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### **ECONOMIC JUSTIFICATION OF ENTERPRISE'S BUSINESS DECISIONS DURING THE IMPLEMENTATION OF INNOVATIVE STARTUP PROJECTS**

The article discusses some aspects of the current development of innovative entrepreneurship and the economic justification at enterprises of business decisions on the implementation of start-up projects. It is emphasized that various upheavals, including the military actions that Ukraine is currently experiencing, social conflicts, ecological cataclysms can stop the development of the economy of any country or push it back, and the driving forces of the modern economy are intelligence, knowledge and new ideas. It has been proven that there is a positive trend in the development of technological entrepreneurship through start-up activities and its impact on progress in Industry 4.0. The analysis of scientific sources showed that the geography of research on innovative startup projects is very broad and covers almost all continents and most countries of the world, but the topic is so relevant and multifaceted that it requires further scientific development. Some results of the study conducted by the Global Entrepreneurship Monitor (GEM) for 2023-2024 were considered and conclusions were drawn regarding the relationship between the standard of living of the country's population and the activity of its innovative entrepreneurial activity. It has been proven that innovative activity, although associated with high risks, has potentially high profitability in the case of successful implementation of a startup project, which certainly attracts investors. Studying statistics shows that when working in the field of innovative entrepreneurship, you should not be too optimistic, because about 90% of startups fail. It was revealed that the main reasons for the failure of start-up projects are the lack/exhaustion of funding and the mismatch of the product to the market, which emphasizes the need for careful justification of business decisions regarding the development and implementation of startups. Formalized and non-formalized methods of making business decisions are analyzed. It was found that the financial and economic justification of a startup project should contain information about initial costs, operating costs, income, profit, the amount of taxes, and the payback period of the project.

**Keywords:** innovative entrepreneurship; start-up projects; justification of business decisions; risks; profitability; investment

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### **ЕКОНОМІЧНЕ ОБҐРУНТУВАННЯ БІЗНЕС-РІШЕНЬ ПІДПРИЄМСТВА ПІД ЧАС РЕАЛІЗАЦІЇ ІННОВАЦІЙНИХ СТАРТАП-ПРОЄКТІВ**

У статті розглянуто деякі аспекти сучасного розвитку інноваційного підприємництва та економічного обґрунтування на підприємствах бізнес рішень стосовно реалізації стартап проєктів. Наголошується, що різні потрясіння, в тому числі військові дії, які зараз переживає Україна, соціальні конфлікти, екологічні катаклізми можуть зупинити розвиток економіки будь-якої країни або відкинути її назад, а рушійними силами сучасної економіки є інтелект, знання та нові ідеї. Було доведено, що існує позитивна тенденція розвитку технологічного підприємництва через стартап діяльність та її вплив на прогрес в Індустрії 4.0. Аналіз наукових джерел показав, що географія досліджень інноваційних стартап-проєктів дуже широка і охоплює практично всі континенти та більшість країн світу, але тема настільки актуальна та багатогранна, що потребує подальшої наукової розробки. Розглянуто окремі результати дослідження Global Entrepreneurship Monitor (GEM) за 2023-2024 роки та зроблено висновки щодо взаємозв'язку між рівнем життя населення країни та активністю його інноваційної підприємницької діяльності. Доведено, що інноваційна діяльність, хоч і пов'язана з високими ризиками, має потенційно високу прибутковість у разі успішної реалізації стартап-проєкту, що безумовно приваблює інвесторів. Вивчення статистики показує, що, працюючи у сфері інноваційного підприємництва, не варто бути надто оптимістичним, адже близько 90% стартапів зазнають краху. Виявлено, що основними причинами провалу стартап-проєктів є відсутність/вичерпання фінансування та невідповідність продукту ринку, що підкреслює необхідність ретельного обґрунтування бізнес-рішень щодо розробки та реалізації стартапів. Проаналізовано формалізовані та неформалізовані методи прийняття бізнес рішень. З'ясовано, що фінансово-економічне обґрунтування стартап-проєкту має містити інформацію про початкові витрати, операційні витрати, доходи, прибуток, суму податків, термін окупності проєкту.

**Ключові слова:** інноваційне підприємництво; стартап проєкти; обґрунтування господарських рішень; ризики; прибутковість; інвестиції

**Introduction.** Economic development is a complex and contradictory process in which positive and negative factors interact, and periods of progress are replaced by periods of regression. Various upheavals, including the military actions that we are currently experiencing in Ukraine, social conflicts, environmental disasters can stop the development of the economy of any country, or push it back.

In traditional economics, countries' economic growth was determined by the availability of natural resources and the level of industrial production. The driving forces of the modern economy are intelligence, knowledge and new ideas. We are currently living in the era of Industry 4.0, which has fundamentally changed the way of doing business and interacting with customers, moreover, the world has begun an active movement to the next level of this Industry, namely - 5.0. The role and importance of start-ups in the processes of Industry 4.0 become especially relevant in view of the level of costs and the effectiveness of the changes that may take place. The task is to develop technological entrepreneurship through start-

up activities and its impact on progress in Industry 4.0. The world economy has been developing rapidly in recent years, and in order to be competitive in the international market, companies must create relevant innovative products. Consequently, one of the effective areas of economic growth can now be considered startups as a progressive form of innovative entrepreneurship.

**Actuality.** Researching activities related to innovative start-up projects and evaluating the potential success of these activities will help investors to choose among a large number of diverse projects safe for financing, and enterprises - to attract funds through the ability to convince investors. All this will contribute to the revitalization of innovative entrepreneurship and have a positive impact on the economic development trends of the country.

**Review of the recent literature and formulation of the research problem.** Today's challenges faced by business require creative, innovative ideas, entrepreneurs need to take risks, so this field of activity is of great interest not only to businessmen, but also to scientists of

various fields, primarily economists. Thus, the problems of creating innovative startup projects and attracting financial resources for their development are widely studied both in Ukraine and abroad.

Scientists comprehensively consider this field of activity, for example, they study startups as objects of the investment process and generally pay attention to the financial aspects of the development of an innovative business environment, such as O.V. Chernyavska [1] and L.O. Dobryk [2]. Many works are devoted to global trends in the development of startups, such as articles by N.M. Vnukova [3], and the activation of innovative entrepreneurship in Ukraine, here it is worth noting scientists O.I. Garafonova [4], M.V. Tymoshenko [5], N.O. Ivanchenko, O.S. Podskrebko [6] and others. The works of such scientists as A.I. Sedykova [7], T.V. Sak, N.A. Hrytsyuk [8], O. Linnyk, T. Kochetova [9] and others are devoted to general theoretical aspects of innovative entrepreneurship and startup project management. In addition, there are many studies on the role of Ukrainian startups in the international market, etc.

The geography of research on innovative start-up projects is very wide and covers almost all continents and most countries of the world, various aspects of this topic fall into the field of interest of foreign scientists, in particular, start-ups are considered as engines of economic development of countries, for example, these issues are studied by M. Ressin [10], J. Szarek, J. Piecuch [11], Gavin C. Reid, Julia A. Smith [12], A. Vonoga [13], and others.

The conclusion to the analysis of literary sources will be the statement that despite the wide and comprehensive coverage of this topic, it is so relevant and multifaceted that it needs further scientific developments.

**The purpose of the study.** The increase in innovative activity of enterprises is due to the need to gain new competitive advantages. In this context, it is worth emphasizing that with the development of information technologies and globalization, the concept of a startup is spreading in all spheres of business. Startup is a new business, the basis of which is the mandatory use of the latest technologies that have not been used before, and everything new carries great risks, so the decision to invest in startup projects must be well-justified that is, it is necessary to objectively and comprehensively evaluate the potential of the idea. The purpose of justification a startup will make it possible to determine the magnitude of the prospects, reflected in monetary terms, and also to predict how sustainable the startup is in terms of investment attractiveness, determine its margin of financial strength, and also how much the business valuation will change if it develops while minimizing certain risks.

**Presentation of the main research material.** Entrepreneurial activity is a natural condition for the functioning and development of the country's economy. There are two models of entrepreneurial activity: classical and innovative.

1. Traditional or classical, reproductive entrepreneurial activity, in which the entrepreneur seeks to organize work with the aim of maximizing the return on the resources invested in it.

2. The second model is an innovative, ground-breaking business activity aimed at making a profit by creating and actively spreading innovations in all areas of business.

In contrast to classical entrepreneurship, innovative entrepreneurship is completely based on the search for and active use of new ideas, new solutions to meet consumer needs, and non-trivial approaches to enterprise development. Since this type of entrepreneurship is rooted on innovation, the result of such activity is either a new product, or a product with fundamentally new characteristics or properties, or new technologies.

It is worth noting that the volume and quality of a country's entrepreneurial activity directly affect the level of well-being of its population. According to a study of 46 countries conducted by the Global Entrepreneurship Monitor (GEM) for 2023-2024, these 46 countries were divided into three groups by income level (table 1):

1. Level A: economies with a GDP per capita of over \$50,000;
2. Level B: economies with a GDP per capita between \$25,000 and \$50,000;
3. Level C: economies with a GDP per capita of less than \$25,000 [14].

Table 1 - Income groups (2023)

Level A >\$50,000	Level B \$25,000-\$50,000	Level C <\$25,000
Canada	Argentina	Brazil
France	Chile	China
Germany	Croatia	Colombia
Italy	Cyprus	Ecuador
Rep. Korea	Estonia	Guatemala
Luxembourg	Greece	India
Netherlands	Hungary	Iran
Norway	Israel	Jordan
Qatar	Japan	Mexico
Saudi Arabia	Latvia	Morocco
Slovenia	Lithuania	South Africa
Sweden	Oman	Thailand
Switzerland	Panama	Ukraine
United Arab Emirates	Poland	Venezuela
United Kingdom	Puerto Rico	
United States	Romania	
	Slovak Republic	
	Spain	
	Uruguay	

GEM is a project that thoroughly and comprehensively studies global trends in entrepreneurial activity, including innovative ones such as startups. By the way, according to the GEM report, last year in 2023, the UAE was recognized as the best country in the world for opening and running innovative business enterprises. Another interesting result of their research is that people very often give up opportunities to develop innovative ideas and create startups because of the fear of failure. On average, two out of five people who see good opportunities will not risk opening their own business because of the fear of potential losses. This fear is justified, as evidenced by statistics on the percentage of successful and unsuccessful enterprises, especially in recent times, given the uncertainty of the external factors affecting the business.

The result of the research is interesting conclusions - the dynamics of the number of people who know

someone who has opened a business increases from countries of level A and the highest indicator in countries of level C. At the same time, the number of people who believe that it is easy to open a business in their country is the smallest in countries of level C and the largest in level A countries. This indicates that in the economies of level C countries, many people start businesses just to survive because employment opportunities are limited compared to countries of levels B and A. Thus, as the income of the population increases, the need to start a business becomes less, due to the fact that there are more employment opportunities and better support systems [14]. But on the other hand, the development of innovative entrepreneurship contributes to increasing the competitiveness of the country's economy and, as a consequence, the standard of living. Entrepreneurship was, is and will remain in the future the main driving force of the country's economic development and one of the priority tasks of state authorities and local governments. Supporting the development of entrepreneurship contributes to the stability and development of any country, both in peacetime and in wartime [15].

In recent years, under the influence of various factors, the global business environment has acquired a new qualitative state, which is generated by a combination of the following properties: variability, uncertainty, complexity and ambiguity. This is particularly characteristic of the realities of Ukraine, especially considering the active phase of the war, which has been going on in the country for almost two and a half years. Despite the complexity, the economies of countries and, accordingly, individual enterprises as the main links of the economy must work, but in such conditions there is a decrease in the effectiveness of traditional approaches to enterprise management, which are based on the relatively slow development of market trends. Thus, the situation of variability, uncertainty, complexity and ambiguity of the environment requires a creative approach to business design and management from enterprises. Adaptability, organizational flexibility and operational efficiency of business are ensured precisely by a creative approach to its design and innovative development of these systems [4].

Innovative activity, although associated with high risks, has potentially high profitability in case of successful implementation of the startup project, which, of course, attracts investors. Thus, innovative companies have been a promising industry for investment and venture funds, business angels and other private investors in recent years. The main goal of a startup is growth. By scaling, the team captures new markets, increases the number of customers and profits in general. But when working in the field of innovative entrepreneurship, it is not worth being too optimistic, because statistics show that about 90% of startups fail. Among the reasons that lead to failure, for example, an incorrectly selected team is highlighted. The following are the top reasons for the failure of startup projects: lack of/exhaustion of funding and inadequacy of the product to the market.

Any business decision usually requires investment, but at the same time there are alternative ways of using

these funds. Therefore, the decision should not be only intuitive or emotional - economic justification of economic decisions is required. A priori, it is known that innovative activity, compared to other types of activity, is more associated with risk, since there is practically no full guarantee of a positive result. As a result, innovative projects have a higher dependence on uncertainty factors, which are the cause of risks.

Decision justification methods are usually used comprehensively. This is determined by the presence of formal and informal factors that create the situation. These factors must be considered when making a final decision.

However, in each specific case, priority is given to a certain group of methods, the choice of which is influenced by:

- scale of the problem to be solved (global and local);
- long-term (operational, tactical, strategic) decisions;
- decision-making conditions (certainty, risk, uncertainty).

Looking at it from a slightly different angle, decision-making methods may vary depending on the type of task or problem being solved. Problems can be classified as follows:

- standard problems that have a clear structure, cause-and-effect relationships, analogues;
- well-structured problems that can be divided into sub-problems, blocks of questions, for each of which there is usually a set of solutions;
- poorly (ill) structured problems, in which directions for solution and cause-and-effect relationships are not always visible, and the problems themselves are not formulated clearly enough;
- unstructured problems that usually have no analogues, cause-and-effect relationships are not completely clear, and solutions are not defined. A classic example is natural and man-made disasters with large social consequences.

All decision-making methods can be divided into two large groups: formalized (mathematical) and informal (heuristic).

Formalized methods based on obtaining the results of quantitative calculations are used when solving standard, well-structured and partially ill-structured problems to evaluate solution options, select and justify the optimal option. Formalized methods are based on fairly strict formalized analytical dependencies, and this group includes a large number of methods common in decision theory.

Non-formalized methods are used when solving complex semi-structured and unstructured problems to generate solution options, analyze and evaluate them, select and justify the best solution. Non-formalized (informalized) methods are based on the description of analytical procedures at a logical level, rather than on strict analytical dependencies. These are methods of expert assessments, scenario, morphological, comparisons, etc. The use of these methods is characterized by some subjectivism, since they are of

great importance intuition, experience and knowledge of the analyst. Informal decision-making methods are less developed than formalized ones and are used primarily in group decision-making. Much attention in these methods is paid to organizing the work of the subject of group decision-making, coordinating the opinions of group members when choosing the final decision. Here are some of the non-formalized methods:

- Brainstorming method
- Delphi method
- Scenario method
- Decision tree methods
- Bord and Pillar Method
- Associative method (free association method)
- Synectics method (Gordon method).
- Reverse thinking (inversion), etc.

All formalized methods are divided into four groups, which are presented below.

1. Analytical methods are a purposeful organization of methods and actions, which makes it possible to break down a complex object into its components, examine them and combine the obtained results with the help of another logical method - the synthesis of a whole, enriched with new knowledge.

2. Probabilistic-statistical methods – statistical data analysis methods that are based on the use of information about the past experience of the enterprise in a certain field of activity and are implemented through the collection, processing and analysis of statistical materials, both obtained as a result of real actions and artificially created by statistical modeling.

3. Mathematical methods encompass a variety of methods used to quantitatively analyze the actual material obtained in the research process.

4. Game-theoretic approaches are methods of analyzing and modeling strategic behavior using mathematical tools and concepts.

The classification of formalized methods of economic decision-making is presented in Table 2.

Table 2 – Classification of formalized methods

Generalized name of the group of methods	List of methods
1. Analytical methods (used in conditions when the information on the situation is fully defined and unambiguous)	<ul style="list-style-type: none"> <li>• Economic analysis</li> <li>• Probability theory</li> <li>• Markov chain (Markov process)</li> <li>• Queuing theory</li> <li>• Dynamic Averaging Method, etc</li> </ul>
2. Probabilistic-statistical (suitable for making decisions in conditions of relative certainty of data on the situation)	<ul style="list-style-type: none"> <li>• Decision Matrix</li> <li>• Sequential analysis</li> <li>• Factor analysis</li> <li>• Statistical hypothesis test (Monte Carlo method), etc</li> </ul>
3. Mathematical methods (for solving problems with several variables)	<ul style="list-style-type: none"> <li>• Linear programming</li> <li>• Nonlinear programming</li> <li>• Dynamic programming</li> <li>• Network planning, etc</li> </ul>
4. Game-theoretic methods (are used in conditions of information uncertainty)	<ul style="list-style-type: none"> <li>• Statistical decision theory (Game with nature):               <ol style="list-style-type: none"> <li>1) Criterion of pessimism;</li> <li>2) Criterion of optimism;</li> <li>3) Hurwitz criterion;</li> <li>4) The Laplace criterion;</li> <li>5) Regret criterion</li> </ol> </li> <li>• Game Theory</li> </ul>

The fundamental point in evaluating a startup is that any startup should be considered as a commercial project. Such a project should be based on the principle of supporting and increasing the capital of investors and startup owners. Projects, the purpose of which is to support and multiply invested capital, must be evaluated, and they must be based on a market assessment that will allow the most promising projects to be selected for the investor. At the same time, the market valuation of a startup should be understood as the most likely price at which a traditional business or startup can be sold on the open market under competitive conditions [1].

The financial and economic justification of the startup project should contain information about start-up costs, operating costs, income, profit, the amount of taxes, and the payback period of the project.

Successfully overcoming the stages of its development, a startup reaches the stage when it acquires all the signs of a traditional business and can be integrated into the structure of an operating enterprise, or continue its existence as an independent economic unit that carries out entrepreneurial activities in various types of economic activity for the purpose of obtaining profit [2].

#### Conclusions and prospects for further research.

The article examines some aspects of the modern development of innovative entrepreneurship and features of the economic substantiation at enterprises of economic decisions regarding the implementation of startup projects. It is obvious that various shocks, including the military actions that Ukraine is currently experiencing, can stop the development of the economy of any country or push it back, and the driving forces of the modern economy are intelligence, knowledge and new ideas, that is, there is a positive trend of economic growth due to revitalization of technological entrepreneurship and startup activity. It has been proven that innovative activity, although associated with high risks, has potentially high profitability in the case of successful implementation of a startup project, which definitely attracts investors, but at the same time, statistics show that about 90% of startups fail. It has been established that the financial and economic justification of a startup project should contain information on initial costs, operating costs, income, profit, the amount of taxes and the payback period of the project.

#### References

1. L. Dobrik. Finansovi umovy rozvytku innovatsiinoho biznes-seredovyscha startapiv i tradytsiinoho biznesu v Ukraini: zahalni rysy ta vidminnosti [Financial terms of innovative business environment startups and traditional businesses in Ukraine: common features and differences]. *Efektivna ekonomika* [Efficient economy] [Electronic resource]. 2017. no 4. Access mode: <http://www.economy.nayka.com.ua/?op=1&z=5548>.
2. Cherniavska O.V., Hnyra-Chernevetka L.V., Chzhysieiev V. Startap yak ob'ekt investytsiinoho protsesu: sutnist ta zhyttievyi tsykl inuvannia [tartup as an object of the investment process: essence and life cycle of existence]. *Naukovyi visnyk Poltavskoho universytetu ekonomiky i torhivli. Seriiia : Ekonomichni nauky* [Scientific Bulletin of the Poltava University of Economics and Trade. Series: Economic sciences]. 2017. no 5. pp. 119-128.
3. Vnukova N. M. Svitovyi trend pryskorennia startapamy innovatsiinykh zmin v industrii 4.0. [The global trend of

- acceleration of innovative changes in industry 4.0 by startups]. *Pravo ta innovatsii* [Law and innovation]. no 3(39). pp. 17–22.
4. Harafonova O. I. Osnovni tendentsii rozvytku startap-proektiv yak formy innovatsiino kreatyvnykh pidpriemstv na ukrainському rynku kompiuternoho prohramuвання. [The main trends in the development of startup projects as a form of innovative and creative enterprises in the Ukrainian computer programming market] .. *Biznes Inform* [Business Inform]. 2017. no 10. pp. 133-138.
  5. Tymoshenko M. V. Innovatsiini startapy yak chynnyk rozvytku ekonomiky: krashcha svitova praktyka ta dosvid Ukrainy [Innovative startups as a factor in economic development: best global practice and experience of Ukraine]. *Naukovi zapysky Lvivskoho universytetu biznesu ta prava* [Scientific notes of Lviv University of Business and Law]. 2022. no 33. pp. 13–20.
  6. Ivanchenko N. O., Podskrebko O. S., Sidletska A. O. Osnovni problemy ta perspektyvy rozvytku rynku startapiv v Ukraini [The main problems and prospects of the development of the startup market in Ukraine]. *Biznes Inform* [Business Inform]. 2020. No 4. pp. 303–311.
  7. Sedikova I. O. Osoblyvosti startapu yak innovatsiinoho proiektu [Features of a startup as an innovative project]. *Prychomomorski ekonomichni studii* [Black Sea Economic Studies]. 2020. Vol. 55-2. pp. 12–16.
  8. Sak T.V., Hrytsiuk N.O. Biznes-model startapu: sutnist, vydy ta mozlyvosti dlia zastosuvannya [Startup business model: essence, types and possibilities for application]. *Naukovyi visnyk Polissya* [Polissya scientific bulletin]. 2022. no 1. (24). pp. 93-107.
  9. Lynnyk O., Kochetova T. Rol mikro-, maloho i serednoho biznesu u stanovleni innovatsiinoi modeli ekonomiky Ukrainy [The role of micro, small and medium-sized businesses in the formation of an innovative model of the economy of Ukraine]. *Visnyk Natsionalnoho tekhnichnoho universytetu "KhPI". Ekonomichni nauky* [Bulletin of the National Technical University "KhPI". Economic Sciences]. 2023. No 3. pp. 52–56.
  10. Ressin M. Start-ups as drivers of economic growth. *Research in Economics*. 2022. Vol. 76(4), pp. 345-354.
  11. Szarek J., Piecuch J. The importance of startups for construction of innovative economies. *International Entrepreneurship Review*. 2018. Vol. 4, No. 2. pp. 69-78.
  12. Reid Gavin C., Smith Julia A. What makes a new business start-up successful? *Small Business Economics. An Entrepreneurship Journal*. 2000. Vol. 14. pp. 165–182.
  13. Vonoga A. Start-ups – an element for economic growth and innovativeness. *Latgale National Economy Research*. 2018. Vol. 1(10). pp. 159-167.
  14. GEM (Global Entrepreneurship Monitor). *Global Entrepreneurship Monitor 2023/2024 Global Report: 25 Years and Growing*. 2023. London: GEM. 240 p.
  15. Maistro R.H., Bilovska O.O. Konkurentospromozhnist biznesu v umovakh viiny v Ukraini [Competitiveness of business in the conditions of war in Ukraine]. *Visnyk Natsionalnoho tekhnichnoho universytetu "KhPI". Ekonomichni nauky* [Bulletin of the National Technical University "Kharkiv Polytechnic Institute". Economic sciences]. 2023. No 2. pp. 50-54.

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