Educational Establishment «Belarus State Economic University"

Institute of Masters Programs

Department of Economics and Management

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EDUCATIONAL METHODICAL COMPLEX

(ELECTRONIC EDUCATIONAL METHODICAL COMPLEX)

FOR THE ACADEMIC DISCIPLINE

Investment and innovation management

on specialty 1-26 81 01 "Business administration"  
(the English-language Master's degree)

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Considered and approved at the meeting of the Scientific and Methodological Council of BSEU

21/06/2017, protocol № 5.

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# Introduction

Electronic educational and methodical complex (EEMC) on the academic discipline "Management of Investments and Innovations" was prepared in accordance with the requirements of the Regulations on the educational and methodological complex at the level of higher education approved by the Decree of the Ministry of Education of the Republic of Belarus of July 26, 2011 №167.

The contents of the sections of the EEMC correspond to the educational standards of this specialty, the structure and subject of the curriculum in the discipline "Management of Investments and Innovations".

"Management of investments and innovations" is one of the main disciplines that form the professional skills of managers. The aim of the course is to reveal the essence of investment and innovation management, to show the possibilities of its use in management activities and to give knowledge to the future specialists, and to instill skills and skills in the methodology of relationship marketing and the possibility of its use in the practical activities of enterprises and organizations.

The purpose of the EEMC for the academic discipline "Management of Investments and Innovations" is the formation of theoretical knowledge among the master students, development of abilities and skills in matters of investment design and innovation. The course covers the following issues:

* general information about the project and features of the methodology of project management;
* goals, objectives and content of pre-investment studies;
* basic mechanisms of investment design;
* methods for preliminary evaluation of project effectiveness;
* organization of work, analysis and risk assessment of the project;
* organization of financing investment projects;
* concept and types of innovative strategies;
* innovative potential of the enterprise;
* assessment of innovation potential;
* management of innovative projects.

The EEMC includes educational, program and educational documents, methodological materials for monitoring students' knowledge, as well as supporting materials.

The EEMC gives a short summary of lectures and provides structured material on the main issues of the course. The material can be used for self-preparation of students for lectures and practical exercises. EEMC provides the possibility of "advanced training", i.e. preliminary study by students of the lecture topic materials. The EEMC also contains questions and test tasks for discussion in practical exercises. The approximate list of questions to offset and to the exam on the subject is given. The auxiliary section contains methodological recommendations for the independent work of students, as well as a list of recommended literature.

# Brief abstract of the lectures

**TOPIC 1. BASIC POINTS OF INVESTMENT DESIGN.** PRE-INVESTMENT STUDIES

An investment is an asset or item that is purchased with the hope that it will generate income or will appreciate in the future. In an economic sense, an investment is the purchase of goods that are not consumed today but are used in the future to create wealth. In finance, an investment is a monetary asset purchased with the idea that the asset will provide income in the future or will be sold at a higher price for a profit.

Investing in the creation and reproduction of fixed assets (real investment) is carried out in the form of capital investments. Investment management is aimed at determining, as accurately as possible, the costs involved in the implementation of investments, what the results of these investments will be and when they will occur.

Investments in a broad sense are activities aimed at developing business, economics and achieving social, cultural, environmental and other goals of social development. Investments are a multifaceted, generalizing concept that is used in various contexts, in connection with which it is expedient to cite the main variants of investment classification.

In terms of the type of assets in which funds are invested, they are usually allocated:

* material (real);
* financial;
* Intangible investments.

Real investments are investments in any material assets, such as equipment, real estate, land, gold, etc. The material wealth of society is created by real assets of economy. Investments in real assets are usually called investment projects.

Financial investments are investments in financial requirements for assets, which are usually issued in a legally defined form, for example, shares, bonds. In a modern market economy, most of the investments are financial. Financial investments are most often calculated to receive income in the form of interest. If the lending rate is below the expected rate of return, then investment will be profitable;

Intangible investments are investments in human capital, knowledge, information, education, etc.

Depending on the investor's ability to participate in the management of the investment object, direct and portfolio investments are allocated. Both groups of investors are equity investors.

Direct investment is usually understood as the investor's acquisition of more than 10% of the property in an investment object (for example, more than 10% of shares issued by the company), which implies the ability to influence decision making and management. Smaller ownership shares, as well as debt relations (loan provision) are considered as portfolio investments. Allocate strategic investors (interested in participating in management) and financial (interested only in receiving interest on financial investments).

On the purpose of investment among real investments are:

* Net investments (investments in creation of new productions);
* Reinvestment (aimed at replacing existing capacities, equipment, etc.);
* Gross investment, represent the sum of the two previous types.

The term of existence of an investment is usually given by:

* Short-term (up to one year);
* Medium-term investments (from one year to three or five years);
* Long-term (more than five years).

Depending on the country of origin, investments are divided into domestic and foreign.

Investment management is a system of methods and tools for analyzing, evaluating, making and implementing decisions on the choice of investment directions and sources of investment in a competitive market environment. Investment management begins with the setting of goals, for which investment is needed. Different purposes correspond to different tools and opportunities. The distribution of limited funds between available alternatives is based on the evaluation and comparison of instruments or projects available for investment.

The process of investment management consists of several stages:

1. Formulation of investment objectives;
2. The formation of investment policy, including the allocation of funds between the main areas of investment and operational activities;
3. Choice of instruments and terms of investment;
4. Evaluation of the effectiveness and risk of investment.

When determining investment goals, it is necessary to take into account a number of factors. The most important factor considered by the investor is the level of risk that he is ready to go to. In a relatively efficient and informed environment of a developed market, the risk is closely related to income. The majority of sustainable high incomes are compensation for risk. There is a risk not only of a direct loss of invested capital, but also a loss of its purchasing power. With an annual inflation of 10%, cash, which is stored for one year, loses 10% of purchasing power.

Liquidity of assets is measured by the ability of their owner or investor to transfer them into cash in a relatively short time at a fair market price or with minimal costs. Most financial assets have a high degree of liquidity compared to real assets. For example, real estate can be sold for weeks, months, years. Liquidity can be assessed indirectly through costs (commission) associated with the transfer of this group of assets into a cash form: from 1-2% of the cost of assets when selling securities to 5-25% when selling real estate.

Complexity of management. The investor must determine the time and amount of labor that he can spend on investment management, as well as the state and specificity of the investment market.

Along with investments in the material production industries, a significant part of them goes to the socio-cultural sphere, in the science, culture, education, health, physical culture and sports, informatics, environmental protection, the construction of new facilities in these industries, improving the applicable In them technology and technology, the implementation of innovation.

In the scientific and educational literature of recent years, much has been said about investing in people, in human capital. This is a special kind of investment, mainly in education and healthcare, directed towards the creation of funds that ensure the development and spiritual perfection of the individual, the strengthening of people's health, the prolongation of life, the expansion of the possibilities for man's creative participation in labor activity and increasing his efficiency.

The effectiveness of the use of investments depends to a large extent on their structure. The structure of investments is understood as their composition by type, direction of use, sources of financing, etc. The structure of capital investments has a special significance for the national economy of the country. The main types of investment structures are technological, reproductive and sectoral structures.

The objects of investment activity are newly created and modernized basic funds and current assets in all sectors and spheres of economic activity, securities, special money deposits, scientific and technical products, other property objects, as well as property rights and intellectual property rights. Thus, objects of investment activity can be any objects in which monetary, intellectual funds are invested.

Users of investment activity objects are legal entities, individuals, state and municipal authorities, foreign states, international organizations that directly use objects of investment activity.

Pre-investment studies. At this stage, the project is being developed, its feasibility study is being prepared, marketing studies are being conducted, the selection of suppliers of raw materials and equipment is in progress, negotiations are underway with potential investors and other project participants, legal design of the project is carried out (registration of the enterprise, execution of contracts). In the end of the pre-investment phase, a detailed business plan of the investment project should be obtained.

The business plan of the investment project must have a completely defined structure, similar to that which will then be necessary for a detailed project. The methodology of UNIDO, the International Specialized Organization of the United Nations Industrial Development Organization (UNIDO), is recommended to highlight in this framework sections on the analysis of possible solutions in terms of:

* Volume and structure of production of goods;
* Types and volumes of resources that will be used to organize production;
* The technical foundations of the organization of production (the characteristics of technology and the fleet of equipment necessary for its implementation);
* The size and structure of direct and overhead costs associated with ensuring the work of production, management and trading personnel;
* Organization of labor activity of production and management personnel, including issues of labor remuneration;
* Organizational and legal support for the implementation of the project, including legal forms of the functioning of the newly created facility;
* Financial support for the project, i.e. estimating the necessary amounts of investment, possible production costs, as well as the ways of obtaining investment resources and the achievable profitability of their use.

State policy in the field of investment support is a very broad concept. Currently, the support system is not complete and complete, it is formed and changes in accordance with changes in the political and economic situation.

It is assumed that the state investment policy includes:

* Clearly defined objectives of public policy;
* Management bodies that implement functions that ensure the attainment of formulated goals;
* A monitoring and control system that objectively reflects the situation and forms adequate information for the development of solutions;
* Instruments of regulation and support, with the help of which the government bodies influence the subjects of investment activity and the institutional environment.

The main instruments of regulation are:

* Direct state stimulation of investments through the distribution of budgetary and extra budgetary financial resources in accordance with the system of state priorities;
* Indirect state stimulation of investment activity in the public and private sectors of the economy with the help of tax, depreciation, customs policy;
* The provision of various types of benefits to the subjects of the investment process (both directly to entrepreneurs who are investing, and to elements of the infrastructure of the investment market);
* The formation of a favorable investment climate in the economy and the reduction of system-wide risks.

Formation of a system of instruments for regulating and supporting innovation activity is carried out by creating a legislative framework, developing infrastructure that implements elements of state policy in the field of investment support, as well as direct support of investment projects initiated by private companies. The regulatory and legislative framework for investment regulation is quite extensive and covers all the elements mentioned above. At the same time, its construction cannot be considered complete, because it is constantly being adapted.

**TOPIC 2. METHODS FOR ESTIMATION OF INVESTMENT PROJECTS’ EFFECTIVENESS**

Elements of investment analysis:

1. The period during which the actions envisaged by the project are carried out, – the settlement period (the period of project implementation);

2. Costs – net investment;

3. Potential benefits – net cash flow from activity;

4. Any release of capital at the end of the economic life of investment – liquidation value.

From the correlation of these four elements, the correct analysis must determine whether it is really worth considering this project.

The first element of the analysis - the period of realization of the project covers various stages of the process of implementing the investment project. When considering the concept of "investment", investment activities must be considered as a unity of stages, phases of investing resources and generating future income streams. These stages of the investment process can occur in a different time sequence.

For investments in real assets, the general flow of the investment processes under consideration is mainly characterized. Sequential and parallel processes of capital investment and profit making can occur predominantly when investing in financial assets, as well as with investments in the technical re-equipment, reconstruction and expansion of existing production facilities. Obviously, the turnover of investment resources, provision of liquidity of assets, the possibility of operational management of circulating assets and, as a whole, the effectiveness of investment activity depend on the temporary succession of the processes of investing capital and making profits.

For the purposes of investment analysis, the most important stage of the investment process is the economic life cycle of the project (Economical Life), in contrast to the physical life of the equipment (Physical Life) and the period of technology use (Technological Life).

The economic life of the project is the time interval during which the project brings economic benefits (or another effect, which is the aim of investing). Even if the building or part of the equipment is in excellent condition, the life cycle of the project ends as soon as the market for a given product or service disappears.

The investment cycle is a process that encompasses a number of stages, connected with the origin of the idea, its implementation and achievement of the set performance indicators of the project. The investment cycle includes the implementation of the investment project until the planned performance indicators. It is shorter than the investment cycle. The investment cycle begins long before the beginning of construction (or other actions envisaged by the project) and ends well after its completion. In this sense, the concept of the investment cycle is much broader than the concepts "the economic life cycle of the project" and the "investment cycle".

The total duration of the pre-investment, investment and operational phases of the cycle is the life of the project. The greatest costs take place in the investment phase. The investment cycle includes the implementation of the investment project until the planned performance indicators.

In the investment process, it is possible to single out the investment phase of the project implementation. The distinction between the investment phase of the project development from the previous and subsequent phases consists, on the one hand, in the fact that actions that require much higher costs and are irreversible (procurement of equipment, construction, etc.) are beginning to take place, And on the other hand, the project is not yet able to ensure its development at its own expense. At this stage, the company's permanent assets are formed.

Since the commissioning of the main equipment, after construction or purchase of real estate, the operational phase of the project begins. This period is characterized by the beginning of production of products (services) and the corresponding revenues and current costs. The duration of the operational phase has a significant impact on the overall performance of the project. The further the upper limit is assigned to the time, the greater is the aggregate amount of income.

The general criterion for the duration of the life of the project is the importance of monetary incomes from the point of view of the project participant. Thus, when conducting banking expertise for loan provision, the life of the project will coincide with the maturity of the debt, the future of the investment of the lender will not be of interest.

The business plan of the investment project does not consider the efficiency of using the company's total capital and the efficiency of using the total working capital.

There are four main elements in the investment project. The first element is the time frame of the project, i.e. Characteristic moments and periods of the project (from the beginning to the end of the billing period).

For the beginning of the billing period, one of the four periods of time is usually chosen:

1) The moment of completion of efficiency calculations;

2) The moment of the beginning of the investment phase;

3) The time of the implementation of the first of the project activities;

4) The commencement of the operational phase.

A certain date (the moment of the beginning of the calculation period) is chosen as the time base - the base moment (base date, base time, t = 0). Step of Calculation is the period of time in the calculation period for which the technical, economic and financial indicators of the project are determined.

The second element of the investment project is related to costs, i.e. with a net investment. In particular, they consist of the total amount of initial costs minus the value of any released assets, the release of which results from the decision to invest.

The costs associated with the implementation of the investment project are divided into three groups:

* initial (pre-production);
* current (costs for the production of investment products);
* liquidation.

The greatest costs take place in the investment phase of the project. Investments should be clearly separated from the costs of production (costs of the operation phase of the investment facility).

Select the following types of initial costs:

* Costs of acquisition and lease of land, including the cost of preparation for development;
* Costs for the acquisition and delivery of machinery and equipment;
* Costs for the acquisition or construction of buildings, structures and gears;
* Costs for the acquisition of patents, licenses, know-how, technology and other amortizable intangible assets;
* Expenses for training personnel for the implemented objects (if the training process is completed before the development of the production capacities that are being put into operation);
* Costs for commissioning, comprehensive development of project capacities and achievement of design technical and economic indicators;
* Other non-recurring expenses (non-capitalized costs).

The pre-production costs related to the initial investment are:

* Expenses incurred in the formation and registration of a company;
* Expenses for preparatory studies (R & D, development of project materials, payment for consulting services);
* Expenses for pre-production marketing research and creation of channels for goods circulation;
* Expenses related to the activities of personnel during the preparation of production (wages, travel expenses, maintenance of premises, computers, cars and other equipment, etc.);
* Other pre-production costs not included in the estimated cost of the facility.

The third element of the investment project is the net cash flow generated by the investment. Net cash flow from the project is the time dependence of cash receipts and payments for the implementation of the project generating it, determined for the entire settlement period, i.е. Under the net cash flow understand the balance of inflow and outflow of funds generated by the project.

At each step the value of the cash flow is characterized by:

* An influx equal to the amount of cash receipts (or results in terms of value) at this step;
* An outflow equal to the payments at this step;
* Balance (active balance, effect) equal to the difference between the inflow and outflow.

The evaluation of the effectiveness of investments is carried out in the process of analyzing the cash flow. Unlike the total cash flow, net cash flow represents a balance of inflows and outflows of cash generated by the project. With the indirect method of calculating the net cash flow, accounting reporting is used with the corresponding correction. The direct account method uses primary data and is performed in the process of analyzing operating activities.

The monetary inflow is mainly provided at the expense of funds coming from various sources of financing (as a result of the issue of shares and bonds, obtaining bank loans, loans from outside organizations, etc.), and proceeds from the sale of products (works, services) , Created during the operation of the project.

The outflow of cash is connected with investments in net working capital and non-current assets, payment of composite elements of transaction costs, tax payments and other expenses. As usual, in the economic analysis, any past expenditures are irrelevant, since these are irreversible costs. But you should take into account the imputed costs (costs of lost opportunities).

Methods for calculating the net cash flow of the project are detailed below.

The fourth element of the investment project is the liquidation value. Usually large projects first require capital expenditures, and then ensure the return of at least a portion of these funds. The need to take into account the liquidation value of the project is due to the fact that it is capital accumulated mainly in non-monetary form and potentially capable of bringing income. The liquidation value of an investment project, net of liquidation costs, is capital accumulated in investment activities and capable of generating revenue;

The estimation of efficiency (profitableness) of investments is carried out during the analysis of a monetary stream. Investment processes deal with cash flows stretched in time. The meaning of investment is to increase the amount of money – the amount of money deposited, to return it in the future with a profit. Therefore, when preparing projects, the value of money in time is analyzed, taking into account the possibilities of their multiplying.

The analysis of the value of money over time is associated with two processes:

* Build-up of the current value (compounding);
* Discounting of the future cost (discounting).

One and the same amount can be considered from two positions - expansion and discounting. In investment projects, the change in the value of money over time is accounted for by discounting cash flows and performance indicators.

The increment is the reduction of current monetary investments in economic activity to their future value. This value is determined by the formula:

Fn = P × (1 + r)n-1, and

The rate of increase is:

Kn = (1 + r)n-1,

where P – is the present value of the invested amount of money; Fn – the future value of the value of money in the n-th period of time; n – the total number of time periods (including the period of investment); r – discount rate (rate of return on investment).

The increment in investment analysis is determined through a compound interest. A compound interest is the calculation of interest on interest. In the investment analysis it is believed that the funds received at some point in time can be reintroduced immediately, so they continue to work and accrue interest on interest.

*Discounting of cost.* Discounting of funds is a reduction of future cash flows from investments to their current value. The present (modern) value of the value of a certain future amount of money is determined with the help of the formula:

P = Fn / (1 + r)n-1, and

The discount factor is less than one. It is equal to:

Kn = 1 / (1 + r)n-1,

where P – is the present value of the invested amount of money; Fn – the future value of the value of money in the n-th period of time; n – the total number of time periods (including the period of investment); r – discount rate (rate of return on investment).

The discount factor for a positive r is less than one. This formula is a simple of the reversal formula.

**TOPIC 3. RISK MANAGEMENT OF THE INVESTMENT PROJECT**

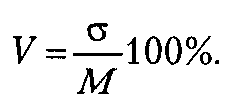
Risk is a fact of business life. In order to create profit and increase the value of the company, it must take risks and manage it. The risks of investing in real assets differ from the risks of financial investments, which determines a different approach to their analysis.

There are many different ways to classify risks. For example, by the criterion of financial damage, by the duration of the risk situation, by sources of occurrence, etc.

To analyze and assess the risk, it is necessary to give a fairly strict definition of risk. On the other hand, the difference in the methods of analysis and risk assessment leads to some discrepancies in its definition.

The measure of quantitative assessment of the risk of an investment project is determined by the coefficient of variation of the economic indicator (profit). This is due to the fact that the basis for determining the risk should be a probabilistic measure, a measure of the uncertainty in the decision. In an explicit form, the probabilistic measure in the risk assessment is used by estimating the coefficient of variation of the economic indicator.

To analyze the measure of variability, the coefficient of variation (V) is used. It is the ratio of the standard deviation to the mathematical expectation and shows the degree of deviation from the average expected values:



The coefficient of variation is a relative value. Therefore, its size is not affected by the absolute values of the studied indicator. The method of estimating the coefficient of variation of the economic indicator explicitly uses the probabilistic measure of risk. With the help of it, you can compare the variation of the signs expressed in different units of measurement. The coefficient of variation can vary from 0 to 100%. The following qualitative estimation of various values of the coefficient of variation is established:

* up to 10% – a weak variation;
* 10-25% – moderate variation;
* over 25% – high variation.

The risk of the investment project can be considered as the degree of deviation of the flow of funds for this project from the expected. The greater the deviation, the more risky the project is.

Using the coefficient of variation as a criterion, in the example considered, one should choose the option of investing in bills. This decision is made to minimize the risk.

When making a decision, you can use another, probabilistic criterion, – the average value of the yield expected with a certain predetermined probability.

There is a way of assessing risk by adjusting the basic rate of return r (adjusting the discount rate), which takes into account the impact of future changes in the state of the economy.

Risk assessment using the method of adjusting the discount rate (interest rate) uses expert valuation methods. The probabilistic measure of expert assessments of changes, while present in an implicit form. The logic of this approach is this: since the risk in the investment process reduces the real return on invested capital in comparison with the expected one, to account for it, you can introduce an amendment (an extra charge) to the interest rate level that characterizes yield on risk-free investments, for example, compared to a bank deposit Or short-term government securities. The greater the risk associated with the project, the higher the input surcharge should be.

Thus, the methodology for adjusting for the risk of the discount factor has the following form:

1. A risk-free rate of return is established – rf (for example, at the level of the price of capital intended for investment);

2. Determined (for example, expert way) the risk associated with the projects under consideration:

* for project A: ΔrA,
* for the project B: ΔrB;

NPV is calculated with a discount factor r:

* for project A: rA = rf + ΔrA,
* for the project B: rB = rf + ΔrA;

A project with a larger NPV value is considered preferable.

There are expert estimates of the risk premiums to the rate of discount. So, depending on the purpose of the project, the following amendments are recommended:

The main advantages of the risk accounting method by adjusting the discount rate consist in the simplicity of calculations. However, this method, in addition to those already noted, has a number of other shortcomings:

* does not give any information about the degree of risk. The results obtained depend substantially only on the amount of the risk premium;
* does not give any information about the probabilistic distributions of future cash flows and does not allow them to be evaluated;
* significantly limits the possibilities of modeling various options, since it all comes down to analyzing the dependence of the project's estimated indicators (NPV, PI, IRR, etc.) on changes in only one indicator-the discount rate.

There are a number of methods for assessing the risk of projects, which are reduced to varying degrees in the analysis of different scenarios for future changes in factors affecting the resulting indicator (indicators). Each scenario is characterized by its possible set of changes in the values of factors with a corresponding set of probabilities for these changes (in explicit or implicit form). Such methods include: the method of reliable coefficients, the sensitivity analysis method, the "decision tree" method, etc. The most detailed description of the scenarios and the most accurate quantitative analysis is provided by the simulation simulation method. Its disadvantage is complexity and accordingly high cost.

*Risk assessment of financial investments.* The risk assessment methods discussed in the previous section are essentially applicable to the analysis of financial investments. In this section, we will consider the specificity of the risk of a securities portfolio.

Each investment program is considered as a set of real investment projects and portfelnyh investments that are in a certain combination. Any of the components of the program in the process of implementation affects the amount of income and investment costs, and, as a consequence, the profitability (profitability) of investments. Portfolio investments are an important element of investment activity, affecting the overall effectiveness of the implementation of the investment program.

The theoretical basis for studying the relationship between risk and return on portfolio investment is developing according to the theory of capital assets valuation developed by economists such as U. Sharp, D. Lintner, M. Miller, G. Aleksein-der, D. Beyli, F. Modigliani , G. Markovits, D. Tobin, and others.

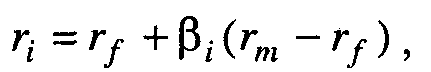
The relationship between risk and profitability in this theory is considered in a perfect market, provided that all investors in the stock market are rationally behaved, highly competitive environment, normal information about risk and expected return, there is no risk of bankruptcy.

The general risk of a portfolio of securities can be represented as consisting of two parts: diversified (non-systematized, poorly projected) and non-diversified (systematic, relatively well-forecasted). The level of overall portfolio risk, according to portfolio theory, varies backproportional to the number of types of securities included in the portfolio by a random set. The more types of securities the less risk.

The systematic risk of financial investments can be reduced by increasing the number of securities in the portfolio. The non-systematic risk of financial investments can be reduced by choosing the structure of securities in the portfolio. The recommended portfolio nomenclature should include at least 12 types of financial assets, which will minimize the impact and level of unsystematic risk.

To take into account the impact of systematic risk on the portfolio return in the portfolio theory, a model of the relationship between systematic risk and return (Capital Asset Pricing Model) is developed. The CAPM model of a systematic risk assessment calculates the expected return on the i-th financial asset (security) and the expected return on the securities portfolio.

The CAPM model is as follows:



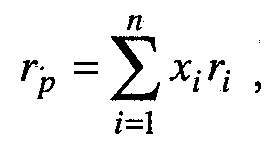
where ri is the expected return on the i-th financial asset (port, project); rf – profitability of risk-free securities (state bonds, treasury notes, etc.); rm – average yield of securities on the stock market in the current period (market yield); (rm – rf) – risk premium at the level of average risk in the stock market; β – betta coefficient, which characterizes the level of risk relative to the stock market.

β = 1 means that the risk of i-x securities corresponds to the average level of risk prevailing in the stock market;

β < 1 means that the risk of i-x securities is less than the average level of risk in the stock market;

β > 1 indicates that the level of risk i-x securities is greater than the average risk in the stock market.

Given the property of linearity of the CAPM model relative to the level of risk, it is possible to determine the risk and yield of the securities portfolio. The portfolio risk is defined as the average weighted β-coefficient. Each portfolio has its own level of risk, consequently, the value of the yield by the CAPM model. If the profitability of securities included in the portfolio is known, then the expected return on the portfolio (rp) is defined as the weighted average of these returns:



where xi – the share of the initial value of investments in the i-th security; ri – expected return on the i-th security; n – the number of types of securities in the portfolio.

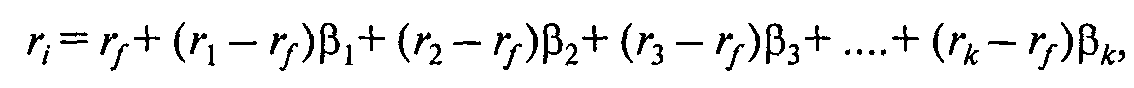
The application of the CAPM approach in long-term investment is possible in three areas.

The first direction involves determining the expected profitability (profitability) of the i-th financial asset, the securities portfolio. The second direction is connected with the possibility of regulating the profitability of the activities of organizations participating in investment projects, where each participant independently fulfills its project. If the investment project is characterized by an average degree of risk, then the expected profitability for the program as a whole is used to determine its profitability. This direction of analysis was called the pure play-approach.

The third direction of using the CAPM is to estimate the expected profitability of some investment projects, especially with a large and medium amount of investment. The use of the CAPM model has its limitations with long-term investments, i.e. with a long implementation period, as during this period the levels of risk-free profitability, average premium and medium-term risk can vary, which contradicts the conditions of application of the CAPM approach.

For all simplicity and clarity, the CAPM model calls for criticism associated with the fact that the coefficient β is too general and many factors do not take into account. Indeed, CAPM is a one-factor model, and its basic idea is that there is only one source of risk that affects the long-term return on investment in assets-market risk. In response to criticism, the APT model was proposed - arbitration pricing, which suggests the isolation of several factors reflecting systemic risks. The model for assessing the risk of APT in contrast to the CAPM model is multifactorial and can be used to analyze long-term investment.

The main idea of APT is that the long-term profitability of assets depends on a small number of system factors. As in the CAPM model, it is believed that risks that are not of a systemic nature are amenable to diversification, and therefore they can be ignored. General view of the APT model:



where ri – the expected return on the stock i; rf – risk-free yield; (rn – rf) is the risk premium for the factor n (n = 1, ... k); βn - the sensitivity of the yield to the factor π; k – the number of factors included in the model.

The APT model is multifactorial and can be used to analyze long-term investment. In the APT model, the number and nature of the factors that influence the expected returns are not determined, therefore investors and analysts include in consideration those factors that they consider important (GDP growth rate, inflation rate, oil price change, defense spending growth rate etc.). It is clear that opinions differ, and this leads to lively discussions in the investment community.

*Reducing the level of investment risks.* Understanding the nature of investment risk and the principles of its quantitative assessment is a necessary, but insufficient condition for developing measures to reduce its level.

Risk management involves the development of effective protection of the company against undesirable circumstances, affecting the level of uncertainty of investment decisions and, as a consequence, the amount of material and financial losses. Risk management has financial, legal, information, insurance, organizational and other aspects, which emphasizes the complexity of measures to reduce the level of risk.

When making investment decisions, it is necessary to take into account the axioms of risk reduction established by world practice:

* Always evaluate the consequences of risk;
* Do not risk much for the sake of small;
* Risk within the limits of own capital;
* If the risk is high, look for other solutions or protect yourself from risk;
* If the risk is low, it is difficult to expect big profits.

For portfolio investments, there are also rules of portfolio formation that contribute to risk reduction, i.e. the portfolio nomenclature should be diversified and contain at least twelve different financial assets (this will virtually avoid a diversified risk). The portfolio structure should be diverse – include corporate securities of large, medium and small enterprises. (We note that reducing the investment risk by diversifying the company's activities is a change in its activities).

The acceptable result of the portfolio investment, in terms of profitability, in world practice is considered, if:

* Loss of profitability is observed in 20% of portfolio securities;
* 60% of portfolio securities achieved the planned profitability;
* 20% of the portfolio has an increased level of profitability.

From the analysis of the risk of the securities portfolio, there follow certain conclusions:

1. The overall portfolio risk can be measured by the standard deviation (standard deviation δ) of the portfolio return;

2. The risk of each security contributes to its specific weight contribution to the overall risk of the portfolio;

3. The standard deviation of profitability (profitability) includes the impact of both non-systemic and systemic risks;

4. Non-systematic risk can be significantly reduced: by diversifying the portfolio; By increasing the number of different securities;

5. By reducing the difference in the average yield and profitability of risk-free securities;

6. Systematic risk is caused by fluctuations in the stock market and can be reduced by increasing the number of different securities.

To protect against the effects of risk factors, methods such as:

* Diversification of the stock portfolio;
* Creation of financial reserves to cover possible losses;
* Attraction of additional information on transactions in the stock market;
* Insurance (hedging) of contracts from the impact of risk factors on the basis of options and futures contracts;
* Insurance of financial guarantees.

Reduction of large risks of high-yield investment is achieved through the distribution of risks through the creation of cooperation. The management mechanism of protection against risk factors can be passive and active depending on the actions of the manager.

Passive approach is focused on a small return on investment and a relatively slow development of the transaction, respectively, and at low risk. An active approach involves investing in investments with a high level of profitability and, accordingly, risk, and provides a set of measures to reduce it. The combination of active and passive measures in the implementation of investment programs reflects the level of risk management.

A set of measures to protect against risk includes: preventive measures, regulating impacts, measures for insurance, analytical work with risk factors.

Preventive measures are connected with monitoring of the stock market, collection and processing of information about the trends in the development of financial and credit relations, the planned distribution of risk among the participants of the program, monitoring compliance with financial proportions at enterprises of participants in investment activities, etc. Regulatory Measures provide for a set of quantitative restrictions on cash flows, loan amounts, interest rates, the size of the reservation, the share of borrowed funds. Risk insurance events include the transfer of their insurance company. Insurance of financial risks in the event of occurrence of an event specified in the classification is carried out by the insurer on the basis of special insurance rules that take into account the specifics of any particular insurance risk.

Insurance is also provided for direct investment in real projects.

Analytical measures of protection against risks represent a combination of special economic studies of the state of solvency of clients, firms, work on controlling investment decisions and programs, established conditions and requirements for investments taking into account risk factors, etc. Analytical measures to protect against financial risks include monitoring of the stock market, as well as state control over the inclusion of securities on the exchange list (listing formation). The formation of the listing is the restriction of admission to the sale of securities on the stock market, control over the financial condition of the firm when securities are included in the exchange list.

Risk management is carried out at all stages of realizing the investment program with the help of monitoring, periodic monitoring and the necessary corrective actions to organize work to reduce risks.

**TOPIC 4. FINANCING OF INVESTMENT PROJECTS**

The strategy of project financing consists in applying in a certain sequence of financing schemes based on individual features of the project and the factors affecting it.

The following main types of financing strategy are distinguished depending on the sources of financing:

* From internal sources;
* From attracted funds;
* From borrowed funds;
* Mixed financing.

Internal sources are the company's own facilities:

* Authorized capital;
* Reinvested profit;
* Depreciation;
* Reserve capital;
* Extra capital;
* Other own funds.

External sources are borrowed and borrowed funds.

Borrowed funds:

* Issue of bonds;
* Bank loans;
* State loans and loans;
* Leasing and, in particular, financial leasing (is that a lessee can return, extend a lease, buy a leasing object).

Involved funds:

* Issue of preferred shares;
* Issue of ordinary shares;
* Venture capital (risk capital);
* Project financing;
* Sale of the retired property;
* Other borrowed funds.

When implementing the financing strategy, the following financing schemes can be used in combination, providing means from different sources:

* Sale of a share to a financial investor;
* Sale of shares to a strategic investor;
* Venture financing;
* Initial Public Offering (IPO);
* Closed (private) placement of securities;
* Access to the western financial markets (depository receipts);
* Bank loans, credit lines, loans;
* Commercial (commodity) credit;
* State credit (investment tax credit);
* Bond issue;
* Project financing;
* Insurance of export operations;
* Leasing;
* Franchising;
* Factoring;
* Forfeiting;
* Grants and charitable contributions;
* Agreement on research and development;
* State financing;
* Issue of a bill;
* netting;
* Other.

The most risky loan investment capital is venture capital. Financial leasing is that a lessee can return, extend a lease, and buy a leasing object. At high investment risks, most often project financing is used with full regression on the borrower.

Own sources of investment characterize the overall cost of the enterprise's funds, ensuring its investment activity and its ownership. To own sources of financing of investments carry:

* Authorized capital;
* Profit;
* Depreciation deductions;
* Special funds formed at the expense of profit;
* On-farm reserves;
* Funds paid by insurance bodies in the form of compensation for losses.

Own funds also include funds donated to the enterprise for the purposeful investment.

Own means of the enterprise from the point of view of a way of their attraction can be both internal (for example, profit, amortization), and external (for example, additional placing of actions). The source of own means for investments are depreciation, net profit and shares. The amounts attracted by the enterprise from these sources from outside are not refundable. The entities that provide these channels, as a rule, participate in the income from the realization of investments on the rights of shared ownership.

The authorized capital is formed at initial investment of means. Its value is announced at the registration of the enterprise, and any adjustments to the amount of the authorized capital (additional issue of shares, reduction of the nominal value of shares, additional deposits, acceptance of a new participant, addition of part of profits, etc.) are allowed only in cases and Order, provided by the current legislation and constitutive documents.

For business companies, legislation provides for the need to compulsorily reduce the statutory capital in the event that its value exceeds the value of the company's net assets. When creating an enterprise, the contributions of founders to its charter capital can be cash, tangible and non-material assets. At the time of transfer of assets in the form of contributions to the charter capital, the ownership right to them passes to the managing entity, i.e. Investors lose ownership of these objects. Thus, in the event of the liquidation of an enterprise or the withdrawal of a participant from the company or partnership, he has the right only to compensate his share in the residual property, but not to return the objects transferred to him in due time as a contribution to the authorized capital. Consequently, the authorized capital reflects the amount of the enterprise's obligations to investors.

Additional capital, as a source of enterprise funds, reflects the increase in the value of non-current assets as a result of revaluation of fixed assets and other tangible assets with a useful life of more than 12 months. It may also include the amount of excess of the actual offering price of shares over their nominal value (the share capital of the joint-stock company). Revaluation is subject to all types of fixed assets, both current and stored, in the reserve, objects of incomplete construction, as well as equipment intended for installation.

Periodic revaluation is carried out in order to bring the book value of fixed assets to the current prices and conditions of reproduction, thereby creating favorable economic conditions for the enterprises and incentives for active renewal of fixed assets. Revaluation of fixed assets has a significant impact on the results of production and financial activities of enterprises, since it leads to a change in depreciation and tax payments.

The reserve capital can be created at the enterprise or in an obligatory order, or in the event that it is stipulated in the foundation documents. The creation of reserve funds is mandatory for open joint-stock companies and enterprises with foreign capital.

*Net profit.* Profit is the main form of the net income of the enterprise, which expresses the form of the value of the surplus product. Its value is defined as the difference between the proceeds from the sale of products (works, services) and its full cost price. After payment of taxes and other payments from profit to the budget, the enterprises have a net profit, which by decision of the general meeting of shareholders (or a meeting of participants in a limited liability company) can be distributed to pay dividends, forming a reserve and other funds , Covering losses of past years, etc.

The net profit directed for investment purposes can either be accumulated in the accumulation fund or other funds of similar purpose created at the enterprise (for example, the development fund) or reinvested in the assets of the enterprise as an undistributed profit balance.

Profit is the main source of the means of enterprise development. The amount of profit depends on many factors, the main of which is the ratio of income and expenditure. At the same time, in the existing normative documents, the possibility of a definite regulation of profit by the management of the enterprise is laid. Such regulatory procedures include: the variation of the boundary between the assignment of assets to fixed assets; Applied methods of depreciation of fixed assets; The procedure for valuation and amortization of intangible assets; The procedure for assessing the contributions of participants to the authorized capital; Choice of the method of valuation of production reserves; The procedure for creating a provision for doubtful debts; The composition of overheads and the manner in which they are distributed.

A significant influence on the amount of net profit directed to investment purposes is provided by the policy of the owners of the enterprise regarding the distribution of profits for consumption and development.

*Depreciation deductions.* Among its own financial sources of investment, an important role belongs to depreciation charges. Depreciation is charged to recover the cost of acquiring fixed assets and, accordingly, depreciation is designed to invest their replacement. In developed countries, depreciation charges up to 70-80% cover the needs of enterprises for investment. With the transition of the Russian economy to market relations, the significance of depreciation charges as a source of financial investment has also increased.

Amortization is the process of transferring the value of the basic funds to the products produced during their standard term of service. The amount of accumulated depreciation depends on the value of the enterprise's fixed assets and the accrual methods used.

The use of non-linear methods of depreciation allows you to recover most of the value of fixed assets (up to 60-75%) in the first half of the period of their use. This allows you to reduce the loss of incomplete compensation of the value of fixed assets in the event of their replacement due to moral depreciation until the end of the standard lifetime.

The advantage of depreciation as a source of investment in comparison with others is that with any financial position of the enterprise this source takes place and still remains at the disposal of the enterprise. Amortization allocations in the enterprise should be used to finance real investments, namely: to purchase new equipment instead of retired; For mechanization and automation of production processes; To conduct research and development work; To upgrade and update the products to ensure its competitiveness; For reconstruction, technical re-equipment and expansion of production; For new construction.

In general, it can be said that equity capital as a source of financing for real investment is characterized by the following main positive features:

* Simplicity of attraction, since decisions related to the increase of equity capital (especially at the expense of internal sources of its formation) are taken by the owners and managers of the enterprise without the need to obtain the consent of other economic agents;
* A higher ability to generate profit in all areas of activity, since it does not require payment of loan interest in its various forms;
* Ensuring the financial stability of the enterprise development, its solvency in the long-term period, and, accordingly, reducing the risk of bankruptcy.

At the same time, he has the following drawbacks:

* The limited scope of attracting, and consequently, the opportunities for a significant expansion of the operating and investment activities of the enterprise in periods of favorable market conditions at certain stages of its life cycle;
* High cost in comparison with alternative borrowed sources of capital formation;
* An unused opportunity to increase the coefficient of rent-equity of its own capital by attracting borrowed financial funds, since without such attraction it is impossible to ensure the excess of the financial profitability of the enterprise over the economic.

Thus, an enterprise that uses only its own capital has the highest financial stability, but limits its pace of development (since it can not ensure the formation of the necessary additional volume of assets during periods of favorable market conditions) and does not use the financial possibilities for increasing the profit on invested capital.

Along with the above own financial resources of the company, borrowed funds from external sources can also serve as sources of investment financing. Borrowed funds mean cash resources received for a certain period and subject to return usually with a payment of interest. Borrowed sources include: funds received from the issue of bonds, other debt obligations, as well as funds received in the form of loans from banks, financial institutions, and the state.

At present, the method of financing investment projects has become widespread, when the project itself is the main security for loans granted to banks; Those incomes which will be received by the created or re-constructed enterprise in the future at the expense of the project. This method received the name of project financing.

A significant part of investment projects should be financed at the expense of the founders' own funds. Such a practice corresponds to the general approach to financing new projects, consisting in the fact that costs and risks should be borne primarily by the initiators (founders) of the project, who, like shareholders, have the opportunity to receive high income, while As creditors can only rely on timely repayment of the loan and interest.

Often financial terms are treated ambiguously. This term was not avoided by the term "financial design", in this connection we will give several formulations that interpret its essence:

* This is financing based on the viability of the project itself, not taking into account the solvency of its participants, their guarantees and guarantees for repayment of the loan by third parties;
* This is the financing of an investment in which the source of debt repayment are cash flows generated as a result of the implementation of the investment project itself;
* This is the financing provided by the economic and technical viability of the enterprise, allowing to combine flows of personality sufficient to service its debt.

Thus, it follows from the above definitions that project financing is characterized by a special method of provision based on confirmation of the reality of obtaining planned cash flows by identifying and distributing the entire complex associated with the project of risks between the parties involved in its implementation (contractual Organizations, financial institutions, government agencies, suppliers of raw materials, consumers of final products).

**TOPIC 5. THE CONCEPT AND STRUCTURE OF THE INNOVATIVE PROCESS**

Innovation is always created for a specific purpose (for example, to increase the consumer value of goods and the competitiveness of an organization, to master new markets, etc.). In other words, it is always a purposeful process, carried out not by one person, but, as a rule, by entire collectives (laboratories, research institutes, departments, etc.). As a result of the innovative process, the idea turns into a commodity and becomes an object of purchase and sale. The innovation process can be viewed in different ways: first, from the standpoint of the consistent implementation of research, production and marketing activities; Secondly, from the position of the life cycle of the innovative product.

IT Balabanov under the innovation process understands "the process aimed at developing, implementing the results of completed scientific research and development or scientific and technical achievements in a new or improved technological product marketed in a new or improved technological process used in practice , As well as related additional research and development. " In this regard, the scientist proposes to consider the structure of the innovation process as a set of consistently implemented elements: initiation, marketing of innovation, production (output), the implementation of innovation, promoting innovation, assessing the economic efficiency of innovation, diffusion of innovation.

The innovation process is a certain sequence of actions aimed at developing, mastering and implementing innovations that allow achieving the planned goals. The innovation process begins with the stage of search-based research (R & D) (fundamental research). The interaction of science and production is the basis of the scientific and technological progress of society. In developed countries, investment in basic research is seen as a highly effective investment of public funds. At the second stage of the innovation process, applied research works are carried out. For potential investors, there is always a certain share of risk when investing in innovative projects, as there is a probability of a negative result, that is, a loss of cash.

Therefore, this type of investment is called risk investment, and firms, respectively, riskyfirms or venture firms. Applied scientific research is carried out by scientific and technical organizations of industry and the department of universities. At the third stage of the innovation process, development work is carried out - a set of works performed during the creation or modernization of products: development of design and technological documentation, production and testing of prototypes (pilot lot). Source of financing - own funds of organizations, customer funds, state budget.

At the fourth stage, the process of commercialization of innovation occurs. During this period, the following types of work are performed: the study of the demand for innovation (marketing innovation); Production (release) of innovation; Realization of innovation; Evaluation of economic efficiency; Diffusion of innovation (the spread of once mastered innovation in new markets, for example, regional, international). The source of financing is the organizations own funds, bank loans, the state.

Linear-sequential model, focused on the needs and demand of the market. The starting point in this model of the innovation process is the needs of consumers and market demand for products.

Thus, before creating a new product (service), technology needs to study the market. In other respects, the sequence of actions for carrying out fundamental, applied research and other works is identical to the previous model.

*The conjugate model.* This model allows connect the needs of society and the market with the technological level of development.

*Parallel model.* The main emphasis is on the parallel activity of integrated groups and external horizontal and vertical links.

*Model of strategic networks.* The model is based on strategic integration and linkages. Research and development (R & D) is carried out on the basis of modern infocommunication technologies. This allows to shorten the duration of development and introduction of innovation, increases the speed of information transfer and ensures timely data exchange between innovators-developers, suppliers, partners, consumers. Marketing of innovation is carried out during the whole time: from basic research to after-sales service of finished products.

It must be said that the success of this or that innovation depends not only on the technological capabilities of the organization, but also on the marketing decisions taken.

The first two models of the innovation process are linear, all the others are nonlinear.

Features of the nonlinear model:

* availability of a feedback system;
* orientation to the complex nature of the creation of innovation;
* a certain independence of the stage of research and evaluation of demand from the main process of creating innovation;
* orientation on a specific economic result and on cooperation with various economic entities.

*The life cycle of innovation.* The cyclical nature of the development of social production presupposes a change in the state of all its components. Any introduced innovation sooner or later loses its novelty. This is mainly due to the change in consumer value, the transformation of innovation into a standard product or technology mastered by many enterprises. Thus, any innovation, regardless of the type, sphere of application, has its own life cycle, that is, a certain period of time during which it has an active life force and brings profit to the manufacturer and (or) the seller.

The life cycle of innovation – the product consists of four stages.

Stage 1. Research and development on the creation of innovation-product, preparation of technical documentation and its transfer to production are carried out.

Stage 2. There is a technological development of large-scale production of new products (the volume of production should ensure the breakeven of the enterprise).

Stage 3. Stabilization of production volumes.

Stage 4. Gradual decrease in production volumes.

The life cycle of innovation - the process (technology):

1. Within the framework of the existing technological structure, research works are carried out with the aim of changing production technology, reducing the production cycle, etc.;

2. The development of the innovation-process takes place;

3. New technology is being introduced to the production of other facilities;

4. There is a routineization, i.e., mastering of innovation-processes in stable conditions.

*Product life cycle.* In the first phase, the product is filled with a free market niche. The subsequent three phases are associated with growth, slower growth and a decline in sales volumes. Tracking the volume of sales of products, the study of demand, a competitive market allow you to make decisions about reducing or expanding the output of products, its modification, which certainly affects the duration of the product's life cycle.

In the Republic of Belarus in 2000, the Resolution of the Ministry of Statistics and Analysis of the Republic of Belarus No. 34 "On approval of state statistical reporting on technological innovations" was adopted. And in 2002, additions were made to the form of state statistical reporting. Most often in the domestic and foreign practice, the following groups of indicators of the organization's innovation activity are used.

Expenditure indicators: unit costs for R & D in sales; Specific costs for the acquisition of licenses, patents, know-how; Costs for the acquisition of innovative firms; The availability of funds for the development of initiative development.

Time indicators (characterize the dynamics of the innovation process): the index of innovation; Duration of the process of developing a new product (technology); Duration of preparation for the production of a new product; Duration of the production cycle of the new product.

Renewability indicators: the amount of development or implementation of innovations-products and innovations-processes; Indicators of the dynamics of the renewal of the product portfolio; Number of new technologies acquired (technical achievements); Volume of exported innovative products; Volume of new services provided.

Structural indicators: the composition and number of scientific and technical, research, experimental units; Composition and number of joint ventures using new technology and creating new products; The number of employees engaged in R & D and the structure of the organization; Composition and number of creative, initiative temporary brigades, groups.

The report on technological innovations provided by organizations in the Republic of Belarus includes the following sections:

* innovative activity of a legal entity;
* expenses for technological innovations by types of activity and sources of financing for the reporting year;
* volume of innovative products (services) for the reporting year;
* the number of new technologies (technical achievements) acquired and transferred by a legal entity, software tools for the reporting year; Sources of information about innovations;
* number of joint projects for the implementation of research and development for the reporting year; Factors that impede innovation.

**TOPIC 6. STRATEGIC MANAGEMENT OF AN INNOVATIVE ENTERPRISE**

There are many different definitions of the concept of "strategy", for example:

1) Research of the future;

2) An idea that gives an advantage in competition;

3) The system of methods of management activity;

4) A comprehensive plan designed to implement the mission of the enterprise and achieve its goals;

6) Organized distribution of resources to achieve certain goals.

The economic strategy is understood as a system of long-term, defined by the development goal, conceptual guidelines for making decisions that allow distributing resources between alternative development paths and adjusting their distribution under changing external and internal conditions of functioning. In the sphere of innovation activity for the organization, consumers, industry, the market as a whole First of all, its novelty. The success of implementing a strategy depends primarily on the capabilities of a particular organization, the state of its internal environment, and the proper setting of innovative goals.

The system approach allows to consider the organization as a system consisting of interacting blocks or units (product, functional, resource, organizational, management). At the same time, the organization develops in the external environment and is exposed to external factors. In this regard, the implementation of innovative strategies is always accompanied by an increase in the level of uncertainty and, accordingly, assumes a higher degree of risk (the variability of the external environment is supplemented by the novelty of the innovative projects themselves). In addition, the implementation of an innovative strategy may entail restructuring processes in the organization and the growth of contradictions in the management sector.

The starting point in the development of innovative strategies is the formulation of innovative goals, always associated with the desired results, the indicators of which can be:

* The proportion of new products in its total volume;
* The proportion of products at the stage of market entry and growth;
* The average age of production equipment;
* The proportion of products with high quality;
* Characteristics;
* Average lead times for new products
* Market, etc.

The nature of innovative strategies is determined by such factors as the science intensity of products, market share, scientific and technical potential, etc. It is also important to take into account the resources of the enterprise itself (technical, scientific, financial, personnel, etc.). The science intensity of products is quantified through the specific weight (share) of R & D costs in the cost of the goods.

Innovative strategies are determined by the overall strategies of the enterprise and, accordingly, by common determinants:

* The level of competition in the industry, relations with suppliers;
* The system of state regulation, technology;
* The needs of consumers.

At the same time, when developing and implementing innovations, a number of specific determinants should be taken into account:

* Scientific and technical personnel potential;
* The presence and condition of the experimental-experimental base;
* State of intangible assets and experience in the implementation
* R&D;
* The structure of output products taking into account the market share;
* Availability of technological and functional
* Substitution;
* The existence of their own free cash or
* Possibility of attracting investments for R&D.

Strategies for innovation can be divided into basic and special.

The basic strategies aimed at enhancing the competitive advantage of the organization include:

1) Strategy of intensive growth;

2) The strategy of integration development;

3) Strategy of diversification development;

4) Reduction strategy.

Special innovative strategies are aimed at developing the internal environment of the organization, its potential:

1. Product (portfolio) strategies;

2. Functional;

3. Resource;

4. Organizational and managerial.

In relation to the stages of the innovation process, innovation strategies can be divided into two groups:

* Strategies for R&D;
* Strategies for introducing and adapting innovations.

The R&D strategy (licensing strategy, parallel development strategies, research leadership, advanced science intensity, life cycle follow-up) is related to the organization's research and development. These strategies determine the nature of borrowing ideas, investing in R & D, and their relationship to existing products and processes.

Strategies for the introduction and adaptation of innovations (strategies for supporting the product range, retrofitting, preserving technological positions, product and process simulation, step-by-step overcoming, technological cohesion, technological transfer, market follow-up, vertical borrowing, radical advancing, waiting for the leader) relate directly to the production renewal system, the withdrawal of products to markets, the use of technological advantages.

Based on the nature of micro and macro changes, one can cite another typology of innovative strategies.

*Micro innovation strategy.* The internal resources of the enterprise are directed at changing the products and / or processes. Allocate product and process innovation strategies.

*Macro innovation strategy*. Focused mainly on addressing issues of leadership and competitiveness. There are six types of these strategies: offensive, defensive, adaptive, imitative, independent and traditional.

Sequence of selection and implementation of innovation strategy.

1. Stage goal setting. The mission of the organization is formulated, which emphasizes commitment to innovation and innovative strategies. The goal of the organization's development is determined, and a "tree of goals" is built.

2. The stage of strategic analysis. The internal environment of the organization is studied and the innovative potential is assessed. The state of the external environment is analyzed and an assessment of the innovation climate is given. The innovative position of the organization is determined.

3. The stage of choosing an innovative strategy. Basic development strategies and their innovative components are established. The selection and evaluation of alternative innovative strategies is being carried out. A choice is made and a preferred innovative strategy is formulated.

4. The implementation phase of the innovation strategy. A strategic project and a project implementation plan are being developed. The strategic control of the project implementation process is organized. The efficiency of the implementation process is assessed and the necessary adjustment of the project, strategy, goals, mission is carried out.

**Types of competitive behavior of organizations.** The great contribution to the formation of competitive strategies was made by the American economist M. Porter. He singled out three strategies that allow organizations to take a specific place in the competition:

* Strategy of differentiation;
* Leadership strategy for costs;
* Strategy of focusing

*Strategy of differentiation.* The essence of this strategy lies in the company's attempt to achieve loyalty on the part of consumers who consider their goods and services to be unique.

Thus, a high price for products can be justified by high consumer value. Examples of successful implementation of such a strategy are Mercedes-Benz cars, home appliances Bosh and others.

*Leadership strategy for costs.* Assumes the use of leadership by various methods to increase productivity, reduce costs for the production and sale of products.

Reducing the cost of production allows you to sell goods at lower prices, thereby obtaining a targeted profit. Such strategies are usually followed by network companies (shops, hotels, restaurants, etc.).

*Focusing strategy.* The organization concentrates its efforts on a certain geographic region or group of consumers.

It should be noted that the organization can at the same time use other competitive strategies, while focusing on the selected segment.

Another approach to distinguishing the types of competitive behavior was proposed by the Russian scientist L.G. Ramensky. According to his approach, competitive behavior can be of four kinds.

**Violent (or force) competitive behavior.** It is typical for large enterprises that carry out mass production and serve the mass market. The main advantage is low prices for products, seriality and scale of production. The creation of the company-violeta requires large investment investments, the availability of a wide marketing and marketing network.

**Patient (or differentiated) competitive behavior.** Assumes adaptation to narrow market segments through the specialized release of new or upgraded products with unique characteristics. Competitiveness of goods is determined by its high consumer value. The development of patron companies can take place in two directions: stagnation or moderate growth along with the occupied niche and a change in strategy and transformation into a major violet. It should be noted several typical problems that arise in organizations that adhere to this strategy: first, the difficulty of finding your own narrow niche; Second, by occupying it, the patient simultaneously becomes her hostage; Thirdly, there is a danger of losing independence; Fourth, the demand for products is limited in volume.

**Efficient (or venture) competitive behavior.** Characterized by entering the market with a radically new product and capturing a part of the market. The main role of such companies is to create and promote innovative products. The financial base of such organizations is venture capital. Their activity is focused on finding new technical solutions, so a large amount of financial flows is directed to development (R & D).

**Commutative (or mixed) competitive behavior.** It presupposes the adaptation of the organization to the conditions of the local market, the filling of niches that for some reason are not occupied by larger companies, the production of novelties of substitute goods, the provision of the needs of the local market, the stimulation of the entrepreneurship of the citizens of the country; Filling the infrastructure of production processes, increasing the level of employment, especially in non-industrial areas. As an example, you can consider universal rural shops, car repair shops, sewing shops, etc.

**The method of identification of the organization by the types of competitive behavior.**

In order for the organization to be oriented in the market space, it is necessary to evaluate scientific and production, personnel, technological and other resources. Having determined the type of competitive behavior, one can assume the further development of the company, identify potential problems, modernize the strategy of activities, including in the field of promoting innovative products (or processes).

Innovative climate and innovative potential of the organization: evaluation procedure.

The implementation of the innovation strategy requires the enterprise to fully implement a certain set of tasks. The state of innovative potential, the degree of its development depends on the internal environment of the organization, the coordinated activity of all its structural units (blocks).

The innovative potential of the organization is a measure of the organization's readiness to implement an innovative project or an innovative transformation program.

Innovative potential can be determined by the state of the internal environment of the organization. For this, it is necessary to analyze the activity of production and non-production blocks (product, functional, resource, organizational, management blocks). Depending on the innovation goal, the block readiness assessment can be private (in this case, the functioning of the unit that is intended to be changed or the activity of which depends on the final result within the framework of one new project is analyzed) and integral (the assessment of the current state of the organization relative to all or groups already Implemented projects).

There are two approaches to the assessment of innovative potential: detailed and diagnostic.

Within the framework of a detailed approach, the analysis of innovation potential is carried out mainly at the stage of justifying innovation and preparing a project for its implementation and implementation, with access to the information resources of the organization.

In the case when we are dealing with a competing structure, or the analysis is conducted by an invited analyst, the best method of evaluation will be a diagnostic one. The diagnostic approach is implemented in the analysis and diagnosis of the state of the organization for a limited range of parameters.

Data on the state of innovation potential can be obtained as a result of an expert survey. For this purpose, special questionnaires are developed, forms of various degree of detail of the parameters. Experts on a certain scale (for example, on a five-point scale) assess the state of the components, reflecting the strengths and weaknesses of the organization. In conclusion, the final assessment of the state of innovative potential is summarized.

The innovative climate of the organization is the state of the external environment of the organization, which either contributes to counteracting the achievement of the innovative goal.

The external environment of the organization can be represented by two levels - micro- and macrolevel.

The macro level of the external environment is considered through the influence of social, technological, economic and political factors.

The microlevel of the external environment can be represented by a set of defined strategic zones of the nearest environment of the organization.

Thus, when assessing the innovation climate, the object of analysis is the sphere of the external macro environment and the microenvironment zone, and the subject is their influence on innovative goals and strategies, through the impact on the innovative potential of the organization.

The innovative position of the organization is an integral indicator of the organization's readiness to implement innovative projects and programs.

The evaluation of the innovation position is carried out during the review of the internal and external environment of the organization. To do this, you can use the SWOT analysis method. When constructing the SWOT-analysis matrix, two vectors are singled out, each vector is divided into two sections (possible states): threats / opportunities emanating from the state of the external environment, strengths / weaknesses of the organization's innovative potential. At the intersection of these vectors, we obtain four groups of possible situations.

**TOPIC 7. ORGANIZATION AND PLANNING OF INNOVATIONS**

The solution of the tasks facing innovative enterprises is carried out within the framework of certain organizational structures. They provide for the presence of a certain number of units or individual functionaries who are in established relationships and interaction, and within the framework of the intra-structural activities of a particular type aimed at fulfilling certain functions and achieving the private and general goals of the functioning of innovative enterprises.

The organizational structure of an innovative enterprise (IE) is a set of scientific, design, design, technological and information divisions (laboratories, departments, sectors, groups) that carry out the basic creative activity to create an intellectual product - innovations of a certain profile and specialization, as well as production, auxiliary And management units that ensure implementation of thematic R & D plans and implementation of the innovations created.

The organizational structure of any IE should correspond to its target and functional structure in each period of time. In practice, there can be no complete coincidence of structures. This is due to the fact that in the conditions of dynamic market relations some goals and functions disappear and new ones appear in accordance with new ideas, tasks, decision methods, etc. Periodic analysis and rationalization of structures is necessary taking into account a number of factors and on the basis of a number of important principles.

Fundamental factors, under the influence of which the organizational structure of the IE is formed, are:

* Features of the branch of knowledge, science and technology, production;
* Degree of independence of the IE or a place in the structure of the association;
* Directions of R & D performed and specific tasks of the thematic plan;
* Level of specialization and degree of cooperation of a particular IP and its place in the social division of labor, as well as the technology and level of automation of scientific, design, economic and management work;
* Terms of solving scientific and technical problems;
* Structure of the available resources of the IE (labor, material, information and financial) and the trends in their development.

The most important principles for building and improving the structure of IE are:

* Primacy of the goals, functions, tasks and the secondary nature of the decisive units;
* Rational division and cooperation of labor (external and internal) and expedient specialization of divisions and executors, which in turn creates conditions for the scientific organization of labor of workers at all levels, speed up document circulation and information of all kinds in vertical and horizontal lines, reduce cycle and reduce costs Creation of innovations;
* Hierarchy of the interaction of structural units with the minimum possible number of hierarchy levels to provide the shortest paths of information from the top down and from the bottom up;
* Providing manageability, for which at each hierarchical level there should ideally be 5-6, but not more than 8-9 organizational cells;
* Specialization of each structural body of any level on the performance of a possibly narrow range of functions stipulated by the provisions.

To this end, various functions should be clearly delineated between individual units or functionaries, and similar functions are combined in one unit or with one functionary;

* Inadmissibility of units with double subordination, as well as not creating or processing information, but only translating it from top to bottom, from bottom to top or horizontally;
* Setting the size of the units taking into account the volume of processed information;
* Ability to quickly rebuild when changing goals, tasks, prerequisites of functioning and deterioration of the quality of the elements of the existing structure.

In the process of functioning of IE, their structures undergo various changes, i.e. modified. At the same time, the variety of structural structures of IE that are encountered in real practice can be reduced to several types that provide different options for the distribution of responsibilities, functions and works performed, specialization and cooperation. There are functional, thematic and mixed types of organizational structures of IE.

The functional type of the IE structure is a set of fully specialized units, each of which performs strictly defined parts of R & D that are relevant to their profile and specializations. Each such unit unites employees of homogeneous specialties. The grouping beginning is the function or method of work being performed. This type of structure is distributed where sufficiently similar, similar studies or design work are performed, allowing a deep breakdown into individual components.

The functional structure is aimed at the primary solution of internal tasks-creating the most favorable conditions for the specialization and profiling of the work of specialists. The main advantages of the structure of a functional type are:

* High intensity of use of human and material resources, due to the high degree of specialization of employees and equipment and more even loading;
* Possibility of concentrating knowledge and experience in a relatively narrow field of science and technology;
* Ease of maintenance of scientific and technical, patent and other information;
* Possibility of widespread use of standardized and standardized solutions and structures;
* The same level of quality of the same type of work in the composition of various projects;
* The best adaptation of young specialists;
* Possibility of developing qualification standards, simple and effective methods of monitoring the quality of labor.

Disadvantages of functional structures in turn are:

* The complexity of planning, monitoring and operational regulation of the progress of research and project programs due to the large number of specialized units, each of which has its own, local goals;
* A large volume of necessary technical and planning documentation (private technical assignments, estimates, bids, plans, etc.);
* The need for a large number of different kinds of coordination at horizontal levels;
* The impossibility of overlapping stages and high sensitivity, even to minor deviations from the calendar schedule of work on the topic;
* The monotony and narrowness of the sphere of professional interests of performers, the lack of opportunities for full disclosure of their creative potential.

Employees of units built according to a functional principle become narrow specialists and may be unsuccessful in solving issues beyond the traditional scope of their specialization. When solving complex and complex scientific and technical problems with a large number of purely functional units involved in the implementation of research and development, these shortcomings nullify all the advantages, and the structure becomes less viable.

In turn, the thematic type of the structure of the IE is characterized by the fact that the units unite specialists of different profiles here. Operating in conditions of almost complete autonomy, each of the thematic multidisciplinary units conducts work on their topics from beginning to end. The thematic unit has in its composition all kinds of resources that are necessary for the timely and high-quality implementation of the topic, and almost does not depend on the activities of other units. At the same time, the thematic structure is aimed at the final result, that is, on the external consumer.

The main advantages of the thematic type of structure:

* Focus of creative teams on the solution of specific and clearly delineated tasks;
* Promptness of their solution, since the head of the unit is endowed with the necessary fullness of authority for permanent and complete control over the state of work on the topic and the operational impact on their course;
* Higher personal responsibility of managers and creative specialists for timely and qualitative work on the topic;
* High probability of the emergence of fundamentally new ideas, born at the junctions of traditional scientific directions;
* Possibility of combining the stages of development, organizing their implementation in a parallel-sequential scheme;
* Fewer different kinds of approvals, intermediate technical and management documentation, and the possibility of unifying design and technical solutions within the framework of the topic.

However, the thematic structures are also characterized by shortcomings:

* a relatively low intensity of resource use due to the inability to fully load specialists of a narrow profile, especially at the first and final stages of R & D;
* higher cost of development due to duplication of functions, equipment, areas;
* uneven loading of laboratory equipment and experimental base;
* less opportunities for standardization of constructive and technical solutions, since specialists of the same profile are dispersed in different divisions and do not have the opportunity to actively exchange information;
* longer period of adaptation of specialists who come from educational institutions or are involved from outside; The complexity of information support.

In real practice, mixed variants of the structure are most often used, creating the best opportunities for rapid and qualitative implementation of R & D and implementation of their results.

In this connection, the task arises of determining the most rational correlation of functional and thematic subdivisions in hybrid structures that are flexible and dynamic, providing the opportunity for horizontal coordination of R & D for prompt coordination of efforts of the team aimed at fulfilling the tasks and planned innovations.

First of all, so-called matrix structures should be referred to such mixed structures. These are typical mixed structures, combining a number of features, both thematic and functional order. The essence of the matrix structure is illustrated by the interaction matrix of the units.

The horizontal lines of the grid grid correspond to the topics that are developed by the IP subdivisions, vertical lines to the specialized types of operations that are performed by the functional departments. Participation of the unit in the development of the topic is marked by corresponding points. The main feature of the matrix structure is the availability of special powers for the topic managers in the coordination and regulation of all horizontal links related to the topic. There are two types of matrix structure: project-matrix and functional-matrix.

In organizations with a project-matrix structure, employees of existing functional units are directly subordinated to the project manager (the topic) for the entire duration of its implementation. The head of the topic, endowed with all the rights of management, determines the immediate tasks for all executors, controls and coordinates their activities, ie, solely carries out general management of the work on the topic. The head of the functional unit monitors only that the total number of employees in this specialty is appropriate to the needs of the organization, distributes specialists on topics, provides its employees with the necessary methodological assistance, deals with promotion of their employees, etc. The application of the project-matrix structure is appropriate in the case when the organization performs a limited number of complex, significantly different projects requiring high quality of work, for the implementation of which it is advisable to use separate specialists and teams that do not participate in other programs.

With the functional-matrix organization of works, specialists involved in the work on the topic are not fully subordinate to the project manager, but act within the framework of double subordination. The project manager is responsible for the qualified management of creative innovation processes and the progress of work on the topics, and the organization of the implementation of all these solutions is provided by department heads in accordance with the current lines of subordination. With this option of separation of powers, the topic leader, uniting the work of all the members of the group, determines what will be done when and when, and the heads of departments - who and how this will specifically deal with it. Heads of departments (both functional and thematic) are responsible for the qualification of specialists, their professional growth, remuneration, advanced training, etc. This option allows the topic manager to be responsible for the results of the implementation of the most important elements and stages of the program, while preserving the established In the organization of a system of division and cooperation of labor.

This approach is advisable in the case when a small number of complex and responsible programs of a long-term nature and a lot of less complicated works are simultaneously carried out in the IP, which, however, collectively have a large share in the annual thematic plan. Since the majority of IPs work simultaneously on a large number of topics and projects, and the resources of specialists are limited, the most frequent application is found in the functional-matrix structure, and often one specialist works on several topics simultaneously. Practice shows that the formation of matrix structures, as a rule, is not connected with the creation of new divisions, they are quite dynamic, easy to rebuild without any negative consequences, do not complicate, but facilitate the work with the cadres. The experience of the functioning of matrix structures gives grounds to consider them an effective means of reducing the time and improving the quality of research and development.

A variation of the mixed structure is the organization of work on projects. In this case, as with the thematic structure, the unit that develops the project consists of specialists from various services administratively subordinate to the head of the topic. The subdivision of the type in question has personnel and material resources in the amount necessary to carry out all the main works of this topic. Auxiliary and providing services in this case are usually centralized on the IP scale. The project unit (brigade, group) is organized to develop important complex problems of applied importance, and after the solution of the task is disbanded. Organization of work on projects is characterized by high speed and speed of implementation of developments, since usually these units are responsible for their implementation in production.

The process of formation of a rational organizational structure of a IE is quite a complex and responsible task, since the efficiency of the IE and innovation processes largely depends on the degree of rationality of the structure and its correspondence to the principles shown above, the goals and the functions performed. At the same time, the rational structure must first meet the following requirements:

1. Comply with the basic objectives of the IE and clearly fit into the procedure for the development of innovations and their implementation in production and markets (internal and external) operating in a particular branch of the national economy;

2. Focus on the prospects for innovation and the study of global demand;

3. Have the flexibility, the ability to adapt to new goals and tasks that may arise in connection with changed public needs or as a result of the emergence of new discoveries and inventions;

4. To contribute the improvement of the quality of the research and design programs being carried out, the level of standardization and unification of the newly created equipment;

5. To develop conditions for the most rational division and cooperation of labor between departments and individual executors, a clear specialization of the works carried out, which ensure the possibility of accumulating knowledge and experience in each of the assigned directions;

6. Do not allow unreasonable duplication and duplication of work leading to useless expenditure of expensive resources. This does not exclude the possibility of organizing competitive design of new equipment, if there are appropriate prerequisites for this (a wide scope of innovation, limited time for the work, the availability of several scientific and technical teams that can solve this problem in a qualified manner, the availability of additional funds, etc. );

7. Ensure the possibility of using the most rational technology for research and development (formalized methods of searching for new ideas and technical solutions, mathematical methods for planning experiments, methods of computer-aided design, etc.);

At the same time, the analysis of the structures of a large number of IE showed that in many of them the organizational structures are excessively complex and do not correspond to the above principles and requirements; In many there are no think tanks – units, purposefully working for the future, including marketing and forecasting. Often, new structural units are created in imitation of other IE without taking into account their own specifics. So scientific laboratories of general purpose, testing bases, etc., various economic services can function.

**TOPIC 8. MANAGEMENT OF INNOVATIVE PROJECTS**

The innovative project and program includes a set of activities necessary to implement innovative transformations.

The complex of transformations has the following content.

*Stage of changes in performance.* Constructively new or updated products with new characteristics, a new product portfolio, new industries / sub-sectors and new markets; New services for customers and consumers of new products of the enterprise; New economic and social results of the organization.

*Stage of changes in resources*. Material and technical base: new raw materials, new materials, new technological equipment; Information databases, new logistics of information flows, etc .; Labor resources: acquisition of new knowledge by employees, new employees; Finance: new tasks of financing an innovative project, new financial flows.

Stage of changes in the business processes of R & D: new tasks, time compression of processes; Production: redistribution of work between production links within the enterprise and orders between subcontractors; Implementation processes: update the implementation network, new marketing functions; Service: preparation for new services, and customer search.

Stage of changes in the organizational structure: transition to project management, new decision-making procedures.

Innovative program – a set of activities, local projects, presented in the form of work with specific deadlines, executors and financial costs.

The implementation of innovative strategies involves achieving innovative goals. The final result of the activity depends on how correctly the goal is formulated. The goal, innovative in particular, must always be concrete and achievable.

When it is formulated, too broad, abstract formulations should be avoided. When determining the goal, it is necessary to consider the following: start the sentence with the verb in an indefinite form in the imperative mood; To concretize the final result qualitatively and quantitatively; To be able to determine the quantitative indicators, which is necessary to confirm the achievement of the goal; Specify the deadline for achieving the goal (by the end of the current month, by February 3, etc.); Specify maximum permissible costs, restrictions on allocated resources.

In addition, the goal should be formalized as a management decision. The goal of a higher order always involves the implementation of a number of tasks and the achievement of intermediate goals. In this connection, when designing innovative transformations, a tree of innovative goals should be built.

The basic rules for building a target tree:

* the division of the goal into subgoals is conducted only on one basis;
* each level of the target tree must contain the necessary and
* sufficient set of sub-goals required to achieve the goal
* higher order;
* decomposition of the goal to the level of a specific performer.

The separation of decomposition levels occurs both when creating a new product, or a new technology (or a transition to a new technology). Decomposition of the goal is carried out in accordance with the stages of the life cycle of the product (process), which allows you to take into account the full range of necessary activities. The decomposition procedure is as follows: a general goal is formulated, subgoals for the stages of the life cycle of the product (process), at each stage, the sub-goals of adapting the enterprise to the production of a new product (or a transition to a new technology) are determined, then specific sub-objectives are put under specific sub-objectives.

**The state of innovation activity in the Republic of Belarus.**

The Republic of Belarus has a strong scientific and technical potential, significant achievements in various branches of science and technology, and reserves in basic research. At the same time, it should be noted that innovation activity in the republic is at the stage of formation.

*Contents and directions of innovation policy.* Innovative policy of the state is a combination of forms, methods and directions of state influence on production with the purpose of producing new types of products and technologies, as well as expansion of the sales markets for domestic goods on this basis.

The main directions of the state policy on the formation and development of the perspective model of the national innovation system (NIS):

* creation of an institutional and legal environment conducive to innovation;
* restructuring of existing structural and functional blocks of the NIS;
* formation of innovative infrastructure;
* development of small and medium-sized business;
* development of financial infrastructure;
* creation of a motivational mechanism for innovation;
* development of institutes for the use and protection of intellectual property rights;
* training specialists for innovation;
* modernization of the economy through technological innovation;
* public administration and ensuring interaction of NIS elements.

Methods of implementing the state innovation policy.

Formation of institutional and regulatory and legislative conditions for positive changes in the innovation sphere.

State support and encouragement of investors investing in high-tech, high-tech production, as well as the development of various forms of ownership (during the development of innovations) by providing certain tax benefits, government guarantees and loans.

Improvement of the tax system to create favorable conditions for innovation by all entities, regardless of the form of ownership and types of financing.

Development of leasing of expensive and unique equipment.

Participation in international competitions and exhibitions.

Sources of innovation investment:

* budgetary appropriations;
* foreign investment;
* the organization's own funds;
* financial capital.

*Technology transfer.* It represents one of the directions of scientific and technical policy. There are various options for determining the transfer of technology.

Let's imagine some:

* "The process of using technology, expertise, know-how or equipment for a purpose that was not originally intended by the developer organization. Transfers of technology may result in the commercialization or improvement of a product / process "(National Technology Transfer Center (NTTC)).
* "The process by which existing knowledge, production facilities or facilities obtained with federal funding of R & D are used to meet public or private needs" (Consortium of Federal Laboratories (FLC)).
* "Formal transfer of new discoveries and innovations obtained as a result of scientific research of universities and non-commercial research institutions, to the commercial sector for the public good" (Association of Technical Managers of Universities (AUTM)).

In 2003, the Republican Center for Technology Transfer was established in the Republic of Belarus with the assistance of the State Committee for Science and Technology of the Republic of Belarus, the National Academy of Sciences of Belarus, the United Nations Development Program (UNDP) and the United Nations Industrial Development Organization (UNIDO). The center's activities are aimed at promoting cooperation between developers, entrepreneurs and investors.

**Main organizational forms of innovation activity**

*Forms of small innovative entrepreneurship.* Innovative activity is always associated with the development of many organizational forms of different levels. In the sphere of small innovative business, the following organizational forms can be distinguished:

New firms within existing companies are one of the methods for the formation of new companies, which allows preserving the innovative personnel potential. In this case, the organization itself subsidizes the formation of a new company, solving financial problems of a young company. A subsidizing company can not receive 100% of the profits of a novice company, since the latter does not belong to it completely.

Venture firms are organizations that are created to implement innovative projects with a significant degree of risk. These are flexible and mobile structures, financing of which is carried out through certain venture funds.

Firms-incubators are organizations created by state authorities or large companies with the purpose of growing new companies. Firms-incubators can be of three types: non-profitable, profitable, branches of higher educational institutions.

Duration of stay within the incubator firms from one to three years. At the end of this time, it is assumed that the tenant company will achieve the required level of independence and exit the incubator.

Fundamentals of inter-firm scientific and technical cooperation: alliances, consortia, joint ventures.

The solution of a number of complex research tasks, the implementation of programs is often impossible without the involvement of third parties. In this connection, since 1979, various variants of joint research have been used in industrially developed countries. The first form of scientific cooperation was the research institutes, which were created according to the program-target principle. The advantage of such cooperation is mainly in the possibility of attracting external consultants, specialists, researchers.

Currently, almost all large industrial enterprises are developing intercompany ties.

*Forms of inter-firm cooperation.* The alliance is a stable association of several firms of various sizes among themselves and / or with universities, state laboratories on the basis of an agreement on joint financing of R & D, product development or modernization.

The consortium is a temporary union of legally independent, self-managing entities, which is created to solve a specific task, to implement the project.

Joint Venture (JV) is an inter-firm cooperation institution based on long-term market transactions and assuming a significant contribution from partners of different countries in the form of capital, technology or other assets.

*The role of parks and technopolis in creating innovation.* The implementation of the innovation policy of a particular region assumes, first of all, the development of a regional system for supporting innovation activities, the creation of an innovative infrastructure.

The Technological Park is a specially organized environment for supporting innovative entrepreneurship. When forming parks, the following elements are important: institutional, triad "university - research - technology", enterprise development, economic environment. One of the oldest industrial parks is the Silicon Valley Park, founded in 1885 on the basis of Stanford University by the industrialist L. Stanford.

On the territory of the former socialist countries of Europe, technoparks began to emerge in 1992. In 2005, a provision was approved on the Park of High Technologies in the Republic of Belarus. We list its activities: development and implementation of information and communication technologies and software in industrial and other organizations of the republic; Export of information and communication technologies and software.

In total, there are four technology parks in the Republic of Belarus: the National Infopark, the High Technology Park, the Metolit Technology Park, and the Mogilev Technological Park.

Technopolis is the most profound form of integrating science with production. The first technopolis appeared in Japan in 1980 and included three main components: social infrastructure, large enterprises, universities.

*Engineering and reengineering of business processes.* The dynamic development of the modern market requires the organization to adapt quickly to new conditions. The implementation of innovative projects is always connected with the revision of organizational issues related to the management of business processes.

Business process – a system of interrelated steps (actions, works), focused on creating a tangible or intangible product for the internal or external consumer.

Business engineering is aimed at organizing commercial entrepreneurship in order to increase competitiveness and achieve the organization's strategic goals.

Within the framework of engineering activities, two classes of tasks can be distinguished:

1. Evolutionary, leading to gradual improvements – the implementation of business processes;

2. Radical, leading to global changes – the invention of new business processes.

The second class of problems is solved by the method of reengineering. This kind of engineering activity is aimed at solving tasks of a higher order (for example, redesigning activities as a whole).

"Reengineering is a fundamental rethinking and radical redesign of the business processes of companies to achieve fundamental improvements in their core performance indicators: value, quality, services and pace" (M. Hammer, J. Champi).

Reengineering assumes a radical level of change and requires a lot of time. It covers all of the organizational units without exception and is initiated by the highest management team. In carrying out the reengineering, specialists from two areas – the reconstructed business and information technologies – participate.

The main parameters for the comparative characteristic of engineering and reengineering: the level of changes, the frequency of changes, the required time, direction, coverage, risk, fixed assets.

When using reengineering, the methods of work change. Reengineering arose mainly because earlier the enterprises were structured in a vertical scheme, functions (R & D, finance, commercial service, etc.), and employees were closed in divisions, their actions were limited to these limits.

*Objects and types of reengineering.* The object of reengineering is organization. Of course, every organization at a certain stage of its development, pursues its policy and pursues its goals. In this regard, there are three types of companies for which reengineering is mandatory: those in a crisis situation; Developing innovative strategies of high risk; Leading organizations that conduct offensive, aggressive innovation policy.

Types of reengineering:

* Crisis;
* Reengineering of development.

The need for crisis reengineering is due to a sharp drop in sales, a decline in demand for products, loss of the company's image. Reengineering development is necessary in the event that the organization reaches the limit level of product sales (including innovations). At the same time, profit from sales of products is declining.

*Process of reengineering.* Reengineering is conducted for each organization based on its problems, requirements and strategic objectives. Any organization is recommended to conduct reengineering once in seven years. The procedure for conducting it:

* Analysis of the current situation and fixing of the existing model;
* The construction of a new regulatory model that will meet the needs of all units and contribute to the achievement of the set goals. The important thing here is the procedure for constructing a target tree;
* Planning the transition from the "old" state to the "new" state (i.e., the imposition of models and the identification of missing elements);
* Development of a specific action plan, the replacement and retraining of some specialists and management, the modernization of the technological and information base, the reengineering of basic and auxiliary business processes, management systems in accordance with strategic goals.

*Venture innovation business.* In the explanatory "Vocabulary Investment Dictionary" the following definition of venture capital is given: "Venture capital" - "venture capital" or "risk capital" form of financing, in which an investor investing in a company is not guaranteed against a possible loss by a pledge or mortgage. The process of venture investment is divided into several stages:

* Deal-flow – "the flow of transactions" – the initial stage of work with companies potentially interesting for the investor, which accumulates information about them;
* Due diligence – "the second stage of the venture investment process, where all aspects of the company's activities that claim to receive investments are inspected;
* Hands-on management – the stage of the investment process, following the provision of investments, at which the venture investor seeks to provide the maximum possible assistance to the company in which its funds are invested;
* Living with company – the period of the venture capitalist's stay in the company where his funds are invested.

With the support of venture capital, many projects have found their practical application (genetic engineering, microprocessor manufacturing, etc.). On how well the venture mechanism functions, the speed of commercialization of innovations, and, consequently, the competitiveness of the state economy depends. That is why the state bodies of any country do everything possible to support and develop the venture business.

For example, in the US in 2000, new venture capital investments exceeded $ 100 billion. The growth of venture capital is typical for Western Europe. The leading positions are held by Great Britain, Germany, France, the Netherlands and Italy.

In Belarus innovative projects are supported by the Belarusian Innovation Fund. Functions of venture capital:

* Reducing the financial risk of enterprises;
* A change in the structure of the productive forces and production relations of society;
* Strengthening the scientific and technical potential of enterprises;
* Identification and development of promising scientific and technical developments;
* Increase the speed of commercialization of innovations.

It should be noted that the venture business attracts investors focused on long-term investment and ready to take financial risks.

*Classification of innovative risks.* Innovation activity always involves risk in the implementation of projects and, therefore, can lead to certain financial losses, the size of which can be predicted.

The risk of innovation is the possibility of unfavorable implementation of the process and / or the result of the innovation. Risk analysis allows you to evaluate possible performance results. There are three variants of the economic result: negative result (loss, damage); Zero result (no profit); Positive result (profit).

Risks can be classified on various grounds, for example, by areas of manifestation (social, political, etc.), activities (financial, production, etc.).

*Innovative risks can be divided into pure and speculative.* In a situation where it is difficult to change or limit the actions of any factors, the organization deals with pure risks, which mean the possibility of obtaining a negative or zero result.

To pure risks carry:

* related to the political situation;
* natural and natural;
* transport.

*Some commercial risks (property, production, trade).* Speculative risks are the possibility of obtaining both positive and negative or zero result, they are determined by the management decision.

To speculative risks include financial risks:

* associated with the value of money;
* investment risks.

The risk of an innovative project is related to innovation activities, the purpose of which is the implementation of innovation in the voluntary investment of capital. The risks of innovative projects include:

* Scientific and technical;
* Risks of legal support of the project;
* Risks of the commercial offer.

At the first stage of the innovation cycle, when research studies are conducted, it is possible to obtain a negative result (for example, if the direction of research is incorrectly chosen), and the lack of results at the set time (in case of incorrect determination of the completion time of the study).

At the stage of R & D, innovation risk can be expressed as follows:

* obtaining a negative result;
* the lack of the result of R & D in the established time frame;
* refusal to certify the result;
* obtaining a non-patentable result;
* untimely patenting.

At the stage of introducing the results of R & D into production, it is possible to obtain a negative result, the lack of results of implementation in a timely manner. In addition, it is necessary to take into account and environmental risk (the technology of production involves the production of environmentally harmful substances).

At the stage of promotion of a new product there is a probability of its rejection by the market (availability of analogs, non-compliance with the requirements of the consumer). A less "painful" situation is possible in case of lower sales volumes than planned.

*Priorities of venture investment.* Investors constantly monitor the state of the scientific and technical sphere. Track the dynamics of changes and respond quickly to them. Attention to these or those venture investment objects depends on many factors, including the priorities of the innovation policy of the state. For example, in the United States, the greatest attraction for investors is the production of software and related services, the development of new types and services of communication, medicine and health care.

Priority areas of scientific, technical and innovation activities in the Republic of Belarus:

* Resource-saving and energy-efficient technologies;
* Production of competitive products;
* New materials and new sources of energy;
* Medicine and pharmacy;
* Information and telecommunication technologies;
* Technologies of production, processing and storage
* Agricultural products;
* Industrial biotechnologies;
* Ecology and rational nature management.

*Basic approaches to reducing investment risks.* Approaches to reducing investment risks can be classified as follows:

* Reduction of risks in the process of choosing the forms of organization of the investment process;
* Risk reduction in the selection of entrepreneurial innovation projects;
* Risk reduction at the stage of creation of a new innovative firm and selection of personnel for the implementation of the selected project;
* Risk reduction at different stages of the innovation project implementation;
* Risk reduction in the process of preparing the initial public offering of shares of the new company.

*Marketing of innovations.* Marketing – the process of planning and implementing the idea, pricing, promotion and implementation of ideas, goods and services through an exchange that meets the needs of individuals and organizations (American Marketing Organization).

F. Kotler defines marketing as a kind of human activity aimed at meeting needs and needs through exchange.

Innovation marketing is a process that involves the planning of innovation production, market research, communication, pricing, organization

*Promotion of innovation and the deployment of services.* The innovation process can be considered only on the procedure for introducing innovation to the market, but you can look more broadly, including the stage of development of innovation.

From the perspective of marketing, innovation markets can be classified according to several criteria:

* By targeting external or internal consumers;
* The degree of novelty for developers and the seller;
* The degree of science intensity;
* Degree of completion.

Features of marketing innovations.

In the marketing system, a significant place should be occupied by:

* Technological forecasting, the purpose of which is to search for the most promising areas of R & D;
* Marketing of a scientific and technical product involves conducting a situation analysis on the environment for the operation of its consumers;
* Study of the consumer value of the intellectual product;
* Protection and preservation of intellectual property rights;
* Search for ways to replicate the intellectual product.

Marketing innovation involves figuring out the impact on the market of two factors: technological progress and consumers of final products.

*Analysis of the demand for innovation.* The market of innovations is not spontaneous, its development is subject to certain regularities. The mechanism of functioning of the innovation market is the process of pricing and resource allocation, the interaction of producers, sellers and

Buyers of innovations (subjects of the innovation market) in determining production volumes, setting prices and time of product's release to the market. One element of the market mechanism is demand.

Analysis of demand is of great importance for any type of product, including for a new, knowledge-based and high-tech. This is due primarily to the need to develop specific production programs, calculate the estimated financial costs.

Demand is a form of expressing a need represented on the market and secured by appropriate funds.

Demand for innovation is studied in the following areas:

* Analysis of the need for a released or implemented innovation (product or service);
* Analysis of the demand for innovation and related services, as well as the impact on them of various factors;
* Analysis of the impact of demand on the results of the enterprise;
* Determination of the maximum sales volume and justification of the sales plan taking into account the analysis and production capabilities of the company.

Demand can be estimated by the following indicators: the number of potential buyers of a particular type of product; Time of sale of products on the market; The price of the expected output and the sensitivity of the demand to the price.

Analysis of the sensitivity of demand to the price allows you to determine the change in demand, depending on the change in any of its factors. For this purpose, calculate the elasticity of demand, showing how much demand will change at a 1% change in any of its factors, for example, prices.

*Strategic and operational innovation marketing.* Innovative marketing should highlight the strategic and operational components.

In the framework of strategic innovation marketing, a strategy is being developed to penetrate the innovation to the market. For this, market research is conducted in which the market situation is analyzed, its segmentation, organization and formation of demand, modeling of the buyer's behavior are carried out.

The main stages of strategic marketing:

* General economic analysis;
* Needs analysis;
* Determination of the degree of attractiveness;
* Assessment of competitiveness;
* "Portfolio analysis";
* Choice of innovative development strategy.

Operational marketing aims to implement a specific innovation strategy. Its goal is to increase profits and sales, maintain the reputation of the company, expand market share.

Pricing strategies in innovative marketing:

* Strategy of "skimming";
* Penetration of the market;
* Prestigious prices;
* A strategy based on the opinion of consumers.

Promotional tools in innovative marketing:

* advertising;
* public relations;
* sales promotion;
* personal sales.

Methods of selling innovation:

* direct method: direct contact between the producer and the buyer of innovation;
* indirect method: contact between the producer and the buyer is established through an intermediary;
* a mixed method: as an intermediary are enterprises in which the authorized capital of the share of the producer's funds.

# Topics of Seminars

|  |  |
| --- | --- |
| **Topic** | **Number of seminar** |
| 1. Basic points of investment design. Pre-investment studies | **1** |
| 1. Methods for estimation of the investment projects’ effectiveness | **2, 3** |
| 1. Risk management of the investment project | **4, 5** |
| 1. Financing of investment projects | **6, 7** |
| 1. The concept and structure of the innovative process | **8, 9** |
| 1. Strategic management of an innovative enterprise | **10, 11** |
| 1. Organization and planning of innovations | **12, 13** |
| 1. Management of innovative projects | **14, 15** |

**Methodical materials for conducting seminarian schools**

**SEMINAR №1**

on the topic: "**Basic points of investment design. Pre-investment studies**"

*Objective*: to study the theoretical foundations of investment design.

*Issues for discussion*

1. The essence and functions of investment management.

2. The purpose and objectives of investment activities.

3. State regulation of investment activities.

*Topics for papers*

1. The concept of project management, taking into account the recommendations of UNIDO.

2. Pre-investment studies.

3. Investment strategy of the enterprise.

**SEMINAR №2**

on the topic: "**Methods for estimation of the investment projects’ effectiveness**"

*Objective*: to study the main methods of analysis of investment projects.

*Issues for discussion*

1. Investments in direct investments.

2. Investments in financial investments.

3. The essence and purpose of the main indicators of the effectiveness of investment in tangible assets.

4. Key performance indicators and their characteristics.

*Topics for papers*

1. The method of calculating net present value.

2. Method of calculating the payback period of the project.

3. Cost of capital and choice of discount factor.

4. Investments in real assets - equity investments.

**SEMINAR №3**

on the topic: "**Risk management of the investment project**"

*Objective*: to study the methods of managing investment risks.

*Issues for discussion*

1. General characteristics of the project risks.

2. Expert and rating evaluation of project risks.

3. Methods for assessing financial risks.

4. Ways and methods of reducing investment risks.

*Topics for papers*

1. Accounting for the uncertainty factor in assessing the effectiveness of investment projects.

2. Analysis of the sensitivity and sustainability of the project.

4. Risk assessment by adjusting the discount rate.

5. Organization of works on assessment, analysis and risk management.

**SEMINAR №4**

on the topic: "**Financing of investment projects**"

*Objective*: To study the forms and sources of financing investment projects.

*Issues for discussion*

1. The main tasks and stages of work on the organization of project financing.

2. Ways, forms and sources of project financing.

3. Development of realization and organization of financing of the project.

4. Financial analysis of the project.

*Topics for papers*

1. Sources of project financing: share issue, loan financing, leasing financing.

2. Evaluation of the project by banks.

3. Forms of investment of investment projects.

**SEMINAR №5**

on the topic: "**The concept and structure of the innovative process**"

*Objective*: to study the concept and main functions of innovation.

*Issues for discussion*

1. Innovation: the concept and basic functions.

2. The essence and content of the innovation process.

3. The role of innovation in the modern economy.

4. Bases of innovative activity of the enterprise.

*Topics for papers*

1. Research of innovative activity of the enterprise.

2. Innovative enterprise policy.

3. Organization of the innovation process.

**SEMINAR №6**

on the topic: "**Strategic management of an innovative enterprise**"

*Objective*: To study the fundamentals of strategic management of an innovative enterprise.

*Issues for discussion*

1. Concept and types of innovative strategies.

2. Innovative potential of the enterprise.

3. Assessment of innovative capacity.

*Topics for papers*

1. The company's innovative climate.

2. Assessment of the innovation climate.

3. Marketing approach to management of innovative processes.

**SEMINAR №7**

on the topic: "**Organization and planning of innovations**"

*Objective*: To study the fundamentals of innovation organization and planning.

*Issues for discussion*

1. Formation of organizational structures of an innovative enterprise.

2. Classification of organizational structures of an innovative enterprise.

3. Planning for innovation.

*Topics for papers*

1. Organization and methods of intra-firm innovation planning.

2. Organizational structures of an innovative enterprise.

3. Management of innovation processes.

**SEMINAR №8**

on the topic: "**Management of innovative projects**"

*Objective*: To study the basics of managing innovative projects.

*Issues for discussion*

1. Fundamentals of innovative design.

2. Methods of economic efficiency of the project.

3. Risk management.

*Topics for papers*

1. Prospects for the development of innovative activities in the Republic of Belarus.

2. Venture entrepreneurship.

**Methodical materials for the control of knowledge of students**

**Questions for topic 1**

1. What is the economic essence of investment?

2. What is meant by investment activity?

3. What is investment in human capital?

4. What is the structure of investment?

5. What are the main subjects and the main objects of investment activity.

6. What are the reasons for the investor's decision to invest in investments?

7. What is the investment market?

8. What is the relationship between consumption, savings and investment?

9. What are the main forms of investment and their classification?

10. What is the difference between planned and actual investments?

11. What criterion underlies the division of investments into direct and portfolio ones? How do these forms of investment correlate with real and financial investments?

12. Does the technological and reproduction structure of capital investment affect the effectiveness of investment activity?

13. What factors explain the volatility of the desire to invest?

14. Why do investments play a crucial role in the functioning and development of the economy.

15. Describe the instruments of state policy to support investment activities.

**Tests for topic 1**

1. Investment activity in the broadest sense is:

1. Any activity aimed at making a profit;
2. Development of a business plan and its implementation;
3. Activities to improve the efficiency of the use of capital;
4. Activities aimed at developing business, economics and achieving social, cultural, environmental and other goals of social development.

2. Real investment is:

1. Investments in any material assets, such as equipment, real estate, land, gold, etc.
2. Value of securities of the enterprise;
3. Short-term capital investments in the material production industry;
4. Use of borrowed funds to increase current assets of the enterprise;

3. Financial investments are:

1. Acquisition of real estate;
2. Development and implementation of an investment project;
3. These are investments in financial requirements for assets, which are usually issued in a legally defined form, for example, shares, bonds;
4. Direct investments.

4. Intangible investments are:

* 1. Portfolio investment;
  2. These are investments in human capital, knowledge, information, education, etc.
  3. Investment of capital in current assets;
  4. Purchase of securities.

5. The purpose of investment is:

* 1. Attraction of foreign financial investments in business;
  2. Acceleration of turnover of current assets of the enterprise;
  3. Improving the structure of the assets of the enterprise;
  4. Investing in long-term business development;

6. Venture capital is:

* 1. Capital of large financial and industrial groups;
  2. Capital of foreign investors;
  3. Risk capital;
  4. Capital, ensuring a guaranteed profit.

7. The balance of investment demand and supply is:

* 1. High price of financial assets;
  2. Placement of capital in a more profitable business;
  3. The effect of the mechanism of equilibrium prices on investment capital and investment products;
  4. The effect of increasing the investment offer.

8. Net investment is:

* 1. Investments in environmentally friendly production;
  2. Investment in human capital;
  3. Reinvestment;
  4. Investment in the creation of new industries (assets).

**Questions for topic 2**

1. Summarize the indicators of the economic efficiency evaluation of long-term investments.

2. What are the basic principles for assessing the effectiveness of long-term investments?

3. What is the difference between a costly and profitable approach when analyzing the effectiveness of investment projects?

4. What is the calculation methodology, rules of application, positive sides and shortcomings of the net present value indicator (NPV)?

5. How are payback period indicators (PP and DPB) calculated? Give a description of their advantages and disadvantages, name the rules for their application.

6. In what cases is the most justified application of the indicator of the marginal rate of return (ARR)? What is the algorithm for calculating it?

7. What is the calculation procedure, rules of application, positive sides and shortcomings of the internal rate indicator (IRR)?

8. How is the ROI calculated (PI). What are the advantages and disadvantages of this indicator of the effectiveness of real investment?

9. What are the main approaches to determining the discount rate.

10. What is the specificity of choosing a WACC indicator as a discount?

11. In what way can inflation influence on the efficiency of the investment project be taken into account?

12. How to draw up a plan for the optimal order of implementation of projects in the face of financial constraints?

13. How is the annual planning of the implementation of investment projects carried out based on the index of possible losses?

14. What is net cash flow?

15. Define the operations of discounting and capital increase.

**Tests for topic 2**

1. In the investment process, the greatest costs occur in:

* 1. Pre-investment phase of the project;
  2. Investment phase of the project;
  3. Operational phase of the project;
  4. At the stage of liquidation of the project.

2. The evaluation of investment efficiency is carried out:

* 1. When determining the estimated period (s) of the project;
  2. In the process of analysis of investment costs;
  3. In the process of cash flow analysis;
  4. As a result of the evaluation of the liquidation value of the project.

3. The liquidation value of an investment project, net of liquidation costs, is:

* 1. Capital accumulated in the main activity of the enterprise;
  2. Capital accumulated in investment activities and capable of generating revenue;
  3. Capital, which can be obtained from the sale of equipment and the release of working capital.

4. The business plan of the investment project does not consider:

* 1. Efficiency of use of the cumulative capital of the enterprise;
  2. Efficiency of use of the aggregate working capital;
  3. The liquidation value of the project;
  4. Efficiency of investments;
  5. Balance of "cash flow".

5. Net cash flow is:

* 1. Inflow of money resources;
  2. Balance of inflow and outflow of money resources generated by the project;
  3. Balance of inflows and outflows of funds taking into account the tax;
  4. Result of investment activity.

6. When calculating the net cash flow, the accounting statements are corrected:

* 1. When analyzing operating activities;
  2. When using the indirect method of counting;
  3. When using the indirect method of accounting in the analysis of operating activities;

7. The enterprise receives current profit due to:

* 1. Innovation activity;
  2. Main activities;
  3. Non-sales activities;
  4. Attraction of funds to working capital.

8. The increment of funds is:

* 1. The increment of the absolute amount of profit for the reporting period;
  2. Bringing current cash investments into economic activity to their future value;
  3. Increase in cash through the issuance of shares;
  4. Accumulation of funds.

9. Discounting of funds is:

* 1. Decrease in the value of money due to inflation;
  2. Bringing future cash flows from investments to their current value;
  3. Withdrawal of part of cash from circulation;
  4. Reduction in the amount of profit due to tax.

10. Discounted payback period of investments:

* 1. More undiscounted indicator of the payback period of investments;
  2. Is equal to the undiscounted indicator of the payback period of the investment project;
  3. Less undiscounted indicator of the payback period of investments.

**Questions for topic 3**

1. What is uncertainty and risk, how are these concepts related?

2. Give a characterization of systematic and unsystematic risks.

3. How are indicators of disperience, standard deviation and coefficient of variation used in the analysis of project risk and what is the economic significance of these indicators?

4. What is the essence of the expert method of assessing the degree of investment risk?

5. Describe the analysis of investment projects in risk conditions using the cash flow change methodology.

6. Outline the contents of the CAPM model in the portfolio theory of securities.

7. What disadvantage of the CAPM model eliminates the ART model?

8. Describe the nature and procedure of the scenario approach to the analysis of risky projects.

9. What is the essence of simulation in the analysis of risky projects?

10. Describe the main ways to reduce investment risk.

**Tests for topic 3**

1. The measure of quantitative assessment of the risk of an investment project is determined by:

* 1. The magnitude of the absolute value of the loss;
  2. Negative value of net present value;
  3. The coefficient of variation of the economic indicator;
  4. The average value of the economic indicator.

2. In an explicit form, a probabilistic measure in the risk assessment is used by:

* 1. Estimates of the average value of the economic indicator;
  2. Adjustment of the rate of return on investment (interest rate, discount);
  3. Estimates of the coefficient of variation of the economic indicator;
  4. Expert evaluation of the economic indicator.

3. Risk assessment by adjusting the discount rate (interest rate):

* 1. Uses the coefficient of variation of the effective indicator (profitability);
  2. Uses the standard deviation of the project results from its average value;
  3. Is to reduce the discount rate with increasing risk;
  4. Uses expert assessment methods.

4. The systematic risk of financial investments can be reduced by:

* 1. Decrease in profitability of risk-free securities;
  2. Decrease in the average yield of securities on the stock market;
  3. Increase in the number of securities in the portfolio.

5. The non-systematic risk of financial investments can be reduced by:

* 1. Decrease in the number of securities in the portfolio;
  2. Decrease in profitability of risk-free securities;
  3. Selection of the structure of securities in the portfolio.

6. The model of the SARM systematic risk assessment calculates:

* 1. The value of the beta-risk factor for the i-th financial asset;
  2. Premium for risk relative to average risk in the stock market;
  3. Expected yield of the i - th financial asset (security);
  4. Expected return on the securities portfolio.

7. The model for assessing the risk of ART in contrast to the CAPM model:

* 1. Is used only to assess systematic risks;
  2. Is single-factor;
  3. Is multifactorial;
  4. Can be used to analyze long-term investment.

8. Reducing investment risk through diversification of activities is:

* 1. Reduction in the use of borrowed capital;
  2. Restructuring of loans;
  3. Changing the types of activities of the enterprise;
  4. Increasing the level of solvency of borrowers.

10. Analytical measures to protect against financial risks include:

* 1. Monitoring of the stock market;
  2. State control over the inclusion of securities in the exchange list (the formation of the listing);
  3. Reduction of costs for non-operating activities of the enterprise.

**Questions for topic 4**

1. What are the main sources of formation of investment resources of the enterprise.

2. Describe the difference between own and borrowed funds?

3. What methods of financing real investments are known to you?

4. What is the difference between equity and debt financing of an enterprise?

5. What is the role of public financing of investments in a market economy?

6. Give a comparative description of the advantages and disadvantages of issuing shares and bonds.

7. Describe the advantages and disadvantages of leasing operations from the perspective of participants in a leasing transaction.

8. Give the definition of forfeiting. In what transactions is the forfeiting mechanism used?

9. What is the essence of the concept of the cost of capital used to finance the activities of the enterprise?

**Tests for topic 4**

1. Funds from the issue of shares for the purpose of financing investments are:

* 1. Borrowed funds;
  2. Involved funds;
  3. Own financial resources.

2. The source of own funds for investment are:

* 1. Issued by the enterprise all types of securities;
  2. Shares;
  3. Depreciation;
  4. Net profit.

3. The most risky loan investment capital is:

1. State credit;
2. Leasing;
3. Venture capital;
4. Bank loan.

4. In the capital market, equity securities are:

* 1. Shares;
  2. bonds;
  3. Options;
  4. Bills of exchange.

5. Financial leasing is that:

* 1. The lessor acquires property on credit;
  2. The lessee can not buy the leasing object from the lessor;
  3. The lease period is shorter than the depreciation period;
  4. The lessee can return, extend the lease, buy a leasing object.

6. The price of capital is:

* 1. The amount of funds that the enterprise receives in the form of revenue;
  2. Interest rate of reinvestment of the central bank of the Russian Federation;
  3. Capitalized profit of the enterprise;
  4. Interest rate on borrowed funds taking into account costs.

7. The cost of investment capital is:

* 1. Return on invested capital for the investor;
  2. Capitalized profit of the enterprise;
  3. Amount of invested capital.

**Questions for topic 5**

1. Open the concept of "innovation".

2. What are the differences between the concepts of "innovation", "discovery", "invention"?

3. Open the notion of "technological innovation".

4. Types of technological innovations.

5. What are the functions of innovation?

6. Open the notion of "innovative culture".

7. Psychological aspects of the formation of innovative culture.

8. The concept of the innovation process.

9. The essence and purpose of fundamental research.

10. Purpose of applied research.

11. The need to study the demand for innovation.

12. Specificity of linear models of the innovation process.

13. Distinctive features of nonlinear models, their advantage.

14. Key indicators of innovation.

**Tests for topic 5**

1. Give definitions of concepts: "innovation", "invention", "discovery".

2. Which scientist first introduced the scientific term "innovation".

3. Innovation functions:

* + 1. effective;
    2. stimulating;
    3. distribution;
    4. improving.

4. The system of classification characteristics includes (select several answers):

* + 1. the target trait;
    2. the external sign;
    3. a structural feature;
    4. a systemic feature;
    5. all of the above listed signs.

5. According to A. Prigogine, innovations are an element:

* + 1. political system;
    2. social regulation;
    3. strategic planning systems.

6. A technologically new product is:

* + 1. a product whose technological characteristics are significantly different from those of similar products manufactured earlier;
    2. the existing product, the quality characteristics of which are improved, the economic efficiency of production is increased by using highly effective components or materials, a partial modification of one or more technical subsystems (for complex products).

7. The purpose of basic research:

* + 1. cognition and development of the theory;
    2. development of a prototype;
    3. preparation of design and technological documentation;
    4. development and distribution of a prototype;
    5. organization of the production process.

8. The linear model of the innovation process is:

* + 1. a certain sequence of actions aimed at developing, mastering and implementing innovations and allowing to achieve the planned goals;
    2. parallel activity of integrated groups and external horizontal and vertical links;
    3. activities aimed at studying the needs of the market.

9. Applied research is aimed at:

* + 1. the discovery of new principles for the creation of products and technologies;
    2. the achievement of a specific goal or task;
    3. identification of ways of practical application of phenomena and processes discovered by fundamental science.

10. Is it true that in the parallel model of the innovation process, the main emphasis is on the parallel activity of integrated groups and external horizontal and vertical links?

* + 1. Yes;
    2. No

**Questions for topic 6**

1. Open the concept of "innovation strategy".

2. Peculiarities of implementing innovative strategies.

3. Name the strategies that relate to the basic growth strategies.

4. List special innovative strategies.

5. Give the groups of strategies allocated to the stages of the innovation process.

6. What are the differences between microinnovational strategies and macroinnovational strategies?

7. Give a brief description of the company that applies the patient type of competitive behavior.

8. Identify the main features of the exploitative type of competitive behavior.

**Tests for topic 6**

1. Basic growth strategies are divided into the following groups (several possible answers are possible):

* 1. Strategies for intensive development (growth);
  2. Resource strategies;
  3. Strategies for integration development;
  4. Strategies for diversification development;
  5. Functional strategies;
  6. Reduction strategies.

2. Special innovation strategies include:

* 1. Resource strategies;
  2. Reduction strategies;
  3. Organizational and management strategies;
  4. Strategies for integration development;
  5. Product strategies.

3. The strategy aimed at finding and using additional opportunities for manufacturing new products in the existing business, in which existing production remains the focus of attention, is called:

* 1. Strategy of design (centered) diversification;
  2. The strategy of conglomerative diversification;
  3. Reverse diversification strategy.

4. Arrange in the required sequence the stages of the process of selecting and implementing the innovation strategy:

* 1. The stage of choosing an innovative strategy;
  2. Stage of strategic analysis;
  3. Stage of implementation of the innovation strategy;
  4. Stage goal setting.

5. Science intensity of products is determined by:

* 1. Number of developments implemented over a certain period of time;
  2. Quality of R & D;
  3. Quantitatively through specific weight (share) of expenses for research and development in cost of the goods.

6. The strategy of product differentiation and the occupation of its niche, a narrow segment of the market, is called:

* 1. Patient strategy;
  2. Commutator strategy;
  3. A strategy that reduces production costs.

**Questions for topic 7**

1. Open the notion of "innovative management".

2. Give a description of the concept of "organizational structure of innovation management".

3. List the types of scientific and technical organizations.

4. Give the definition of a scientific organization.

5. Who is called a scientific worker?

6. What are the characteristics of organizational structures of innovative enterprises ?.

7. Describe the management system of venture enterprises.

8. Give a definition of engineering and implementation enterprises.

9. What are the features of consortium management?

10. Give a description to financial and industrial groups and holding companies.

**Questions for topic 8**

1. Give a brief description of the development of innovation in the Republic of Belarus.

2. The essence of "incubator programs", their development in the Republic of Belarus.

3. Distinctive features of the scientific and technological park and technopolis.

4. Specificity of joint ventures.

5. List the main activities of the High Technology Park in the Republic of Belarus.

6. Explain what benefits universities get, the state as a whole from the creation of scientific parks.

7. Name the foreign and national scientific parks you know.

8. The concept of engineering and reengineering of business processes.

9. The concept of the business process.

10. Examples of successful reengineering of well-known foreign and domestic companies.

11. Expand the concept of "venture capital", the features of the venture mechanism.

12. Appointment of venture funds.

13. Organization of the venture investment process.

14. The role of the state in regulating venture business.

**Tests for topic 8**

1. Innovative policies have:

* 1. Time aspect;
  2. The social dimension;
  3. Territorial aspect.

2. The innovative policy of the state is:

* 1. A combination of forms, methods and directions of the state's influence on production with the aim of producing new types of products and technologies, and also expanding the sales markets for domestic goods on this basis;
  2. Drawing up an investment plan for a separate scientific project;
  3. Development of a targeted program for the development of the enterprise.

3. Prioritized directions of scientific and technical activities in the Republic of Belarus are:

* 1. Resource-saving and energy-efficient production technologies
  2. Competitive products;
  3. Development of the oil refining industry;
  4. Information and telecommunication technologies;
  5. Medicine and pharmacy.

4. Methods of implementing innovation policy include:

* 1. Formation of institutional and regulatory and legislative conditions for positive changes in the innovation sphere;
  2. Training of specialists in the field of industrial production;
  3. The development of leasing of expensive and unique equipment.

5. Technology transfer is:

* 1. The process by which enterprises use technology, expertise, know-how or equipment;
  2. A formal transfer of new discoveries and innovations obtained as a result of scientific research of universities and non-commercial research institutions, the commercial sector for the public good.

6. The leading structure in the field of technology transfer in the Republic of Belarus is:

* 1. Republican Center for Technology Transfer;
  2. National Academy of Sciences of Belarus;
  3. Center for Technology Transfer of Radioelectronics.

7. Fundamental rethinking and radical redesign of business processes of companies to achieve significant improvements in their key performance indicators: cost, quality, services and pace, is:

* 1. Engineering;
  2. Reengineering;
  3. Innovation process.

8. Reengineering happens:

* 1. Price;
  2. consumer;
  3. Reengineering development.

9. Innovation engineering has the following specific features (several possible answers are possible):

* 1. Is embodied in the material form of the product
  2. Is reflected in the beneficial effect of the product
  3. Is an object of sale

10. The following organizations are the object of reengineering:

* 1. Organizations in crisis;
  2. Organizations characterized by stable rates of development;
  3. Organizations that develop innovative strategies;
  4. Leading organizations that conduct an aggressive innovation policy.

11. Possibility of unfavorable implementation of the process and / or obtaining a negative result when implementing the innovation:

* 1. Risk of innovation;
  2. Uncertainty of the conditions of innovation;
  3. The situation of force majeure;
  4. Probability of an event.

12. Functions of venture capital:

* 1. Decrease in financial risk of enterprises;
  2. Receiving profit from the main activity of the enterprise;
  3. Change in the structure of the productive forces and production relations of society;
  4. Increase the speed of commercialization of innovations;
  5. Stimulation of the banking services market.

13. The following organizational form of venture capital investments has the greatest financial risk:

* 1. Diversification of investor funds between projects;
  2. Direct investment;
  3. Joint investment of entrepreneurial projects;
  4. Organization of a venture capital fund.

14. The principles of venture financing include:

* 1. The borrower's responsibility for the return of the external investor invested in the business;
  2. Availability of collateral;
  3. Participation of a venture investor in the management of the company invested.

**Questions for the exam**

1. The essence and functions of investment management.

2. The purpose and objectives of investment activities.

3. Functions and mechanism of investment management.

4. State regulation of investment activities.

5. The concept of project management, taking into account the experience and recommendations of UNIDO.

6. Pre-investment studies: general characteristics and content. Investigation of investment opportunities.

7. Development of a business plan for the project.

8. Investment strategy and its place and role in the overall strategy of the business entity.

9. Methods and technologies of calculations to assess the effectiveness of investment projects.

10. General scheme of financial analysis and evaluation of the project.

11. Estimation of the full costs of the investment project.

12. Methodological tools of investment management: an estimation of cost of money in time: the account of the factor of inflation; Taking into account the risk factor and other factors.

13. Methods of technical and fundamental analysis of investment market conditions.

14. Organization of work on risk assessment, analysis and management.

15. Expert and rating assessment of project risks.

16. Accounting for uncertainty in the evaluation of investment performance. Analysis of the sensitivity and sustainability of the project.

17. Ways and methods of reducing the magnitude of risks.

18. Accounting for risk factors when planning an investment project.

19. Forms and sources of financing of investment projects.

20. The main tasks and stages of work on the organization of project financing.

21. Ways, forms and sources of project financing: issue of shares; Loan financing, leasing financing.

22. Development of an implementation plan and organization of project financing.

23. Project evaluation by banks economic analysis of the project (qualitative analysis). Financial analysis of the project (quantitative analysis).

24. Innovations: concept and basic functions. Basic concepts and definitions.

25. The essence and content of the innovation process.

26. The role of innovation in the modern economy.

27. Bases of innovative activity of the enterprise.

28. Research of innovative activity of the enterprise.

29. Innovative enterprise policy.

30. Concept and types of innovative strategies.

31. Innovation potential of the enterprise. Evaluation of innovation potential.

32. The company's innovative climate. Evaluation of the innovation climate. Marketing approach to management of innovative processes.

33. Formation of organizational structures of an innovative enterprise.

34. Classification of organizational structures of an innovative enterprise. Innovation planning. Processes, organization and methods of intrafirm innovation planning.

35. Fundamentals of innovative design.

36. Organization of project management. Methods of economic evaluation of the effectiveness of the project.

37. Risk management.

38. Prospects for the development of innovative activities in the Republic of Belarus.

39. Venture entrepreneurship.

**Methodical recommendations for independent work of students**

In accordance with the Regulation on the independent work of students, approved by the Order of the Minister of Education of the Republic of Belarus (from 27.05.2013 № 405), the goals of independent work are: activation of educational and cognitive activity of students; Formation of skills and skills of students for self-acquisition and generalization of knowledge; Formation of skills and skills of students in the independent application of knowledge in practice; Self-development and self-improvement. The knowledge economy provides a wide range of tools for independent mastering of academic disciplines, so the educational standard of 40 to 65% of the time for studying the academic discipline "Management of Investments and Innovations" is reserved for independent work of undergraduates.

To organize an effective managed independent work, it is necessary to provide the appropriate scientific and methodological support for the discipline: lists of tasks and control activities; A list of recommended educational, scientific, reference, methodological literature; Educational and methodical complexes, including electronic ones; Access to library funds, electronic means of training, electronic information resources (local, remote access) for academic discipline; Typical tasks, tests, tests, algorithms for performing tasks, examples of solving problems, test tasks for self-testing and self-control, subject of abstracts, methodological developments on innovative forms of training and diagnostics of competencies, etc.

The main types of self-directed work of undergraduates are: the formation and assimilation of the content of the lecture notes on the basis of the textbooks recommended by the lecturer, including information educational resources (electronic textbooks, electronic libraries, etc.); Writing essays; Preparation of multimedia presentations and reports; Implementation of micro-surveys on a given problem; Preparation for practical classes; Practical development and development of recommendations for solving the problem situation; Fulfillment of homework assignments in the form of solving problems, performing standard calculations, calculating computer and individual works on certain topics; Computer-based self-monitoring and progress control based on electronic training and evaluation tests, etc.

**Recommended tools for diagnosing competencies of undergraduates**

Estimated diagnostic tools should provide an assessment of the ability of students to creative activity, their willingness to search for solutions to new problems associated with the lack of conventional algorithms.

To diagnose the competencies of students as a result of mastering the academic discipline "Management of Investments and Innovations", the following forms and means of knowledge assessment can be used.

Oral form – interviews; Colloquiums; Oral presentations and presentations at seminars; Oral reports at student scientific-practical conferences; Evaluation based on the results of business games; Assessment based on the case-study method; exam.

Written form – tests; Control polls; test papers; essay; Abstracts; Individual tasks; Publication of articles, reports; a written exam.

Written and oral form – reports on classroom or home practical assignments with their oral protection; defense of the thesis; Evaluation by modular-rating system; Evaluation based on the results of a business game.

Technical form – computer testing; Multimedia presentation of reports; Development of video materials (thematic videos, problem videos).

The assessment of master's knowledge is made on a 10-point scale. To assess the knowledge and competence of students, the criteria approved by the Ministry of Education of the Republic of Belarus are used.

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