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## CONSIDERATION OF LEASING AS AN EFFECTIVE TOOL IN THE SYSTEM OF EFFECTIVE ACTIVITY OF INDUSTRIAL ENTERPRISES

*В умовах економічної кризи щодо розвитку національної економіки загострюється необхідність розробки надійних механізмів залучення інвестицій, які є засобом модернізації основних засобів та впровадження новітніх технологій. У зв'язку з можливістю виникнення ризику при вкладенні інвестицій в нові технології комерційні банки не досить активно приймають участь у фінансуванні освоєння інновацій. Значною мірою вирішення цих завдань може бути забезпечене шляхом застосування лізингу, який є перспективним напрямом господарсько-економічної діяльності промислових підприємств. Тому об'єктом дослідження обрано лізинг як інструмент інвестиційно-інноваційного розвитку промислових підприємств.*

*У роботі на основі системного підходу доповнено перелік задач, принципів, функцій щодо здійснення трансферу технологій у формі лізингу як способу комерціалізації інноваційної продукції промислових підприємств, що спрямовано на активізацію їх інноваційної діяльності. Запропоновано підхід щодо визначення лізингу як дієвого інструменту в системі ефективної діяльності промислових підприємств. Він має ряд особливостей застосування, зокрема базується на економіко-математичній моделі вибору форми трансферу технологій та оцінці її впливу на ринкову вартість підприємства. Відмінною особливістю моделі від існуючих підходів є облік вартості активів та приріст ринкової вартості активів інвестиційного проекту, що реалізується за допомогою трансферу технологій, а також чистого дисконтованого грошового доходу. Це дозволяє застосовувати модель і у разі визначення ефективності використання банківського кредитування як способу фінансування трансферу технологій.*

*Застосування в якості параметрів моделі показників формування ринкової вартості підприємства дозволяє застосовувати її і для моделювання основних показників його майнової оцінки за складом і джерелами формування. Використання даної моделі в практиці роботи промислових підприємств дозволить визначити ефективність застосування лізингу при реалізації інвестиційних проектів.*

**Ключові слова:** промислові підприємства, трансфер технологій, інноваційна продукція, ринкова вартість, інвестиційний проект, активізація інвестиційної діяльності.

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### 1. Introduction

In economically developed countries, the main increase in gross domestic product is ensured through the transfer and implementation of promising scientific and technical developments in the real sector of the economy. Therefore, for any country, the introduction and development of innovative technologies are priority elements of market competition, factors in the growth of production efficiency and improving the quality of products. As well as strategically important tools for socio-economic development, guarantors of economic stability and national security.

In the context of the economic crisis for the development of the national economy, the need is growing for developing reliable mechanisms for attracting investments, which are a means of modernizing fixed assets and introducing the latest technologies. Efficient organization of the technology transfer process helps to increase the degree of implementation of state innovation programs in relation to

the modernization and innovation of the real sector of the economy. The technology transfer facilitates the permanent transfer of research and development to the industrial sector of the economy. And also allows to strengthen the position of national production in the global market for high-tech developments. All this led to the choice of research direction.

Concerning the theoretical aspects of leasing as an object of scientific research, a wide range of fundamental and applied economic studies of recent times has been devoted to their development. Leasing is considered as:

- peculiar way of lending to business activities;
- method of investment financing [1];
- rental relations, allowing to increase the efficiency of use of fixed assets, by combining all the elements of credit, investment and foreign trade operations [2];
- long-term lease or one of its forms;
- veiled way of buying and selling means of production or the right to use other people's property;
- source of updating the technical base of enterprises.

In [3], leasing is considered as a special type of entrepreneurial activity, a new organizational and legal form of business, it is the economic regulator of the investment development of enterprises and acts as an effective tool for enhancing investment processes in the national economy.

Leasing is compared with a marketing tool, a form of credit income [4]. Thus, the authors of the study [5] prove the advisability of using leasing in the implementation of economic activities of enterprises to strengthen their position in the market.

In [6], methodological tools for assessing leasing activity based on indicators of leasing and investment activities of enterprises are presented. Even carrying out a sociological study on the use of leasing as an alternative source of financing, bring its feasibility and importance as the cheapest way to finance [7].

Given the significant experience [8], leasing can be considered an effective and efficient method of enhancing investment activity. Given the problems in the sources of financing, «leasing can become an effective source of updating fixed assets, a promising area of increasing the volume of production potential and an effective tool for marketing our own products» [9]. But, positively evaluating the scientific results of research, it should be noted that the issue of increasing the effectiveness of leasing as an economic tool for innovative renewal of industrial enterprises requires further study. So, *the object of research* is leasing as a tool for investment and innovative development of industrial enterprises. And *the aim of research* is to improve on the basis of a systematic approach theoretical and methodological foundations for the implementation of leasing activities. This will increase the competitiveness of industrial enterprises and strengthen their market position.

## 2. Methods of research

In the research process, the following scientific methods were used as logical generalization and abstraction, system analysis, analysis and synthesis, induction and deduction, economic-statistical analysis and economic-mathematical modeling.

## 3. Research results and discussion

The leasing industry plays an important role in the European economy, especially in supporting and developing small and medium-sized businesses. Leasing is considered as an effective tool for the intensive development of national economies of Western countries, increasing their competitiveness in the world market [10]. The economic importance of leasing is that it provides capital for investment purposes. This, in turn, contributes to a healthy economy, employment and innovation. Let's use the objects of the Ukrainian market for the implementation of leasing activities as an example for research.

In Ukraine, the main organization that regulates the market for leasing services is the Association «Ukrainian Association of Lessors», created in 2005 as a voluntary union of professional leasing market participants. The main objective of the Association is to promote the development of an open and equitable market for operational and financial leasing in Ukraine by coordinating the activities of enterprises that have united to protect common interests. It should be noted that the share of the Association of

Ukrainian Lessors Association in the total leasing market is growing, reaching 77 % of the total Ukrainian new business volume.

Today, the Ukrainian leasing market for the fifth year in a row shows an upward trend in 2019 results. The cost of leasing transactions concluded in 2019 compared to 2018 increased by 18 %. Compared to 2017, it grew by 102 %. The portfolio of leasing companies increased by 15 % during 2019. Portfolio growth compared to 2017 was 27 %.

Stable positive dynamics of the leasing market during 2017–2019 was caused by a number of favorable factors, including the stability of the national currency, the active entry of the Ukrainian manufacturer into European markets, liberalization of the economy, as well as increased financial literacy of the population and business. In particular, familiarization with the features of financial leasing as a financing tool allows small and medium-sized businesses to take advantage of its availability and advantages over credit.

Another factor was the more active attraction of external financing by leasing companies. Thus, the size of attracted bank loans is about 30 % of the total funding. Compared to 2018, the growth was 20 %. A new source of funding was raising funds from international financial organizations. Their size amounted to about 2.5 % of total funding [11].

During 2019, the following leasing items were most often financed through leasing:

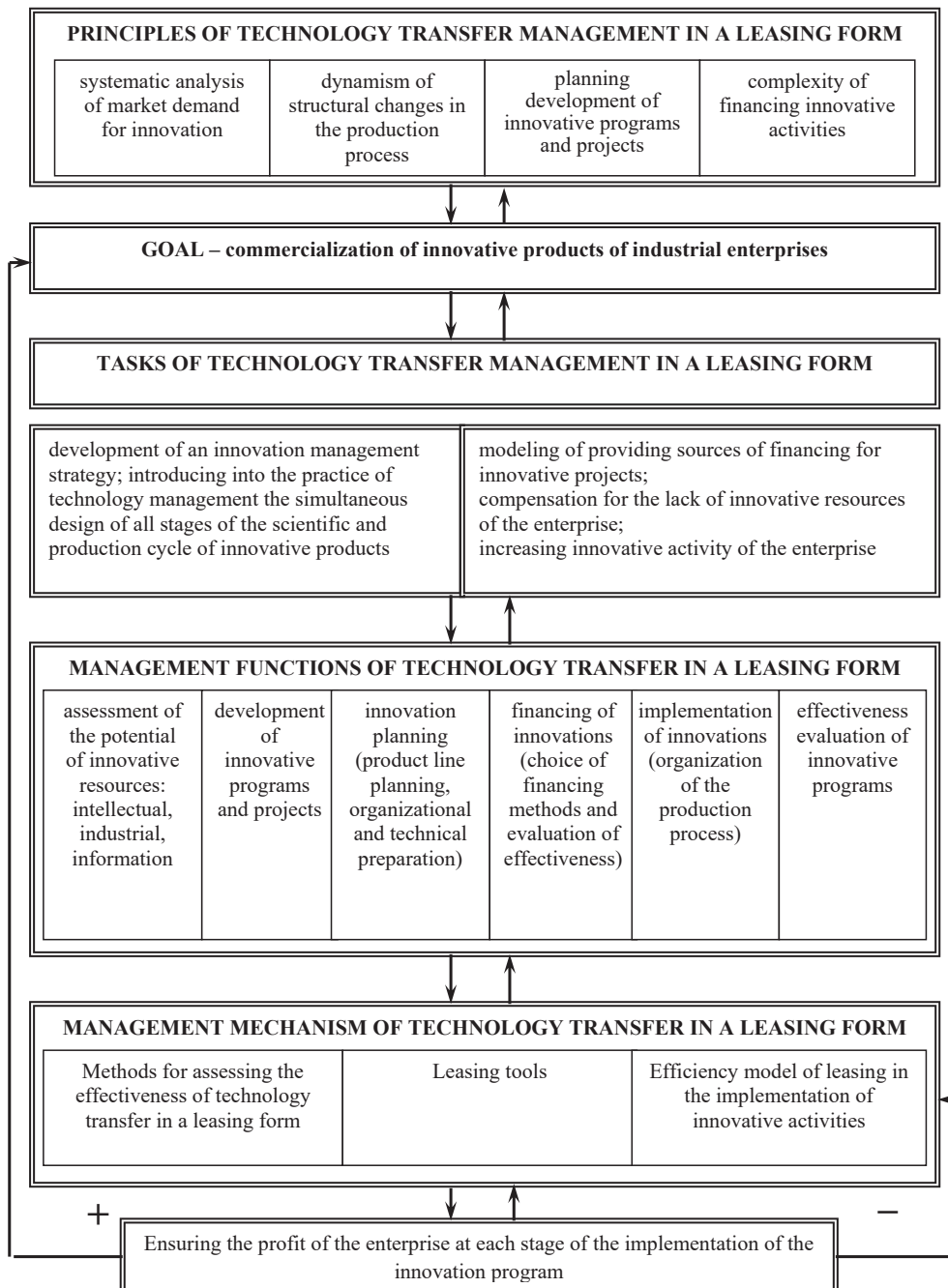
- vehicles – 63 % of the total amount of contracts;
- machinery, machinery and equipment for agriculture – 25.5 %;
- buildings and structures – 4 %;
- construction equipment and machinery – 4 % of the total amount of contracts.

Since in Ukraine the process of implementing leasing activities is gaining momentum, therefore, knowledge of the theoretical foundations of leasing when applied in domestic practice and in foreign economic activity, its planning techniques is important for domestic specialists and practitioners. The success of a leasing business in any industry depends on a proper understanding of its content and specific features. In this regard, let's consider the theoretical and methodological foundations of the implementation of leasing activities (Fig. 1). The methodological basis of the leasing mechanism is the goal and objectives. The goal is the commercialization of innovative products of industrial enterprises aimed at enhancing innovation. The main tasks include:

- development of a strategy for managing innovative activities;
- introducing into the practice of technology management the simultaneous design of all stages of the scientific and production cycle of innovative products;
- modeling of providing sources of financing for innovative projects;
- compensation for the lack of innovative resources of the enterprise;
- increasing the innovative activity of the enterprise.

The next element of the conceptual foundations of technology transfer in the form of leasing is principles. As the main ones, let's single out:

- systematic analysis of market demand for innovation;
- dynamism of structural changes in the production process;
- planning development of innovative programs and projects;
- complexity of financing innovation.



**Fig. 1.** Theoretical and methodological foundations of the implementation of leasing activities

The leasing functions allow to reveal in more detail the essence of this complex phenomenon, determine its main purpose, and identify priority areas of leasing activity. The main functions of leasing activities include:

- assessment of the potential of innovative resources;
- development of innovative programs and projects;
- planning, financing and implementation of innovations;
- assessment of the effectiveness of the implementation of innovative programs.

The capacity of the system for managing technology transfer in the form of leasing is determined by the management mechanism, ensures the influence of individual elements on leasing activities by certain methods and tools.

An important role in the innovative provision of industrial modernization is played by the financing of innovation.

Due to the possibility of risk when investing in new technologies, commercial banks are not actively involved in financing the development of innovations. Loans are provided at a high interest rate. This causes an acute shortage of funds from Ukrainian enterprises for the development and implementation of innovations, as a result of which the outdated model of the country's economic development remains.

The necessary financial resources for mastering the production of innovative products have at their disposal units of Ukrainian industrial enterprises. For the lion's share of Ukrainian industrial enterprises, the diversion of part of the working capital will pose a threat to the continuity of the operational process. Access to borrowed funds is limited or closed for most small and medium-sized busi-

nesses, since obtaining a loan is accompanied by a pledge and high interest rates. In addition, bank investment lending is associated with a number of risks [1]. Of course, the innovative products themselves can act as collateral in obtaining a loan, however, in Ukrainian lending practice this is only permissible for large resident investors.

The choice of such a form of technology transfer as leasing has a direct impact on the market value of an investment project, namely:

$$MVP^1 = p(MV^1 - IV^1) + p \sum_{j=1}^J (\Delta MV_j - \Delta IV_j) + (1-p)NPV, \quad (1)$$

where  $MVP^1$  – market value of the investment project, c. u.;  $p$  – probability of occurrence of risk, which leads to the impossibility of further implementation of the investment project, which provides for the transfer of technology;  $N^1$  – value of investment at the time of assessment ( $u$ ), c. u.;  $MV^1$  – market value of assets at the time of valuation ( $u$ ), c. u.;  $\Delta MV^1$  – an increase in the market value of the assets of the investment project in the process of performing the operation (work)  $j$  over a period of time [ $u$ ;  $m$ ], c. u.;  $\Delta IV_j$  – increase in investment as a result of the operation (work)  $j$  over a period of time [ $u$ ;  $m$ ], c. u.;  $NPV$  – the amount of net present value, expected from the implementation of the investment project, c. u.

If actions are taken to further increase the market value of assets, the market value of the entire investment project, which provides for technology transfer ( $MVP^2$ ), will be:

$$MVP^2 = p(MV^2 - IV^2) + p \sum_{j=1}^J (MV_j - \Delta IV_j) + p \sum_{j=1}^J (\Delta MV_j - \Delta V_j) + (1-p)NPV - (1-p) \sum_{j=1}^J \Delta V_j, \quad (2)$$

where  $N^2$  – value of investment at the time of assessment ( $u$ ), c. u.;  $MV^2$  – market value of assets at the time of valuation ( $u$ ), c. u.;  $\Delta MV_j$  – increase in the market value of assets when taking actions to further increase their market value;  $\Delta V_j$  – cost of taking actions to increase the market value of the assets of the investment project, c. u.

Based on this, it is advisable to increase the market value of assets for an investment project if  $MVP^1$  exceeds  $MVP^2$ , that is, if  $p\Delta MV_j > \Delta V_j$ .

If to plan to use a bank loan as the main potential investors in the technology transfer process, it is necessary to check the effectiveness of the alternative to increase the share of borrowed funds to finance the payment by reducing such a share in the period [ $O$ ;  $P$ ]. The effectiveness of the acceleration of the payment term will be ( $E_p$ ):

$$E_p = \frac{(V_{t=p}^A - V_{t \in [O; P]}^A)(IV^A - F^A)}{V_{t \in [O; P]}^A(1-c) \frac{d}{N} R(IV^A - F^A)} = \frac{I_{PM}^A}{(1-c) \frac{dR}{N}}, \quad (3)$$

where  $c$  – the value of the price discount to the company for expediting payment to the participant, taking into account the subscription term;  $d$  – payment acceleration period, in days;  $N$  – the number of days in the period for which the profitability indicator is calculated;  $R$  – profitability of current activities.

At the same time, the choice of a point in time for making a payment will be affected by the possibility of attracting the required amount over a period of time [ $O$ ;  $P$ ]. The effectiveness of the alternative is to increase the share of borrowed funds ( $E_B$ ) to finance the payment by reducing such a share in the period [ $O$ ;  $B$ ] will be:

$$E_B = \frac{(V_{t=p}^A - V_{t \in [O; P]}^A)(IV^A - F^A)}{V_{t \in [O; P]}^A(R - r^A) \frac{d}{N}(IV^A - F^A)} = \frac{I_{PM}^A}{(R - r^A) \frac{d}{N}}, \quad (4)$$

where  $r^A$  – the interest rate on borrowed funds for the transfer of technology;  $d$  – the number of days between the dates of borrowing for the transfer of technology.

The application of the above model will determine the effectiveness of leasing in the implementation of an investment project that involves the transfer of technology by determining its market value.

Under the current conditions, one of the effective tools for the development of innovative activity of industrial enterprises may be the mechanism of leasing of intellectual property. The economic importance of leasing is recognized as one of the methods of supporting entrepreneurship by the state, tools for technical equipment and re-equipment of production, modernization of fixed assets of business entities, the grounds for financial monitoring, effective forms of private investment. Therefore, in the further improvement of the organizational and economic mechanism for the implementation of leasing activities, it turns out to be promising and timely.

#### 4. Conclusions

In the course of the study, on the basis of a systematic approach, the list of tasks, principles, and functions for implementing technology transfer in the form of leasing was supplemented as a way of commercializing innovative products of industrial enterprises, which is aimed at enhancing their innovative activities. An approach to the definition of leasing as an effective tool in the system of effective activity of industrial enterprises is proposed. It has a number of application features, in particular, it is based on an economic-mathematical model for choosing the form of technology transfer and assessing its impact on the market value of an enterprise. A distinctive feature of the model from existing approaches is the accounting for the value of assets, the increase in the market value of assets for an investment project that is implemented using technology transfer, as well as net discounted cash income. This allows to apply the model in the case of determining the effectiveness of bank lending as a way of financing technology transfer. The use as indicators of the model indicators of the formation of the market value of the enterprise allows to use it to model the main indicators of its property valuation by composition and sources of formation. Using this model in the practice of industrial enterprises will determine the effectiveness of leasing in the implementation of investment projects.

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