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METHODICAL APPROACH TO THE EFFICIENCY OF INNOVATION PRODUCT

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Abstract

Modern development of the banking system in Russia is characterized by a significant number of financial and credit institutions, the increasing number of foreign players in the domestic banking market, and, therefore, increased competition. Such trends force banks to move towards an innovative path of development, the success of which depends on the level their innovative potential. The introduction of scientific achievements and inventions into the organization of banking services provides continuous improvement of banking products and applied technologies of consumer service. That is why the study of problems related to innovation activities of domestic banks is extremely relevant. The development of scientific research on this issue is particularly important in the context of the financial crisis, the leading financial institutions are experiencing a liquidity crisis and the outflow of financial resources, there are cuts in the financing of innovative and investment projects and a decline in innovation and investment activities. This interpretation of the essence of innovation is related only to the means of production or technological processes, which are a necessary but insufficient condition that shall direct the entire investment flow of resources in the industry of the national economy with its effective use. It is these aspects that need to be kept in mind when considering innovative development. The paper discusses the methodological approach to evaluating the efficiency of an innovative product.

Keywords: Financial innovation, technical innovation, banking innovation, methodology.

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1. Introduction

In the context of the integration of the economy into the world economic system, the ways of solving the problems of assessing the efficiency of innovation shall not come into contradiction with the methods of economic definition and justification adopted in world practice. In the western theory and practice of investment calculations, the cash flow method is widely used. This approach, based on the analysis of cash flow and innovation-related expenditure, serves the basis for methodological recommendations to assess the efficiency of innovative projects. It is suggested to distribute the performance indicators of innovative projects into the following types:

- commercial (financial) efficiency taking into account financial implications of the project for its direct participants;
- budgetary efficiency reflecting the financial impact of the project on federal, regional or local budgets;
- economic efficiency that takes into account costs and results associated with the implementation of the innovation project and go beyond direct financial interests of the project participants and provide for cost measurement.

The identification of such types is artificial and is related to the definition of a single indicator of economic efficiency (Magomadova, 2019), but in relation to different objects and levels of the economic system: the national economy as a whole (global criterion of economic efficiency), regional, sectoral, as well as at the enterprise level or a specific innovation project.

The indicators of economic efficiency reflect the efficiency of the innovation project in terms of the interests of the national economy as a whole, as well as for the regions, industries and institutions involved in the project. When calculating the economic efficiency at the level of the national economy, the results of the innovation project include the following:

- final production results (income from sales in domestic and foreign markets of all manufactured products and services). It also includes income from the sale of intellectual property (licenses for invention, computer programs, etc.) during the project;
- social and environmental results defined from the joint impact of participants of the innovation project on the health of the population, social and environmental situation in the regions;
- direct financial results;
- credits and loans of foreign states, banks and firms, revenues from import duties, etc.

It is also necessary to take into account indirect financial results caused by the implementation of the innovative project: changes in the income of third-party organizations and citizens, changes in the market value of land plots, buildings and other property, costs of liquidation of production facilities, loss of natural resources and property due to possible accidents. Social, environmental and political results are considered as additional indicators of national economic efficiency and are taken into account in the decision to implement the project and state support of innovative projects.

The costs of the innovative project include current and nonrecurrent costs of all the participants of the project envisaged in the project and necessary for its implementation. The assessment of the costs and

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results to be achieved in determining the efficiency of the innovation project is carried out within the calculation period.

Its duration is accepted taking into account the following factors: project duration, operation and liquidation, weighted average standard service life of the main technological equipment, requirements of the investor.

In order to manage costs efficiently, you need to consider each object of the project in conjunction with the objects that make it work. The method of accounting the total cost of ownership was thus developed (Total Cost of Ownership – TCO) (Dedov, 2018; Grishina, 2013). The total cost of ownership (TCO) includes not only the cost of acquiring a facility, but also the cost of repairing, upgrading, consumables, maintenance, etc.

2. Problem Statement

The problem of excellence in assessing the efficiency of applied innovative funds is constantly the focus of attention of scientists and practitioners. A significant number of scientific papers on the problem have been published in recent decades. Various guidelines and recommendations were also proposed in the area of economic justification for investment in various innovative projects designed for different levels of application: national, sectoral and territorial.

Modern economic conditions of the society are characterized by considerable saturation with important political and socio-economic events and influence the procedure for assessing the economic efficiency of innovation. Therefore, the question arises as to the degree of novelty and compliance of existing recommendations with real economic conditions and the possibility of using them to evaluate innovative projects. In order to answer this question, it is necessary to take into account some methodological aspects in the field of capital investments, while focusing on the current state and prospects of the country's economy (Magomedkadiev, 2014).

From a commercial point of view, any project on the introduction and development of modern innovative technologies can be considered as an investment, i.e. aimed at profit-making. The investment project is naturally understood as the plan (program) of economic event or entrepreneurial ideas the implementation of which requires investments.

In general, a potential investor is facing the problem of assessing the efficiency of investments, i.e. the business entity with capital resources at disposal, whose investment can bring some benefit to their owner. This benefit can be defined as the extent to which the objectives of the investor are achieved. For enterprises operating in market relations on the basis of self-financing and investing in production in order to create a long-term material basis for their development, the question of the future benefit – the ultimate economic efficiency of such investments – is very important. They should therefore predict the total income from these investments, given a degree of uncertainty. For this purpose, it is necessary to use the appropriate tools of economic justification for decision-making.

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3. Research Questions

The subject of the study includes innovative products of the bank and economic relations arising in the process of innovation activity in the banking sector of Russia.

4. Purpose of the Study

An important feature of business actors operating in the market economic system should be the differences with the objectives they pursue according to their sphere of activity. These differences in goals should manifest themselves in different conditions underlying investment decisions and methods for assessing the cost-effectiveness of innovative technologies. In the context of the integration of the economy into the world economic system, the ways of solving the problems of assessing the efficiency of innovation should not conflict with the methods of economic definition and justification adopted in world practice.

5. Research Methods

The methodological basis of the study is a dialectical method, an integrated and systemic approach. The work utilized general scientific methods and techniques such as scientific abstraction, generalization, quantitative and qualitative analysis, grouping and comparison methods, economic and mathematical methods, modeling, analysis and synthesis, statistical and graphical analysis.

6. Findings

Today, credit institutions use methods to calculate the economic efficiency of innovative banking products, which are based on the assessment of statistical accounting of innovation revenues and costs. The disadvantages of such approaches include subjectivity or inability to assess certain parameters (such as quality of service) and the fact that an assessment of the current market situation is made, while market conditions are rapidly changing, new participants and regulations of their activities are emerging. The factors that change the banking business itself are not taken into account.

There is no doubt that due to the use of Online Banking Services (OBS) (Kuznetsova & Vasilieva, 2016) both the bank and the client receive a certain benefit, including economic benefits. In order to determine the efficiency of a banking product, it is necessary to determine in advance the costs of implementation and operation, utilization income, payback period and expected profit.

Since none of these methods is sufficient for objective assessment of OBS profitability, we propose to develop a methodology for comprehensive assessment of financial and economic results and efficiency of online servicing.

Based on this approach, we consider it appropriate to apply discounted indicators and to determine the economic benefits of the OBS use in banking activities, taking as a basis traditional indicators of assessment of the efficiency of investment business projects and combining these factors into a single set.

To assess the efficiency of the innovative banking product it is possible to use an indicator, on the one hand, combining traditional indicators and, on the other hand, taking into account the specifics of

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banking innovation activity. This implies the need to identify key performance indicators for the implementation of the OBS system taking into account the time factor and investment risks. For this it is necessary to calculate the net discounted income as the difference between the discounted income and the discounted costs according to the following formula:

$$NDI = DI\text{-}DC, \quad (1)$$

where DI – discounted income; DC – discounted costs. The discounted income can be calculated using the formula:

$$PD = \sum_{i=1}^{n} \frac{D_i}{(1+r)^n} \quad (2)$$

where I (Д) – income from the implementation of the i-stage of the project; r – discount factor; p – number of project implementation periods (years). The discounted costs can be calculated according to the formula:

$$PR = \sum_{i=1}^{n} \frac{P_i}{(1+r)^n} \quad (3)$$

where P_i – costs from the implementation of i-phase of the project. If NDI > 0, the implementation of the OBS system is considered effective, if NDI < 0, the implementation of the system is considered ineffective. The discount factor *r* is the interest rate used to recalculate future income and expenditure flows into a single fair value taking into account the influence of the time factor. Most often, the discount rates in assessing the economic efficiency of innovative projects in banks are determined authoritatively on the basis of the macroeconomic analysis in the country, inflation, refinancing rates, interbank crediting rates. It seems appropriate to calculate the discount rate taking into account the risks of financial payback of the project. Given that investment in innovative banking products ultimately leads to an increase in aggregate banking capital, the discount rate needs to be linked to the bank's capital returns. According to the author, the discount rate can be calculated according to the following formula:

$$r = dcc \times IC / (IC + BC) + rbc \times BC / (IC + BC), \quad (4)$$

where dcc – return on the bank's internal funds (return on equity); IC – bank's internal funds (capital); BC – bank's borrowed capital; rbc – return on bank's borrowed capital.

This method of assessing the investments into an innovative product can be used to justify the acceptance of one project. When choosing between two or three OBS projects with completely different levels of funding, it is necessary to bring them to a comprehensive budget in order to be able to compare them. For this purpose, the profitability index (PI) is used, which is calculated as follows:

$$PI = NDI / PR \times p * 100 \quad (5)$$

The profitability Index (Kim, 2016; Semagin, 2011) shows the current value of revenues per ruble of net investments in the OBS system. The higher the rate of return, the preferable the project. If the profitability index equals one and lower, the project is not profitable. The profitability index that is equal 1 corresponds to zero net present value. After assessing the profitability of the OBS system, it is advisable to use a method in which the subjective factor is minimized, namely the calculation of the payback period (PP). The payback period is the time period during which the discounted income takes a positive value. This means that the discounted income should be equal to the discounted capital cost(s). Based on this equality, the payback period can be presented as the following formula (Tronina et al., 2018):

$$PP = DC / DIav, \quad (6)$$

where DIav – average amount of income over the investment period.

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7. Conclusion

Banking involves a high level of risk that can lead to real losses. Therefore, the risk factor should be taken into account when calculating performance indicators for the implementation of OBS systems. Different approaches can be used here:

1. Ranking of types of innovative banking products taking into account probabilistic assessment of risk and calculation of average risk level of OBS implementation.

2. Accounting of risks in a particular bank calculated according to the Bank of Russia methods.

The bank's income from online banking is primarily determined by the value of customer service tariffs. The tariffs for Internet banking vary from bank to bank and usually include connection fees, subscription fees and fees for various types of payments. Connection fees are rarely charged by banks, and mainly for providing the technical components of the system. The subscription fee is set by all banks. The payment fee is usually a percentage of the payment amount (from 0 to 3 %), but not less than a certain minimum amount (varies from 5 to 600 rubles). On average, the income per customer within the OBS is 1.2 thousand rubles. As a result, despite high costs, the systems usually pay off in an average of five years. At the same time, banks inevitably incur additional costs due to increased safety, reliability, security and speed requirements of advanced electronic systems. Their implementation will necessarily entail a significant increase in the costs of support and administration of the bank's hardware and software complex. Nevertheless, significant progress in this area of banking in both the world and Russia is clear. Banks understand the importance of the fact that today it is necessary to provide their clients with the most promising electronic services.

Various methods of assessing the efficiency of innovative products are used in the banking sector (Dobrynina et al., 2014): financial, qualitative, probabilistic, statistical, etc. The financial method uses three key figures: NPV (net present value), IRR (internal rate of return), Payback period. Applying the methodology of comparative efficiency of online banking and the methodology of assessing the efficiency of online customer service using traditional performance indicators of investment business projects, adjusted taking into account the time factor and risks of investments, it is possible to determine the economic expediency of implementation and use of certain OBS systems at the stage of the management decision.

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