровая экономика, инновационная деятельность, инновационное управление, открытые инновации, динамические способности, agile, платформенный подход, цифровая трансформация, конкурентоспособность предприятия.

INTRODUCTION

The digital economy represents a qualitatively new stage in the development of the modern economic system, in which data, knowledge, digital technologies, and intellectual capital become the main drivers of economic growth. Under such conditions, the sustainable development of enterprises depends not merely on the volume of production resources or traditional management methods, but on the ability to generate innovations, implement them rapidly, and adapt them to market demands. For this reason, the management of innovative activity is becoming one of the central directions of enterprise management.

The content of innovation management is not limited solely to the creation of new products. It also includes the introduction of new technologies, the reorganization of business processes, the modernization of management methods, the development of digital services, the creation of new models of interaction with customers, and the organization of new value chains [1]. Thus, in the digital economy, innovation management appears as a strategic system that ensures the enterprise's adaptation to changes in both its internal and external environment.

Traditional management systems often rely on rigid hierarchies, slow decision-making, fragmentation between functional divisions, and delays in information circulation. The digital economy requires the opposite: speed, flexibility, readiness for experimentation, network-based cooperation, and real-time management. Therefore, the introduction of modern approaches to innovation management is not only a scientific and practical necessity, but also a key survival factor for enterprises operating in market conditions [2].

REVIEW OF LITERATURE ON THE SUBJECT

The theory of innovation management has evolved through several stages in the history of economic thought. The theoretical foundation of this field was laid by J. Schumpeter, who interpreted innovation as the principal driving force of economic development [1]. According to Schumpeter, innovation may manifest itself in the form of a new product, a new technology, a new market, a new source of raw materials, or a new organizational form. This approach is important because it views innovation not as an isolated invention, but as a managerial phenomenon capable of transforming the economic system.

P. Drucker regarded innovation as the principal instrument of entrepreneurship and argued that it can be managed systematically [2]. In his view, innovation is not accidental, but rather a managerial process based on analysis, observation, and the identification of opportunities. This perspective is especially relevant in the context of the digital economy, where data flows enable enterprises to identify and evaluate emerging opportunities more rapidly.

In the contemporary period, the concept of open innovation advanced by H. Chesbrough marked a new stage in the management of innovative activity [3]. According to this approach, an enterprise can create and commercialize innovation not only through internal resources, but also through cooperation with external partners, universities, startups, customers, and other institutions. Under the conditions of the digital economy, this model is particularly effective because it accelerates knowledge exchange through platforms and network connections.

The dynamic capabilities approach developed by D. Teece interprets the enterprise's ability to reconfigure its resources and competencies in a rapidly changing environment as a source of innovative advantage [4]. According to this approach, the effectiveness of innovation management depends not on the sheer volume of available resources, but on how quickly and effectively they can be renewed and adapted to new markets.

C. Christensen's theory of disruptive innovation also occupies an important place in the study of innovation management [5]. This approach analyzes innovations that initially enter the market in simple and low-cost forms, but later displace traditional products. In the digital economy, many platform-based business models are developing precisely according to this principle.

E. Rogers's diffusion of innovations theory is another important source for explaining the process of innovation adoption and dissemination [6]. This approach demonstrates that innovation management must take into account not only the creation of innovation, but also the stages of acceptance, adaptation, and diffusion.

Research methodology

The study is based on secondary data obtained from scientific literature, international reports, and analytical materials on innovation management and the digital economy. Data were collected through systematic review and comparative analysis. The analysis was conducted using qualitative methods, including content analysis, synthesis, and logical generalization, as well as comparative evaluation of modern innovation management approaches and their effectiveness indicators.

ANALYSIS AND RESULTS

Under the conditions of the digital economy, the transformation of innovation management is radically changing the content of innovative activity in modern enterprises in several directions. First, the innovation

cycle is becoming significantly shorter. In the past, creating, testing, and bringing a new product or technology to market required substantial time and resources; today, cloud technologies, artificial intelligence, big data, the Internet of Things, and platform-based services have considerably accelerated these processes [7]. As a result, enterprises are increasingly able to respond more quickly to market demands, improve products and services within shorter periods, and commercialize them more efficiently.

At the same time, the sources of innovation are no longer confined to the internal environment of the enterprise. In the digital environment, innovation is developed not only through the company's own research units, laboratories, or specialists, but also in cooperation with external startups, freelance networks, research centers, universities, and user communities [3]. This indicates a transition in innovation management from a closed model to an open and collaboration-based model. In addition, the role of data in innovation management has grown sharply. Decision-making processes are no longer based primarily on intuition, but increasingly on analytics, real-time data, customer behavior, market signals, and digital monitoring tools [8]. Consequently, innovation decisions are now taken on the basis of evidence, forecasts, and practical observations. Furthermore, the success of innovation management is becoming more dependent on the internal culture of the enterprise. Under the conditions of the digital economy, employees' initiative, a culture of learning from mistakes, horizontal cooperation across departments, and rapid communication are becoming decisive factors in the implementation of innovation [9].

One of the most important modern approaches to managing innovative activity is the open innovation approach. This approach views the enterprise not as a closed system, but as a knowledge platform open to collaboration. The open innovation model demonstrates that a company does not necessarily need to generate all ideas internally; rather, it is more important to identify the most valuable ideas, integrate them, and commercialize them [3]. This approach makes it possible to make broader use of scientific potential, reduce innovation costs, accelerate time-to-market, and develop new forms of partnership. However, this model also has several limitations, including intellectual property risks, dependence on external partners, and the fragmentation of knowledge.

Another important direction in modern innovation management is the Agile approach. This approach interprets innovation management as a flexible, incremental, and iterative process. Instead of relying on long-term and rigidly planned projects, it prioritizes short sprints, rapid prototyping, and continuous improvements based on customer feedback [7]. The advantage of the Agile approach lies in its ability to adapt quickly to market demands, identify mistakes at an early stage, strengthen teamwork, and reduce innovation risks. Therefore, it has become an especially effective management tool in a rapidly changing digital environment.

Data-driven management is also gaining particular significance in the management of innovative activity. Data-driven management means that innovation decisions are based not on subjective judgments or solely on managers' experience, but on data analysis. With the help of digital platforms, ERP, CRM, BI systems, and various analytical tools, enterprises can measure the performance of their innovative activity, forecast market trends, and determine investment priorities [8]. This approach plays an important role in improving management quality, reducing risks, and increasing the efficiency of the use of innovation resources.

Another increasingly widespread approach in the digital economy is the platform ecosystem approach. Today, many enterprises are no longer independent producers in isolation, but active participants in broader ecosystems. The platform approach implies managing innovation not only within the boundaries of a single product or service, but across the entire value creation network. This approach demonstrates particularly high efficiency in service industries, e-commerce, fintech, and digital logistics [10], because platforms enable enterprises to integrate customers, partners, suppliers, and other stakeholders within a single digital environment.

The dynamic capabilities approach also has significant theoretical and practical value in innovation management. This approach places at the center of innovation management not the resources themselves, but the ability to renew, recombine, and strategically adapt them. For this reason, in the digital economy, sustainable advantage is often determined not by the quantity of assets or the scale of production capacity, but by the enterprise's ability to respond quickly to innovation, remobilize its internal potential, and adapt to market changes [4]. This feature makes the dynamic capabilities approach one of the most promising and modern approaches to innovation management (Table 1).

Table 1.
Comparative Analysis of Modern Approaches

| Approach | Main Objective | Main Tool | Expected Outcome |
|----------------------|--------------------------------|--|--|
| Open innovation | Attracting external knowledge | Cooperation, networking, collaboration | Expansion of innovation sources |
| Agile | Rapid adaptation | Sprints, prototypes, iteration | Faster implementation and fewer errors |
| Data-driven | Evidence-based decision-making | Analytics, BI, KPI | Improved decision quality |
| Platform approach | Building an ecosystem | Digital platforms, APIs, collaboration | Large-scale value creation |
| Dynamic capabilities | Strengthening adaptability | Reconfiguration of resources | Long-term competitive advantage |

The analysis of factors influencing the effectiveness of innovation management in enterprises demonstrates that the effective management of innovative activity depends directly on a number of key factors. First, the level of digital infrastructure is of particular importance. The presence of modern databases, integrated information systems, analytical tools, and cybersecurity mechanisms forms the technical foundation of innovation management. The more developed the digital infrastructure, the faster and more effectively an enterprise can generate, test, analyze, and implement innovative ideas.

At the same time, organizational flexibility is one of the key determinants of the effectiveness of innovation management. In enterprises built on rigid hierarchical structures, where information exchange between departments is slow, the innovation process usually decelerates and initiative declines. By contrast, the development of horizontal communication, the formation of project teams, and strong interdepartmental cooperation contribute to the faster development and implementation of innovations [9]. Therefore, organizational flexibility should be regarded as one of the essential conditions shaping the internal dynamics of innovation management.

Another important factor influencing the effectiveness of innovation management is human capital and digital competencies. In the present era, the management of innovative activity depends not only on employees' traditional professional knowledge, but also on their analytical thinking skills, digital literacy, ability to work with modern technologies, and creative approach [11]. In the digital economy, knowledge, skills, and intellectual potential are becoming the main source of innovative advantage. For this reason, enterprises seeking to improve innovation management must continuously enhance employee qualifications and familiarize them with new technologies and management approaches.

In addition, strategic leadership emerges as a decisive factor in the success of innovation management. If top management does not foster a philosophy that supports innovation, encourages experimentation, and promotes learning from failure, then even when technical capabilities and qualified personnel are available, innovative outcomes may still fall short of expectations [4]. Strategic leadership helps shape an innovation culture within the enterprise, inspires employees to generate new ideas, and aligns long-term development goals with innovation activity. In this sense, the role of management in innovation is not merely supervisory, but also guiding and inspirational.

Finally, the degree of integration with the external ecosystem also has a significant influence on the effectiveness of innovation management. The more active and systematic an enterprise's relationships with market actors, customers, universities, research centers, startups, and other innovation partners are, the broader its opportunities for innovation management become [3]. Integration with the external ecosystem enables the enterprise to attract new knowledge, technologies, ideas, and practical experience. This enriches innovation activity, improves its market relevance, and strengthens competitiveness.

Overall, the effectiveness of innovation management in enterprises depends on the harmonious development of digital infrastructure, organizational flexibility, human capital, strategic leadership, and integration with the external ecosystem. While each of these factors has independent significance, they are also closely interconnected and collectively ensure the effectiveness of innovation management as a unified system (Table 2).

Table 2.
Problems in innovation management and ways to overcome them

| Problem | Description | Recommended Solution |
|--------------------------|---|---|
| Lack of innovative ideas | Reliance only on internal sources | Introduce an open innovation platform |
| Slow decision-making | Dominance of bureaucratic processes | Strengthen Agile teams and project management |
| Poor market fit | Customer needs are not sufficiently studied | Introduce customer development and feedback systems |

| | | |
|----------------------|--|---|
| Fragmented data | Information systems are not integrated | Ensure ERP, CRM, and BI integration |
| High innovation risk | Weak risk assessment mechanisms | Introduce portfolio management and phased pilot testing |
| Employee resistance | Unpreparedness for change | Improve digital competencies and motivation systems |

The proposed model for improving innovation management reflects a comprehensive approach aimed at increasing the effectiveness of innovation management in enterprises under the conditions of the digital economy. The implementation of this model begins with an assessment of the enterprise's innovation potential, digital readiness, human capital, data infrastructure, and external relationships. After that, innovation priorities are strategically determined, including product, process, marketing, or managerial innovations. At the next stage, organizational restructuring is carried out: innovation project teams are formed, horizontal cooperation between functional units is strengthened, and areas of responsibility are defined. At this stage, particular importance is attached to integrating ERP, CRM, BI, AI, project management platforms, and knowledge bases into a unified management system. Innovative solutions are then first tested on a small scale through pilot implementation, their results are analyzed, and only then are they introduced on a broader scale. At the final stage, the performance of innovative activity is continuously assessed on the basis of a KPI system. In general, this model is designed to organize innovation management in enterprises in a systematic, flexible, and results-oriented manner (Table 3).

Table 3.
Indicators for evaluating the effectiveness of innovation management

| Indicator | Description | Evaluation Dimension |
|------------------------------|---|--------------------------|
| Share of new products | Proportion of total revenue generated by new products | Commercial effectiveness |
| Innovation cycle duration | Time from idea generation to market launch | Speed |
| R&D efficiency | Ratio of research expenditures to results achieved | Investment efficiency |
| Level of digital integration | Degree of interconnection between systems | Technological readiness |
| Customer satisfaction | Acceptance of innovative products/applications | Market fit |
| Employee innovation activity | Number of proposals, participation, projects | Organizational culture |
| Degree of collaboration | Number of innovation projects with external actors | Level of open innovation |

The advantage of this model lies in the fact that it interprets innovation management not as the task of a separate department, but as an integrated system that aligns strategy, technology, human resources, organizational culture, and market relations. In this regard, the model has a broader scope than traditional innovation management models and ensures a higher level of flexibility. Based on the findings of the study, a number of generalized scientific conclusions were formulated. In particular, it was determined that the key characteristic of innovation management in the digital economy is its reliance on speed, flexibility, and network-based integration. Furthermore, the effectiveness of innovation management depends less on the technology itself than on the quality of its strategic management. The study substantiated that a combination of open innovation, Agile, data-driven approaches, and dynamic capabilities represents the most appropriate model for the effective management of innovative activity in enterprises. In addition, human capital, digital culture, and leadership were identified as key determinant factors in improving innovation management. On this basis, it can be emphasized as a conceptual conclusion that an effective model of innovation management in the digital economy must place at its center not technological renewal itself, but the capability to manage the process of renewal.

CONCLUSIONS AND SUGGESTIONS

Under the conditions of the digital economy, the management of innovative activity has become a strategic factor determining enterprise competitiveness and long-term development. The findings of the study showed that modern approaches to innovation management—open innovation, Agile, data-driven management, platform ecosystems, and dynamic capabilities—are more effective than traditional management mechanisms. This is because they enable enterprises to adapt to rapidly changing market conditions, shorten innovation processes, maintain continuous interaction with the market, and use resources more rationally.

As substantiated in the article, the effectiveness of innovation management is determined not only by the introduction of new technologies, but also by the enterprise's organizational structure, the strategic approach of management, employees' digital competencies, the quality of data use, and the external cooperation network. Therefore, improving innovation management requires a comprehensive approach.

Based on the proposed model, the following practical recommendations may be advanced:
to establish a dedicated strategic platform for innovation management within enterprises;

to expand open innovation and ecosystem-based collaboration;
to introduce Agile and pilot testing mechanisms;
to integrate digital tools such as BI, AI, ERP, and CRM;
to continuously develop employees' digital and innovation competencies;
to evaluate innovation performance regularly on the basis of clearly defined KPI indicators.

Thus, modern approaches to managing innovative activity in the digital economy enable enterprises not only to adapt, but also to shape the market, create new value, and achieve sustainable competitive advantage. Therefore, innovation management today is not a supplementary element of enterprise development, but its core strategic foundation.

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