

FEATURES OF PLANNING IN INNOVATIVE ACTIVITIES

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Abstract. The article is devoted to the study of the features of innovative activity and the analysis of the specifics of planning of innovative projects in order to adapt the legislation of Ukraine to modern trends in innovative development.

The scientific work identifies the features of innovation activity and compares them with standard business. The forms of results of innovation activity are analyzed: outputs, outcomes and impacts. It is found that impacts are of a deferred nature and may carry risks for society, the environment, human health, etc. It is argued that between the stages of the innovation cycle there are differences in the nature of uncertainties, risks, priorities, and resource needs, which necessitates the development of separate plans for each of them. It is proven that taking into account critical risks is an important component of innovation project planning. The feasibility of phased development of innovative project plans, combining classical and flexible planning methods, is substantiated.

Based on the results of the study, it is proposed to harmonize the provisions of the Laws of Ukraine «On Innovation Activity» and «On Scientific and Scientific-Technical Activity» regarding innovation projects, to introduce a holistic mechanism of state support for innovation activity, unified regulatory requirements and methodological recommendations for planning of innovation projects for each stage of the innovation cycle.

Key words: innovation project, innovation cycle, risk, impacts, legislation.

AUTHOR CONTRIBUTIONS

The author prepared the article independently. The author independently selected the literature, analyzed it and formulated conclusions.

DISCLOSURE STATEMENT

The author does not have any competing financial, professional, or personal interests in relation to others.

INTRODUCTION

Innovative growth of the Ukrainian economy has been defined as a vector and a guideline of state policy. This goal is set in the National Economic Strategy for the period until 2030 (Cabinet of Ministers of Ukraine, 2021), the Strategy for the Development of the Sphere of Innovation Activity for the period until 2030 (Cabinet of Ministers of Ukraine, 2019), and other strategic documents. The need for innovative development of the state makes the implementation of innovations at the micro level relevant, primarily in priority areas (Verkhovna Rada of Ukraine, 2011).

It is known that without proper planning, effective management of activities is impossible, especially in conditions of dynamic changes, rapid technological progress, high risks and uncertainty.



The legislative framework of Ukraine regulates the planning processes in the field of innovation activities for innovation projects that must undergo state expertise (Verkhovna Rada of Ukraine, 2002). The form and sample structure of a business plan for such a project is established by the relevant order of the Ministry of Education and Science of Ukraine (Ministry of Education and Science of Ukraine, 2013).

Since not all innovation projects in Ukraine are subject to state registration and competitive selection (Korvat & Hlibko, 2023), business owners, investors, and other interested parties can set their own requirements for planning innovation activities. If in international markets it is customary to use generally recognized standards of business plans and feasibility studies (international consulting corporation KPMG, European Bank for Reconstruction and Development (EBRD), UN Industrial Development Organization UNIDO, international auditing corporation Ernst&Young, etc.), then in Ukraine, in addition to the Model Structure of an Innovation Project Business Plan (Ministry of Education and Science of Ukraine, 2013), several other regulatory legal acts on planning have been approved that can be applied in the innovation sphere. These are Methodological recommendations for developing a business plan for enterprises (Ministry of Economy of Ukraine, 2006), Methodological recommendations for developing business plans for investment projects (State Agency of Ukraine for Investments and Development, 2010), Business plan form for obtaining a microgrant/grant for creating or developing one's own business, a grant for creating or developing one's own business for participants in hostilities, persons with disabilities as a result of war and members of their families (Ministry of Economy of Ukraine, 2023), Methodological recommendations for developing a financial plan for a business entity in the public sector of the economy (Ministry of Economy of Ukraine, 2024), Regulations on business plans submitted for receiving financial state support (Cabinet of Ministers of Ukraine, 2025).

Thus, a certain regulatory framework has been formed in Ukraine regarding the planning of innovation activities, in particular in terms of the preparation of innovation projects subject to state examination. However, the fact that the state register of innovation projects remains virtually empty is direct evidence of the stagnation of the innovation sector of the economy (Korvat, 2023). One of the reasons for this situation is the state ignoring the specifics of innovation activities during the development and implementation of innovation policy. This is manifested in the use of regulatory instruments that are effective for traditional sectors of the economy, but are barriers to innovation development. Under such conditions, the relevance of studying the features of innovation activities and its planning is due to the objective need to adapt innovation management methods at the micro and macro levels to modern technological progress.

THEORETICAL FRAMEWORK

Innovation planning has been the subject of many scientific studies for a long time. O. Berezovskyi, P. Brandtner, R. Cooper, S. Dolynskyi, P. Hryntko, A. Hyvdrinen, O. Klipkova, S. Kniaz, J. Ma, A. Martensen, M. Moehrle, M. Mumford, P. Mykityuk, O. Nedbalyuk, J. Sinfield, J. Utterback, K. Yakovenko, T. Yankovets, Yu. Yegupov and other scientists have studied this topic in detail, both as a whole and in terms of individual aspects of innovation and strategic management. Scientific works of this research direction are in any case based on innovation theories and on the general theory of planning. In the publications of recent years H. Jalon, W.-D. Lv, M. Martinsuo, M. Schut, M. Solesvik, P. Vettik-Leemet study the problems of innovations, innovation processes and their management. Also relevant in science are the studies of new approaches, methods and technologies for developing strategies and plans of routine activities, which is highlighted in particular in the works of D. Adamantiadou, M. Alnoukari, F. Csaszar, R. Cooper, J. Gold, R. Kepczynski, D. Lazar, Y. Mansoori, M. Moehrle, A. Mohammad, H. Nakajima, N. Nosan, S. Singh, R. Sutriana, E. Yilmaz. The development

of theoretical foundations of innovation and management creates favorable conditions for a more comprehensive study and improvement of processes and mechanisms of planning in innovative activity. Despite the development of theoretical foundations of innovation management, the issue of taking into account the specifics of innovative activity in the practice of planning innovation projects and in state regulation of the innovative sphere of the economy is not sufficiently covered in the scientific literature.

In a broad sense, planning is a component of management. It allows for the reasonable determination of goals and objectives, as well as the resources and measures necessary to achieve them. It is no coincidence that planning is considered a fundamental property of rational behavior (Mattar & Lengyel, 2022).

It is known that the process of developing plans is laborious. It begins with defining the idea and goal of future activities, their development and improvement. Planning necessarily relies on foresight, which can be intuitive or rely on knowledge and experience. Scientifically based foresight (forecasting) increases the effectiveness of planning, especially in conditions of uncertainty (Sutriana & Sudirman, 2024). When drawing up a plan, not only prospects and strategic alternatives of activity are studied, but also information about the current state of the management object and external conditions is identified, its strengths and weaknesses are identified, the market environment is studied, competitors' activities and consumer needs are analyzed for better adaptation of future products to the market (Klipkova & Gaber, 2018; Kniaz et al., 2012; Martensen & Dahlgaard, 1999; Yakovenko, 2012; Yankovets, 2013). Based on the analysis, the plan substantiates the tasks aimed at achieving the desired result (Martensen & Dahlgaard, 1999). Therefore, goal setting is an important stage of planning. The quality of goals and objectives is traditionally assessed using SMART criteria, i.e., whether they are specific, measurable, achievable, realistic, and time-bound (Doran, 1981). Clear and high goals increase the possibility of their implementation (Locke & Latham, 2002).

The planning process also ensures the determination of the necessary resources to achieve goals, expected revenues, provides information for finding ways to optimize costs and increase the effectiveness of processes, determines a system of indicators for monitoring the activities of the enterprise, answers the question of what capital is needed for development and what efficiency of its use can be expected. In the process of drawing up a business plan, the risks of the activity are necessarily analyzed, measures for their management are developed, which allows ensuring the sustainability of the functioning of the business entity (Kniaz et al., 2012; Mamatova, 2021). Thus, planning not only helps to study the prospects for the development of the activity, but also prepares the plan implementers for possible changes and unforeseen situations.

Although the structure of business plans can vary depending on the industry, scale and scope of the business, regulatory requirements and stakeholder requirements, there are some key parts that are traditionally included in the final document of the planning process. These include an executive summary (written after the business plan has been written), a product description, an analysis of the industry, market, and potential of the business entity, a marketing plan, a production plan, an organizational plan, a financial plan, and a risk and performance assessment.

Due to the fact that innovation activity is characterized by a number of significant features, they must be taken into account in planning at enterprises and in state regulation of innovation activity. Therefore, this article is devoted to identifying the features of innovation activity and analyzing the specifics of planning of innovation projects in order to adapt the legislation of Ukraine to modern trends in innovation development.

METHODOLOGY

To achieve the goals of the article, the author used general scientific research methods such as analysis, synthesis, and abstraction during his scientific work.

RESULTS

The features of planning innovation activities are primarily due to the specifics of creating and implementing innovations as a process compared to standard business. While traditional business activities are focused on stable profits and use proven business models, the innovation sphere is characterized by a high level of risks and uncertainties in many aspects (Brandtner et al., 2014; Hyvärinen et al., 2020; Kniaz et al., 2012; Lv et al., 2018; Mamatova, 2021). Uncertainty concerns future investments, demand, competitive advantages, pricing, revenues, costs, technological, environmental and social risks, risks of cooperation with key partners, etc. In innovation activities, the innovation cycle is often much longer in time and less predictable than the operating cycle of standard business. It may include research and development (R&D) work, which increases the initial costs of projects. The introduction and promotion of product innovations in the innovation cycle will usually require more significant financial and time costs compared to the promotion of traditional products.

Based on the analysis of standards (OECD & Eurostat, 2018; ISO, 2019) and scientific works on innovation activity (Berezovskyi et al., 2021; Brandtner et al., 2014; Cooper, 2008; Glaeser & Lang, 2024; Hryntko et al., 2019; Hyvärinen et al., 2020; Hossain, 2020; Klipkova & Gaber, 2018; Kniaz et al., 2012; Korvat, 2024; Lv et al., 2018; Ma et al., 2023; Martensen & Dahlgaard, 1999; Mumford et al., 2008; Vettik-Leemet & Mets, 2024), the author identified the features of the innovation sphere compared to standard business, which are summarized in Table 1.

Table 1. Comparison of innovative activities and standard business

Criterion	Innovative activities	Standard business
Goal	Obtaining new or better social, economic, environmental and other effects in the future after the creation, implementation and commercialization of innovations	Obtaining predicted and maintaining existing positive social, economic, environmental and other effects through proven business models
Risk level	High	Medium or low
Cycle	Innovative	Operating
Repeatability of the cycle	Unique and one-time for each innovative project	Repetitive
Cycle stages	1. Idea 2. Research 3. Development 4. Testing 5. Implementation 6. Commercialization	1. Procurement of resources 2. Production 3. Sales of products 4. Revenue generation
Cycle duration	Most often several years	Most often several months
Relationships with partners	Flexible and dynamic	Stable, often long-term with recurring transactions
Sources of funding	Mostly venture capital, business angels, government grants, own funds (R&D budgets)	Mostly own funds, bank loans, classic investors
Payback period	Longer and riskier	Shorter and more predictable
The importance of intellectual property	Most often - a key asset	Often - a minor asset

Criterion	Innovative activities	Standard business
Value proposition focus	Creating new opportunities and addressing needs that are not yet fully understood by consumers	Meeting already known needs
Sources of competitive advantage	Creativity, technological breakthrough, affecting efficiency, quality, price, sales volumes, compared to standard products / services of competitors	Efficiency, quality, price, sales volumes compared to competitors' goods/services
Pricing	Focus on market novelty and uniqueness	Focus on cost and level of competition
Profitability factors	Patent protection, commercialization of ideas, speed of diffusion of innovations, scaling	Sales volume, market conditions, cost management efficiency
Predictability and accuracy of revenue estimates	Difficult to predict because the market may not yet exist, demand growth rates are unknown, high dependence on the diffusion of innovations	More predictable. The assessment is based on retrospective data, stable demand, market trends
Predictability and accuracy of cost estimates	It is difficult to accurately estimate the costs of R&D, patenting, testing, marketing, and scaling up production	Relatively stable. For evaluation, you can rely on market trends in resource prices, costs of similar enterprises

The differences between innovation and standard business, presented in Table 1, should be taken into account by those carrying out the planning process. Given that there are different business entities: those that focus exclusively on innovation (or on its individual processes), entities that are engaged exclusively in business, as well as enterprises that combine both of these areas. For the latter category of entities, the operating and innovation cycles (Table 1) reflect different aspects of the activity. If the operating cycle is a sequence of purchasing resources, production / provision of services, sales, receipt of funds, then during the innovation cycle, innovations are created and implemented, starting from an idea, through research, development, testing to implementation and commercialization. The results of operating cycles affect the current state of the enterprise, and the results of innovation cycles – on long-term prospects. Together, they constitute different but complementary types of activity, where one type is aimed at maintaining stable functioning, the other – at forming the potential for further development.

It is worth noting that international standards on innovation (OECD & Eurostat, 2018; ISO, 2019) do not specify a time frame for the completion of the innovation cycle. The Oslo Guidelines (OECD & Eurostat, 2018) emphasize that the defining characteristic of innovation is its implementation. It is implementation that distinguishes innovation from inventions, prototypes, and new ideas. Previously, it was believed that the innovation cycle consisted of the stages of idea generation, problem solving, and ended with the stage of innovation implementation (Utterback, 1971). Now the understanding of the innovation process has changed significantly: modern models already include the stages of innovation commercialization and diffusion. This has led to the fact that there is no clear boundary between the end of the innovation cycle and the beginning of the operational cycle. Scientific research explains that for enterprises that integrate innovation and business, the innovation and operational cycles at the stage of the beginning of commercialization intersect and become a single convergent process (Vettik-Leemet & Mets, 2024). The convergence of these processes can be represented as a zonal transition from the innovation to the full operational cycle. This vision is consistent with the concepts of overlapping activity and fuzzy gates, which are common in new product development to reduce the time-to-market for new products. It is appropriate to call the complete completion of the innovation cycle and zonal transition the moment when the operational process becomes stable and repeatable, and the market and technological uncertainties of the business are reduced to an acceptable level of risk.

The considered features of the zonal transition of the innovation cycle to standard business are important to consider during planning, given that there are several indicators of results of innovation activities: outputs, outcomes and impacts. If the outputs are the first implementation or first sale of an innovation, which marks the beginning of a zonal transition into the operating cycle, then the outcomes and impacts from the use of innovations arise somewhat later. The European Commission defines the term “outcomes” as the expected effects of a project in the medium term, usually achieved shortly after the completion of the project, and the term “impacts” as the long term effects for society and the environment, usually occurring some time after the completion of the project and most often made possible by the investment in the project (European Commission, 2024). A comparison of innovative outputs, outcomes and impacts, formed by the author on the basis of the analysis, is given in Table 2..

Table 2. A comparison of innovative outputs, outcomes and impacts

Criterion	Innovation outputs	Innovation outcomes	Innovation impacts
Essence	Result of implementing an innovative technology, product, service (successful / unsuccessful)	Effects for the enterprise, partners (revenues, profits, efficiency gains, market share, etc.), consumers (functionality, quality, etc.)	long term effects for the environment, society, economy (scientific, ecological, technological, economic, impacts on the people's health, culture, behavior, etc.)
Time horizon from the moment of innovation implementation	Short-term	Medium-term	Medium and long term
Control	Fully under the control of the project implementers	Partly depends on external factors	Significantly depends on external factors
Results periods	Once during innovation activity at the implementation stage	Regularly starting with the implementation of innovation during each operating cycle	One-time recording of each effect after the implementation of the innovation

Innovation outcomes are the effects of implementing and/or using an innovation that are received by the enterprise and consumers. In contrast to outcomes, innovation impacts are the large-scale and long-term consequences of implementing an innovation for society, the economy, and the environment, which have a cumulative effect and are potentially capable of changing systems, communities, or entire environments. Such results and impacts can be both positive and negative. The risks of future innovation are caused by the uncertainty of how the implementation of the innovation will affect the market, the operation of technological systems, consumer demand, the functioning of the economy, national security, the environment, people's health, their behavior, etc.

In addition to distinguishing between outputs, outcomes and impacts of a completed project (Table 2), it is advisable to distinguish intermediate project results at different stages of its implementation. A standardized tool for measuring the progress of an innovation project is the Technology Readiness Levels (TRL), which define the criteria for achieving each stage (European Commission, 2013; EARTO, 2014). The author's proposed distribution of TRLs by stages of the innovation cycle and the definition of their expected results are summarized in Table 3.

Table 3. Stages of the innovation cycle and their results

Stages of the innovation cycle	Technology Readiness Levels	Outputs
Idea	TRL 1 – Basic principles observed	A report with evidence and justification of the basic principles of the idea
Research	TRL 2 – Technology concept formulated	Report describing the concept and theoretical justification of the innovation
	TRL 3 – Experimental proof of concept	A report with experimental evidence supporting the concept
Development	TRL 4 – Technology validated in a lab	Laboratory report on validation of technology in laboratory conditions
	TRL 5 – Technology validated in a relevant environment (industrially relevant environment in the case of key enabling technologies)	Report on the validation of components/subsystems/technology of the future innovation in the relevant environment
	TRL 6 – Technology demonstrated in a relevant environment (industrially relevant environment in the case of key enabling technologies)	A prototype (or engineering model) of an innovation that has been demonstrated in a relevant environment
Testing	TRL 7 – System prototype demonstration in an operational environment	A prototype (or engineering model) of an innovation that has been demonstrated and tested in real-world conditions
	TRL 8 – System complete and qualified	First commercial sample, technical documentation for production
Implementation	TRL 9 – Actual system proven in an operational environment (competitive manufacturing in the case of key enabling technologies, or in space)	Implementation of innovation into mass production (successful / unsuccessful)
Commercialization	Zonal transition of the innovation cycle to full-fledged operational activity	Achieving a stable operating cycle of production and an acceptable level of business risks (successful / unsuccessful)

The implementation of the innovation corresponds to the TRL 9 level and is the goal of all innovation activities. However, as previously explained, at this stage the innovation process is not yet complete (Table 3). At the stage of transition of the innovation cycle to full-fledged operational activity (until the moment of stabilization of sales and reaching an acceptable level of risk), the manufacturer must necessarily monitor the value of the innovation for the market and society. Regular analysis of the results of commercialization may reveal the need for minor product improvements, the development of a radically new solution, or even a complete refusal to further produce the innovation (OECD & Eurostat, 2018; ISO, 2019). It will be possible to thoroughly analyze the value and effects of a new product for society only after a long time after its entry into the market (Table 2).

Thus, the considered features of innovation activity indicate that at the initial stages it is impossible to draw up a full-fledged plan in the form prescribed by the legislation of Ukraine, including the Model Structure of the Business Plan of an Innovation Project (Ministry of Education and Science of Ukraine, 2013). The practice of developed countries proves that it is advisable to develop separate plans for different TRL levels, which is due to fundamental differences in the nature of uncertainty, resource needs and management priorities of each of the stages. In particular, for low TRLs 1 – 3, the

innovation project is dominated by technical (technological) risks associated with uncertainty about whether the technology is workable at all. At medium TRLs 4 – 6, the risks shift to uncertainty about whether the technology is functional in real conditions and whether it can be scaled. At high TRLs 7 – 9, market, financial and operational risks dominate, when uncertainty concerns demand, production costs and economic viability of the future innovation.

With an increase in TRL, the project feasibility criteria change, according to which it moves to the next stage. For TRLs 1 – 3, the scientific significance and theoretical possibility of implementing the innovation are important, for TRLs 4 – 6, the technological feasibility of implementing the innovation, and for TRLs 7 – 9, the effectiveness of the innovation. Creating separate plans within several TRLs helps to correctly distribute human resources. For low TRLs, scientists and researchers are needed, for high TRLs – engineers, marketing and sales specialists. In addition, different sources of funding are involved at different TRLs: low TRLs are supported by grants, R&D programs, while high TRLs are most often financed by venture capital, bank loans, private investments, state support programs and own funds of enterprises. Therefore, planning based on TRLs is more rational, since plans are adapted to the specifics of the stages, and resources are spent more purposefully to obtain results at the corresponding stages of innovation activity.

It is generally accepted that a plan is a document that contains descriptive, analytical and calculated information regarding the objectives of an activity or project, the possibilities of their implementation, the system of measures, income, expenses, planned indicators and expected results. The requirements for innovation project plans within the framework of state funding programs in the EU and leading countries of the world (USA, Japan, South Korea, etc.) are usually very strict and cover scientific, technical and business-oriented components. Projects supported by the state must necessarily correspond to state strategic priorities. For example, in the EU, the Horizon Europe program contributes to solving the goals of competitiveness of European industry, health, culture, civil security, climate, energy, mobility, food, bioeconomy, natural resources, agriculture, environment, development of digital technologies, etc. (European Parliament and Council, 2021). To receive grant funding under the Horizon Europe program, project proposals are assessed according to three main criteria: excellence; impact; and quality and efficiency of the implementation (European Parliament and Council, 2021).

Since innovation is inherently associated with a high level of uncertainty, identifying and addressing risks is an important component of the innovation management process (ISO, 2019). When planning innovation projects, risks to both the project itself and the future use of the innovation should be identified and, where possible, assessed. In the early stages, projects also involve taking risks, after which not all of them will reach the commercialization stage (ISO, 2019). Modern approaches, in particular within the Horizon Europe program, require developers to compile a list of critical risks associated with the project and describe measures to mitigate them. This list and the action plan should be updated as the project progresses (European Commission, 2024).

In the EU, special attention is paid to ethical and environmental risks when planning innovations, in particular the protection of personal data, physical and mental integrity of the individual, protection of the environment and human health (European Parliament and Council, 2021). Any economic activity, including innovation, must be implemented in compliance with the principle of «do no significant harm» (European Parliament and Council, 2020). The process of assessing potential ethical risks is primarily carried out by the developers of innovation projects themselves. However, the ethical risks of projects financed under state programs undergo systematic expert review to identify aspects that may raise complex or serious ethical issues (European Parliament and Council, 2021).

It should be noted that R&D plans (projects up to 7 TRL) and innovation activity plans are not inherently identical. In particular, R&D planning is predominantly technical and details the parameters of scientific and technical (experimental) development. The main goal of an R&D project is to achieve technical excellence (Excellence) of the development, while the expected economic, environmental,

social or other impacts of the future innovation are indicated only in a descriptive form. In contrast, planning for innovation projects (7 – 9 TRL) is much broader in scope. It covers not only the technical component, but also more detailed planning of production, marketing, revenues, costs, risk management, intellectual property protection, performance indicators and other key elements of a business plan.

The EU actively encourages consistent and integrated financial support for projects at different levels of technological readiness. Specific rules regarding the structure and detail of plans apply to project proposals. At the same time, with each subsequent stage of the innovation cycle, the requirements gradually increase or change. Compared to the EU, Ukraine lacks comprehensive state support for innovation projects depending on the TRL (Verkhovna Rada of Ukraine, 2002). Instead, Ukrainian legislation offers financing of individual scientific and technical works from the state budget (Cabinet of Ministers of Ukraine, 2018; Ministry of Education and Science of Ukraine, 2025). However, in the case of state registration of an innovation project, for which a business plan is necessarily submitted (Ministry of Education and Science of Ukraine, 2013), the state does not have any obligations regarding further budget lending or other state support (Verkhovna Rada of Ukraine, 2002). This creates two fragmented mechanisms that impose uncoordinated requirements on R&D projects (Verkhovna Rada of Ukraine, 2015) and innovation projects (Verkhovna Rada of Ukraine, 2002), which negatively affects the innovative development of the national economy. In the best global practices of state regulation, the rules for stimulating innovation are holistic and consistent at all stages of the innovation cycle.

The linking of government funding programs to TRL encourages innovators to use planning methods focused on stages, where each stage has clearly defined goals and performance criteria. Such features of regulatory requirements, combined with the increased riskiness of innovation activities, necessitate the use of flexible, iterative and hybrid methods of developing plans. Process-oriented planning methods that involve dividing the innovation process into successive stages with an intermediate assessment of results have become widely used in innovation management practice. The most famous example is the Stage-Gate approach, which provides systematic control over the development of innovations from idea to market entry and allows reducing technological and financial risks by making further decisions based on previously achieved results (Cooper, 2008). Such approaches are increasingly being implemented in integrated business planning systems that combine strategic, operational, and innovation solutions in a single management loop (Kepczynski et al., 2018; Lazar & Primerano, 2023).

Adaptive methods of innovation planning, focused on working under uncertainty, are currently being actively developed. These include effectuation, discovery-driven planning, assumption-based planning, lean startup, which focus not on the clear achievement of pre-defined goals, but on the gradual refinement of innovation directions through testing key assumptions and learning in the process of action (Mansoori & Lackjus, 2020; Solesvik & Ianenková, 2016). Such methods are especially relevant for radical and breakthrough innovations, when market parameters and technological results cannot be reliably predicted at the initial stages.

An important place in the system of planning innovation activities is occupied by methods of technological forecasting and foresight: technological roadmapping, scenario analysis and design-oriented approaches. They allow to connect long-term strategic goals with the evolution of technologies and market needs, forming a coordinated trajectory of innovative development (Moehrle et al., 2013; Gold & Jones, 2023). In modern innovation planning, the role of digital tools and artificial intelligence is increasing, in particular in data analysis, scenario modeling and support of strategic decisions (Adamantiadou & Tsironis, 2025; Csaszar et al., 2024; Poretschkin et al., 2023; The Strategy Institute, 2024; Yilmaz & Demir, 2024).

At the same time, classical approaches to business planning continue to play a significant role in innovation management, especially at the stages of innovation commercialization. They provide structure, coordination of innovation goals with available resources, and integration of innovation

activities into the overall enterprise management system (Nakajima & Sekiguchi, 2025; Nosan et al., 2023). At the same time, the use of exclusively classical methods reduces the effectiveness of planning in conditions of high uncertainty (Mansoori & Lackéus, 2020). Therefore, in the practice of innovation management, it is advisable to combine classical and flexible planning methods, as well as develop plans in stages, taking into account the results achieved in the previous stages of the innovation cycle, available resources, opportunities, and market prospects.

CONCLUSIONS

Planning in innovation management plays a decisive role. It is through planning that the goals and objectives of innovation activities are formed, measures and resources are determined to achieve them (ISO, 2019). Systematic work on planning allows for the initial validation of the idea and the process of its implementation into innovative products. In addition, the drawn up plan as a document is the basis for effective communication when communicating with investors, in particular with the state, which most often acts as a key player in financing risky innovation activities. For such purposes, the state regulates the requirements for plans for innovation projects that meet the priority areas of innovation development and qualify for state support. Regulatory requirements for plans are a guideline for the interaction of innovators with any investors.

When planning innovation projects, the specifics of innovation activity must be taken into account. It consists of several important aspects:

- the innovation cycle from idea to innovation implementation is unique and one-time for each innovation project, unlike the multiple repetition of routine operational cycles;
- the transition from innovative activity to operational activity is not a clearly fixed moment, but takes a certain period of time until the operational process becomes stable and the level of entrepreneurial risks is acceptable;
- the performance of innovative activities manifests itself in various forms: in the form of outputs, outcomes and impacts, and the impacts are of a delayed nature and may carry risks for society, ecology, people's health, etc.;
- the difficulty of predicting future revenues and expenses of an innovation project after the innovation is implemented makes financial results unpredictable;
- taking into account possible environmental, social, ethical risks, safety risks, and negative impacts on people's health from the use of innovations is a critical component of planning an innovation project.

The above-mentioned features, as well as the high uncertainty of innovation activity, necessitate the use of flexible and adaptive planning methods, according to which plans are developed in stages, taking into account the results achieved in the previous stages of the innovation cycle, available resources, opportunities and market prospects. Taking these characteristics into account is necessary both in the practice of planning innovation projects and in the legal regulation of the innovation sphere of the economy.

Unfortunately, Ukraine has significant problems with the development of innovation activity. In addition to limited funding, weak institutional support, shortcomings in legal regulation, and administrative barriers (Nedbalyuk & Urbanovich, 2017; Klipkova & Gaber, 2018; Korvat, 2023; Mamatova, 2021; Yegupov & Shmihol, 2024), the national innovation policy purposefully distinguishes between R&D and innovation activity. Instead of a unified system of financial support for innovations and incentives, establishing links between science and business, financing of the initial stages of innovation projects is carried out separately in accordance with the legislation on scientific and scientific and technical activities, and mechanisms for supporting innovation projects at the final stages of TRL are absent. At the same time, the regulatory requirements for R&D and innovation plans differ significantly. Such fragmentation of regulation is not only a bureaucratic obstacle, but

also a systemic factor inhibiting innovative and economic development. In addition, the results, effects and impacts of funded R&D projects are not monitored by the state.

According to the author, one of the incentives for the activation of innovation activity in Ukraine can be the construction of a holistic mechanism of state support for innovation projects with systematic financing and monitoring of results at all levels of TRL. It would be advisable for Ukraine to harmonize the provisions of the Laws «On Innovation Activity» and «On Scientific and Scientific-Technical Activity» regarding innovation projects, minimize administrative barriers to innovation activity, and introduce unified regulatory requirements and methodological recommendations for planning of innovation projects for each stage of the innovation cycle. Further scientific work will focus on the problems of assessing ethical and environmental risks of innovation projects and improving national legislation in the field of innovation.

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ОСОБЛИВОСТІ ПЛАНУВАННЯ В ІННОВАЦІЙНІЙ ДІЯЛЬНОСТІ

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Анотація. Стаття присвячена дослідженню особливостей інноваційної діяльності для вдосконалення процесів планування та державного регулювання інноваційної сфери економіки.Хоча національне законодавство регламентує вимоги до інноваційних проектів і передбачає можливості їх державної підтримки, втім інноваційна діяльність в Україні перебуває у стані стагнації. Одна з ключових причин цієї проблеми – це ігнорування державою специфіки інноваційних процесів, особливостей планування інноваційних проектів та їх реалізації.

Планування інновацій є предметом багатьох наукових досліджень. Попри розвиток теоретичних зasad інноваційного менеджменту, питання врахування специфіки інноваційної діяльності у практиці планування інноваційних проектів, так і в державному регулюванні інноваційної сфері економіки висвітлено в науковій літературі недостатньо.

Мета дослідження – виокремити особливості інноваційної діяльності й проаналізувати специфіку планування інноваційних проектів з метою адаптації законодавства Україні до сучасних тенденцій інноваційного розвитку. Для досягнення цілей статті було використано загальнонаукові методи дослідження такі як аналіз, синтез і абстрагування.

У науковій роботі виокремлено особливості інноваційної діяльності та здійснено їх порівняння зі стандартним бізнесом. На відміну від рутинних циклічних операційних процесів, кожен інноваційний цикл є унікальним і неповторним. Окрім етапів формування ідеї, дослідження, розробки, тестування і впровадження, сучасна концепція інноваційного циклу охоплює етап комерціалізації. Цей етап доцільно розглядати як зональний переход від інноваційної діяльності до операційної, який триває з моменту впровадження інновації до досягнення стабільності операційної діяльності та прийнятного рівня ризиків.

Проаналізовано форми результативності інноваційної діяльності: виходи, результати та впливи. З'ясовано, що впливи мають відтермінований характер і можуть нести ризики для суспільства, екології, здоров'я людей тощо. Аргументовано, що відмінності між етапами інноваційного циклу існують у характеристі невизначеностей, ризиках, пріоритетах, потребах у ресурсах, що зумовлює необхідність розроблення окремих планів для кожного з них. Доведено, що врахування критичних ризиків є важливим компонентом планування інноваційного проекту. Обґрунтовано доцільність поетапної розробки планів інноваційних проектів, поєднуючи класичні та гнучкі методи планування.

Врахування особливостей інноваційної діяльності є необхідним як у практиці планування інноваційних проектів, так і в державному регулюванні інноваційної сфері економіки. На підставі результатів дослідження запропоновано узгодити положення Законів України «Про інноваційну діяльність» і «Про наукову та науково-технічну діяльність» щодо інноваційних проектів, запровадити цілісний механізм державної підтримки інноваційної діяльності, єдині нормативні вимоги й методичні рекомендації з планування інноваційних проектів для кожного етапу інноваційного циклу.

Ключові слова: інноваційний проект, інноваційний цикл, ризик, впливи, законодавство.

FEATURES OF PLANNING IN INNOVATIVE ACTIVITIES

Abstract. The article is devoted to the study of the features of innovative activity to improve the planning processes and state regulation of the innovative sphere of the economy. Although national legislation regulates the requirements for innovative projects and provides for the possibility of their state support, innovative activity in Ukraine is in a state of stagnation. One of the key reasons for this problem is the state ignoring the specifics of innovative processes, the features of planning innovative projects and their implementation.

Innovation planning is the subject of many scientific studies. Despite the development of the theoretical foundations of innovation management, the issue of taking into account the specifics of innovative activity in the practice of planning innovative projects and in state regulation of the innovative sphere of the economy is not sufficiently covered in the scientific literature.

The purpose of the study is to identify the features of innovative activity and analyze the specifics of planning of innovative projects in order to adapt the legislation of Ukraine to modern trends in innovative development. To achieve the goals of the article, general scientific research methods such as analysis, synthesis and abstraction were used.

The scientific work identifies the features of innovative activity and compares them with standard business. Unlike routine cyclical operational processes, each innovation cycle is unique and unrepeatable. In addition to the stages of idea formation, research, development, testing and implementation, the modern concept of the innovation cycle includes the commercialization stage. This stage should be considered as a zonal transition from innovation to operations, which lasts from the moment of innovation implementation until the stability of operations and an acceptable level of risks are achieved.

The forms of innovation results are analyzed: outputs, outcomes and impacts. It is found that impacts are of a deferred nature and may carry risks for society, the environment, human health, etc. It is argued that the differences between the stages of the innovation cycle exist in the nature of uncertainties, risks, priorities, resource needs, which necessitates the development of separate plans for each of them. It is proven that taking into account critical risks is an important component of planning an innovation project. The feasibility of phased development of innovative project plans, combining classical and flexible planning methods, is substantiated.

Taking into account the features of innovative activity is necessary both in the practice of planning innovative projects and in state regulation of the innovative sphere of the economy. Based on the results of the study, it is proposed to harmonize the provisions of the Laws of Ukraine «On Innovative Activity» and «On Scientific and Scientific-Technical Activity» regarding innovative projects, to introduce a holistic mechanism of state support for innovative activity, unified regulatory requirements and methodological recommendations for planning of innovative projects for each stage of the innovation cycle.

Key words: innovation project, innovation cycle, risk, impacts, legislation.

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