

FINANCIAL - ECONOMIC ASSESSMENT OF INNOVATIVE PROJECTS

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Abstract: *The national economy restructuring, the European Union membership and globalization clearly outline the necessity of implementation of various activities, including innovation by which companies to form long-term competitive advantages. This creates the need for implementation of systematic and reliable research of the effectiveness of the implemented innovation as a component of overall efficiency. This requires improvement and grounded updating of traditional approaches to financial and economic evaluation of the planned innovation and related activities. In the proposed work are presented the opportunities for planned innovations economic assessment with the help of financial and economic instruments through the use of information technology.*

Keywords: INNOVATION, INNOVATION PROJECT, ECONOMIC EVALUATION, FINANCIAL-ECONOMIC INDICATORS, INFORMATION TECHNOLOGY

1. Introduction

The national economy restructuring, the European Union membership and globalization clearly outline the need for the implementation of various activities, including innovation by which companies to form long-term competitive advantages. This creates the necessity of implementation of systematic and reliable research of the implemented innovation effectiveness as a component of overall efficiency. This requires improvement and grounded updating of traditional approaches to financial and economic evaluation of the planned innovation and related activities. The reason is that this tool is not used in an adequate level by industrial enterprises managers, plans developing for implementing innovation is rather random in nature, and appropriateness analysis of the planned rarely does.

Determination of appropriateness of the implemented resources in any innovation and related activities at the planning stage allows the decision maker to assess whether this innovation is justified in respect of implementation funds.

The successful innovation implementation is a prerequisite for a competitive market presence in the industrial enterprises economy. In the existing conditions, the use of appropriate tools for determining financial and economic feasibility of implementing an innovation and related activities is necessary.

Important role for the economy prosperity plays the ability of creation and implementation of innovation. Innovations implementation is a determining factor for enterprises competitiveness increasing. An important step to overcome the existing lagging behind the developed European economies is to promote innovation process in the country. The European and global experience points that skillful use of research, advanced technologies and innovation, makes it possible to take active steps to increase the competitiveness of the economy and raise living standards. The transition to the knowledge economy and joining global information society appears to be the main challenge.

Industrial Enterprise is a multifaceted entity having social, technical, legal, economic, product-market and organizational and managerial aspects, and builds specific policies for implementation of various activities. Effectiveness evaluation of the activities in industrial enterprises does not contribute for improving the decision quality. The used criteria to evaluate the businesses performance needs systematization and respective inclusion in the summary approach to the assessment of their activities.

The planned innovation financial-economic analysis performance for the development of any industrial establishment and development of a common approach to financial and economic evaluation of innovation is a necessary task in modern society[4].

The planned innovations assessment opportunity is presented in the proposed work understandably with the help of financial and economic instruments through the use of information technology.

2. Theoretical assumptions about the innovation nature and related activities

The innovation process is a sequence of actions, from generating ideas for innovation to develop the final product and its commercialization, which are described and justified in the innovation project. This is a creative, cyclical, complex and expensive process, a result of a number of interrelated activities, which type and specificity depend of the scale of the innovation project and are not always innovative. For the realization and implementation in their entirety and complexity specific interdisciplinary knowledge and skills are required [1].

Whatever field of application is innovation is associated with novelty, which should be a value above all because the enterprise is on the way to realize it. The essence of innovation due to the specifics of its manifestation, enables multifaceted interpretation which leading to the formulation of new questions that need to be addressed. Innovation is a knowledge-based and involves product creation, creation of process or technology and innovation is measured by the degree of novelty for the firm and / or market. Innovation leads to increased competitiveness of the enterprise, industry, economy, or to increased user satisfaction. It is a process and result of the process in the core of which is innovation.

The effective use and implementation of innovations should be well planned, adequate to market realities and financial capabilities of industrial enterprises. This requires further development of existing tools for assessing the appropriateness of the expenses for innovation and development of a common approach for evaluation.

Innovation is most often defined as a change aimed at renewal or introduce something new and useful in practice, it is possible to happen in different areas: business, society, politics, science, art and more. There are different concepts of innovation, in 1934. Joseph Schumpeter first defines innovation as a useful change - an engine for economic development. He specifies 5 main cases of innovation in the economy:

- New product introduction;
- New method of production;
- New market opening;
- New source of raw materials / resources for production use;
- Creation of new organization of work or relationships between companies in the same industry.

Depending of the adopted principle of classification different types of innovation are known. Depending on the degree of novelty distinguish radical (revolutionary) and incremental (improvements, imitations, etc.). Innovate. The most common innovations are compilations (such as mergers characteristics of multiple devices in one as a printer / scanner / copier),

improvements and modifications. According to the outcome distinguish product, process, market, financial, organizational, logistics and others. innovation. The creation of new products and services, and the change in the ways of selling, advertising, delivery are among the most - popular innovation today. Usually innovations are seeking a solution to a problem such as:

- Customers unmet needs;
- Unused opportunities for production and sales of product sought;
- Basic model unsatisfactory performance characteristics;
- Basic product unsatisfactory reliability, quality;
- Basic product production, delivery, sale higher cost;
- Technical and structural difficulties in the production process.

Key factors determining the success of an innovation is its relevance and utility, the company's ability to mobilize quickly knowledge and skills for implementation and the possibility of organizing production and sales faster than competitors, flexibility in modifying innovation for different markets and customers.

Innovation process stages.[3]

1. Market analysis, including analysis of customer needs, and analysis of the existing and future competition.
2. Evaluation of the technical and organizational resources of the company and their own potential sources of innovation.
3. Defining the subject of innovation activities and terms of reference.
4. Establishing and structuring team for the realization of design.
5. Development of a concept for the realization of innovation with a linear schedule and an estimate of the project cost and the expected results. Comparative analysis.
6. Decision on the implementation or rejection of the project.
7. Development of technical project in detail remit.
8. Feasibility study of innovation. Adoption of the final budget for its realization.
9. Making innovation.
10. Testing.
11. Innovation implementation.
12. Promotion.
13. Results evaluation. Conclusion.

Basic steps in the innovation implementation.

- (1). Generating ideas for innovation.
- (2). Selection and evaluation of idea for innovation.
- (3). Protection of the idea.
- (4). Investigation of the idea usefulness and market opportunities.
- (5). Check of the idea feasibility.
- (6). Planning and organizing of the implementation.
- (7). Development of a test sample (prototype).
- (8). Testing.
- (9). Manufacturing of the new product / service.
- (10). Monitoring, control and adjustment of the new product / service.

It is possible unification of some of these steps or another sequence, depending on the specific situation and capabilities of the enterprise.

3. Financial economic evaluation of innovative projects[2]

Project evaluation is aimed to determine whether and to what extent new or advanced technologies and products will improve the competitive position of the company. The assessment of innovative projects can be viewed in different ways: economic evaluation; social; evaluation from a strategic perspective; environmental assessment; independent risk assessment; net present value, calculated on the basis of equivalent risk-free flows; net present value calculated based on risk-adjusted discount rate. That ultimate goal of any innovation requires investment and projects to be evaluated by the financial economic perspective. Evaluation of the innovation project should reflect the full potential of new or

advanced technologies and products to bring benefit to the company not only for one year but for a certain period. This allows to reflect the time factor, appearing in the different starting point of production commencement[5].

In the present publication the author is considering the step "Selecting and evaluating of idea for innovation." in the stage "Feasibility study of innovation", and the author of the publication offers for - optimal assessment of innovative projects to apply the following assessment methods:

- Net present value (NPV - Net Present Value)
- Internal rate of return (IRR - Internal Rate of Return)
- Payback period (PVP - Payback Period)
- Profitability Index (IP - Index Probability)

Method of net present value

Present days investment and innovation analysis assumes that the net present value is the most practical application. [4] It is the leading indicator for evaluating the effectiveness of investment projects, as best indicator to what extent has improved the welfare of the owners (shareholders) of the company. This method determines whether the sum of the discounted net cash income over the duration of the economic life of the project exceeds the amount of discounted investment costs. The formula for calculation of the "net present value for the investment that has more than one cash flow has the form:

$$NPV = -C_0 + \frac{C_1}{(1+r)^1} + \frac{C_2}{(1+r)^2} + \dots + \frac{C_n}{(1+r)^n}$$

The criterion for evaluating and ranking the projects under consideration is the method: the maximum positive net present value. On this basis, displays the following rule of decision:

NPV > 0 - the project is considered

NPV < 0 - the project is rejected

NPV = 0 - the project is on the verge profitable / unprofitable and further analysis is needed.

Method of internal rate of return

IRR represents that discount rate that equalizes the amount of positive cash flows discounted by the amount of negative (cost) cash flows generated by the project. In other words, IRR is the discount rate at which the net present value becomes zero. If we use the formula for finding the net present value, internal rate of return will be the rate of discounting in the following equation:

$$-C_0 + \frac{C_1}{(1+IRR)} + \frac{C_2}{(1+IRR)^2} + \dots + \frac{C_n}{(1+IRR)^n} = 0$$

To assess the project effectiveness by using the IRR indicator is necessary to know what is the market rate. As market interest rate can be used interest rate at which the bank would grant a loan. In this case, if:

IRR > r - project is considered

IRR < r - the project is rejected

IRR = r - project on the border profitable / unprofitable

Payback period method

This method is one of the most popular and widely used methods of evaluation and selection of investment options. The method payback period determining the length of time needed to recover the initial investment at the expense of financial results of the investment. If the cash incomes in the years are the same, the formula for determining the payback period is as follows:

$$PBP = \frac{IC}{NI}$$

PBP - payback period

IC - initial investment

NI - average net cash flow

Index Profitability Method

The index of profitability shows the value (income) obtained from every lev initial investment while respecting the time value of money. The formula for calculation of the profitability index is as follows:

$$PI = \frac{\frac{C_1}{(1+r)} + \frac{C_2}{(1+r)^2} + \dots + \frac{C_n}{(1+r)^n}}{C_0}$$

The criterion of selection the project is as follow:

If $PI > 1$ project is considered

If $PI < 1$ project is not accepted

If $PI = 1$ project on the border profitable / unprofitable

Information technology use for financial - economic evaluation of innovative projects[1]

To provide investment evaluation, especially for the calculation of economic indicators, and especially for IRR it is mandatory to apply software - an essential element of information technology. The author has developed a method by which, after analysis and preparation of input data for the calculation of economic fundamentals and relevant calculations assessing the economic efficiency. As a result of calculation of financial indicators, net present value, internal rate of return, payback period and profitability index the method valued the planned innovation activities. It is a tool to assist management practice in planning innovation activities and various associated with them to.

4 Conclusion

Innovations are one of the main factors for the successful development of business in a competitive market environment. There are a variety of methods for the assessment of innovative projects. The main methods used by international financial institutions are described in the development of net present value method and the internal rate of return. Other specified methods serve to introduce additional criteria for assessing innovation, but also complement the information on the return of investments for realization of innovative projects. We must seize the opportunities of modern information technologies. Each innovative project itself is unique depends of the company and particular area of application which fact gives flexibility to not necessarily apply unified approach to financial - economic evaluation. It is recommendable analysts to reconsider which methods are best suited for use in different versions for innovation. Nevertheless of the manner of conducting assessment of each project this is a tool for increasing the efficiency of operations in Bulgarian enterprises and their sustainable development .

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