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ABSTRACT of a DISSERTATION

for obtaining an educational and scientific degree "DOCTOR"

in a professional direction 3.7. „Administration and Management“

Risk management in investment projects

Author:
EDIZ-HANIF BAYAZIDOV SAIDOV

Supervisors:
Prof. Dr. Serafim Petrov
Assoc. Prof. Dr. Nadia Milanova

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The dissertation work is 219 pages long, referring to 107 information sources.

Structurally, the dissertation includes an introduction, three chapters, a conclusion, references and applications.

The author provides a Declaration of originality and authenticity of the dissertation.

The dissertation is available to those interested in the Rector's Office of IBS and on the university's website.

I. GENERAL CHARACTERISTICS OF THE DISSERTATION WORK

The problem of risk management is relevant and complex due to its importance both in human terms and with its specific dimensions. The reasons for this are due to the fact that the future results of investment or other entrepreneurial activity are significantly influenced by both the shocks in the economic policy of the countries and the numerous factors of market conditions that do not depend directly on economic entities and the fact that economic phenomena and processes are also influenced by a large number of non-economic factors. On this basis, Ulrich Beck defines today's realities as "turbulent" realities, formulating the thesis of a "risk society".[1]

In the Great Depression that began in 2008, millions of people around the world lost their homes and jobs. Others still experience anxiety and fear that something like this will happen to them, watching their investments melt away from their previous value. The famous American economist Joseph Stiglitz (Nobel laureate) emphasizes that the "new economy" with its deregulation and financial engineering, which was persistently imposed in the second half of the 20th century, had to allow better risk management to put an end to traditional business-cycle.[2]

Life shows that applying the principle of free interaction of market participants and ensuring healthy market competition inevitably increases uncertainty and economic risk. Each type of activity contains one or another risk, which manifests itself under certain conditions and may have negative or positive consequences for the socio-economic system as a whole or for its constituent structural parts. This view has to do with crashes the objectivity of risks and their presence (presence, obligation, etc.) everywhere.[3] In these conditions, it is extremely difficult to choose optimal solutions and predict their consequences in the field of business. Therefore, in the system of market relations, investment risk is an objectively necessary economic category, process and phenomenon, which requires to develop both as a theory and as a practice of economic analysis. According to the general opinion of the so-called risk scientists, the theory of risk does not fit within the currently dominant scientific ideas, but has its own philosophy, which is radically different from the leading theories (concepts) in classical science. This affects its three main axioms - comprehensiveness, admissibility, non-repeatability.[4]

The predominant part of the management decisions can be argued that they are taken in the conditions of a certain risk, conditioned by a number of factors - absence of complete information, presence of opposing tendencies, elements of chance, etc. It would be unwise to assume that risk-free entrepreneurship is possible. Risk management is inherently defined as the reverse side of the freedom of entrepreneurial activity, ie. its peculiar price. In order to succeed in the conditions of fierce market competition, the

[1] Ulrich Beck, World Risk Society, S., 2001
[2] See J. Stiglitz, Free Fall, S. 2010
[3] Buyanov, V., Riskologiya, M., 2003
[4] Ibid., Pp.6-7.

economic entities have to go for the introduction of innovative, non-traditional technologies, which objectively increases the risk. In any business idea, it is important not to avoid risk, which is practically impossible, but to anticipate it and, if possible, to minimize it.

Therefore, the problem of quantitative and qualitative assessment of investment risks and their management is relevant and directly related to the opportunities for large losses in the implementation of financial, production and other activities and requires continuous development. The importance and responsibility for finding solutions to these problems is the leading motive in the selection and development of the doctoral thesis.

The general plan of the defended thesis is based on some problems of risk management in the investment activity. In this regard, the analysis is aimed at revealing some theoretical and applied aspects of risk in this activity. In this regard, an opportunity is sought to reveal some methodological aspects and mathematical methods for assessing economic risks. In the process of the analysis, existing problems in the investment of money capital and the related risk are sought, the functions and certain problems in the investment management are revealed. Particular attention is paid to the problems in risk management in the investment process.

The topicality of the study stems from the dynamic changes in recent years in our country, in Europe and in the world. The destructive processes in the country and in the world have created an atmosphere of social insecurity and opportunities for a high degree of risk in investment projects. The main feature of modernity has become interdependent especially between countries within the European Union. What is happening somewhere in the world sooner or later affects Bulgaria. This reality requires seeking knowledge of the model of the general picture of risk and its specific manifestations, which includes analysis, management and control of risk in investment activities.

The subject of the study is the methodology of current trends affecting investors and their investment intentions and, as a consequence, the emergence of risks of different nature. The latter arise as a result of the specifics and peculiarities of international practice, as well as problems and trends in investment process in Bulgaria.

Object of the study. The management of investment projects and the accompanying risks arising in the process of their implementation as a result of accelerating and deepening globalization in today's dynamic conditions. This has a direct and ambiguous impact on the dynamics of social processes, including indeterminacy and risk in the investment activity.

Purpose of the study. To present and analyze the theories and practices in risk management, revealing the conditions and some of the mechanisms for improving risk management in investment activity and to study the trends in this direction, presented in a separate concept.

The tasks which are set to achieve the goal in the dissertation are:

1. Analysis of the occurrence and manifestation of risk in investment projects in the process of their preparation and implementation and formation of profitability for investors, as a result of the risk taken by them.
2. Characterization of the principles and behavior of economic entities, their entrepreneurial culture and activity for realization of non-traditional and innovative high-risk technologies due to uncertainty in the yield and fluctuations in the prices of securities in the conditions of dynamic market environment and competition.
3. Analysis of the key impact of investments on economic activity and growth, income and living standards and the presence of risk in this process.
4. To determine the need for active investment activity requiring professional development of knowledge, innovation and scientific service of the investment risk management cycle in practice.

Scientific research method. Conducting analysis and comparative analysis of foreign and our theoretical views and practices relevant to risk management in investment activities, as well as the use of statistical methods for quantitative and qualitative analysis of the impact of different types of risk on investment projects.

The solution of the problem set in the doctoral thesis required a thorough analysis of the existing and possible approaches for guaranteed risk minimization. The research is also aimed at revealing opportunities to optimize risk management, dictated by modern realities arising from geopolitics and geoeconomics problems in the state, governance and regulation of the national economic policy, the factors generating risks and threats to the country's financial stability. This necessitated looking for and revealing the causal links between weaknesses and threats arising from inadequate risk management.

Taking into account the limited investment opportunities of countries such as Bulgaria, the possibilities for optimizing the investment risk management and the participation of Bulgaria in the processes for ensuring the financial stability of the countries of the European Union are analyzed and revealed.

The research hypothesis is aimed at researching and analyzing the many theoretical and applied aspects that ambiguously consider trends in investment activity and risk development in the new conflicting economic and financial realities, as well as to reveal new and complex problems related to risk management, which have not been the subject of a more detailed analysis.

II. STRUCTURE AND CONTENT OF THE DISSERTATION

1. STRUCTURE OF THE DISSERTATION

The structure of the dissertation is determined by the combination of the object, the subject, the goals and its tasks and reflects the author's approach to the research.

The dissertation has a volume of 211 pages, of which: introduction - 5 pages; main text (three chapters) - 200 pages, conclusion - 3 pages and 5 pages list of references with 107 titles.

2. CONTENT OF THE DISSERTATION

The content is in accordance with the set tasks and is presented in the following sequence:

III. SHORT STATEMENT OF THE DISSERTATION WORK

Chapter One
Theoretical and conceptual aspects of risk in investment activity

1.1. Theoretical and applied aspects

The risk in the economic activity in theoretical and applied aspect manifests itself completely independently as an important component of the theory and practice of management. The existence of risk is directly related to the problem of uncertainty in any situation, which is diverse in both form and content.

In his doctoral dissertation „Risk, Uncertainty and Profit“, published in 1921, Frank Knight built his analysis of decision-making on the difference between risk and uncertainty. Uncertainty should be seen as radically different from the well-known concept of 'risk', which has never been distinguished in any way before. From this it is clear that risk as measurable uncertainty is so far removed from immeasurable uncertaintythat there is essentially no uncertainty at all.

The classical theory of entrepreneurial risk, based on J. Mill and N.W. Senior identify risk with the mathematical expectation of losses due to the choice of one or another solution, ie. the risk is considered as damage as a result of the implementation of a decision.[5] Such a one-sided and limited approach to understanding the nature of risk is difficult to accept.

An analysis of the economic literature related to the problem of risk shows that there is no consensus among researchers on the definition of entrepreneurial and investment risk. In this respect, there is still no unambiguous understanding of the nature of risk. For example, Hristo Draganov understands insecurity as a personally perceived sense of risk in a given situation.[6] Russian researchers Galina Chernova and Andrei Kudryavtsev perceive uncertainty and risk as similar concepts.[7] This is largely due to the multifaceted nature of this phenomenon. In addition, risk is a complex phenomenon with inconsistent and sometimes contradictory underpinnings.

In the encyclopedia of Nikola and Ivan Danchovi from 1936, the definition of risk has three meanings: first, possible danger; second, an uncertain expectation of success; third, readiness to take risks in the hope of success. In the Dictionary of Foreign Words in the Bulgarian Language of the Institute of Bulgarian Language of the Bulgarian Academy of Sciences the term “risk” is given the following meaning: first, possible danger; second, action at random with the hope of success; third, possible loss in a commercial transaction, in foreign exchange and credit operations, in insurance, etc.

[5] Body Zwi, Merton Robert, Finance, M, 2000
[6] Draganov Hr., Risk Management, S. 2003
[7] Chernova, G., Kudryavtsev, A., Risk management, M., 2006

We consider the investment activity as an initiative, independent activity, aimed at the realization of profit or income, carried out on its own behalf and under its own property responsibility or on behalf of and under the legal responsibility of a legal entity. The business presupposes property liability within the limits set by the organizational-legal form of the company.

In our analysis we adhere to the following definition of risk, which in our opinion most fully reflects its nature. Risk is an activity related to overcoming uncertainty in a situation of inevitable choice, in the process of which there is an opportunity to quantitatively and qualitatively assess the probability of achieving a presumed result, failure and deviation from the goals.

Management and risk are interrelated components of the economic system. One can be a source for the other. The general conceptual approach to investment risk management, in our opinion, can be reduced to the following: *first*, revealing the possible consequences of investment activity in a risk situation; *second*, the development of measures to prevent or reduce losses from the impact of insufficiently taken into account risk factors and unforeseen circumstances; *third*, the implementation of such a system for adapting entrepreneurship to risks, with the help of which it will be possible not only to neutralize or compensate the negative probable results, but also to maximize the chances for achieving a high entrepreneurial income.

1.2. Risk classification

The issue of risk classification is a complex problem due to their diversity. Their classification according to certain features and their consequences is useful in the evaluation of each project.

By their nature, the consequences of risk can be divided into *pure and speculative*[8]. The peculiarity of pure risks (also called statistical or simple) is that they practically always carry losses for entrepreneurial activity. Causes of them can be natural disasters, accidents, incompetent management of the company and others. Speculative risks (also called dynamic or commercial) carry with them either losses or additional gains for the entrepreneur. Reasons for them can be in the change of exchange rates, change in the market situation, change in the investment conditions and others.

When the set of risks is considered as a system in which each element occupies a strictly defined place and at the same time obeys the laws of the economic system as a whole. In this case, the task of classifying risks is reduced to determining the system of risks and its system-forming elements[9].

In principle, any classification is conditional, as the real processes are much more complex. In the real processes between the indicated groups of risks there is an intertwining of the layers and in this connection the separate types of risks are

[8]See Balabanov IT, Risk Management, M. 1996
[9]See Shapkin AS, Shapkin VA, Risk theory and modeling of risk situations, M. 2014

manifested in the different groups simultaneously. For example, currency risk is present in each of the groups, which proves the interdependence of the groups and the elements in them.

In the modern conditions of investment activity there are two main types of risk at the level of decision making - global risk and local risk (risk at the level of individual companies). In our opinion, the main part of the risk is borne by investors through their independence and economic responsibility.

The analysis of the classification features, types and sub-types of risk, in our opinion, can continue, but this will lead to a list of opinions of different researchers and experts, which does not answer the main question: What approach, what classification is basic and to what extent will it be able to reduce the degree of risk?

There are two other groups of risk - static (simple) and dynamic (speculative).

In conclusion, we believe that it is practically impossible to completely avoid or eliminate the risk, but the investor, analyzing the source of losses is able to reduce the threat of them, ie. to reduce the impact of adverse factors.

1.3. Risk assessment and management system and principles

Risk management generally involves making trade-offs, guiding the balance between the benefits of risk reduction and the costs involved, and deciding what action should be taken to this end, including refusing of any action.

The initial stage in the risk management system is its analysis, aimed at obtaining the necessary information about the structure, properties of the site and the available risks. Risk analysis should be both qualitative and quantitative.

Qualitative analysis involves the identification of all possible risks, disclosure of their sources and causes, practical benefits and possible negative consequences that may occur in the implementation of risk-containing solutions. In the process of qualitative analysis it is important both the full disclosure and identification of all possible risks and the disclosure of possible resource losses that accompany the occurrence of risk events.

Quantitative analysis involves numerical assessment of risks, determining their degree and choosing the optimal solution. Quantitative risk assessment is performed using the methods of mathematical statistics and probability theory, which allow to predict adverse situations and, if possible, to reduce their negative impact. The quantitative assessment of the occurrence of individual risks and what they can lead to allows the separation of the most probable and severe losses from the risks, which will be the subject of further analysis to make decisions on the appropriateness of the situation.

As each type of risk allows several traditional ways to reduce, in our opinion, the task arises to assess the relative effectiveness of the impact of risk to choose the best of

them in order to minimize possible damage in the future. The comparison could be made on the basis of different criteria.

The choice of measures to prevent or minimize risk plays an important role in the investment risk management system, which significantly determines its effectiveness. These include the means of authorization and ways to reduce the risk: first, risk avoidance, ie. a conscious decision to avoid a certain type of risk; second, loss prevention, i.e. performing activities that reduce the likelihood of losses and minimize their consequences; third, risk acceptance, i.e. covering losses at the expense of own resources; fourth, the transfer of risk, i.e. transferring the risk to other entities, for example, selling risky securities to someone else.

As an example, we will analyze a risk-sharing model aimed at reducing adverse future risk. Most often, these are actions related to financial management decisions.

We assume that there is an opportunity to invest a certain amount of capital by acquiring shares in two companies. The dividends are the same - 2 conditional units (cu) for cu per year, and the same risk of possible failure and zero income. How to distribute the investment?

Option 1. To invest in the first company. The average income in this case will be equal to:

2*0.5 + 0*0.5 = 1 cu/cu per year.

The probability of losing funds is 0,5.

Option 2. To invest in the second company. The average income in this case will be equal to:

0*0.5 + 2*0.5 = 1 cu/cu per year.

Option 3. To divide the investment between the two companies. The average income in this case will be equal to:

2* (0.5*0.5) + 1*(0.5*0.5) + 1* (0.5*0.5) + 0*(0.5*0.5) =

= 1 cu/cu per year.

The probability of losing funds will be equal to:

0.5*0.5 = 0.25,

as both companies are at a loss.

In the third option, the risk of complete loss of funds is reduced twice, and the average income turns out to be the same in all options.

In the example under consideration, asset management did not in fact affect future average income, so choosing the allocation of funds can be used as a criterion for assessing the minimum risk of losing funds.

For investors with significant funds, the investments of small amounts are made, as a rule, at more significant for the investor income in terms of risk. The investor is ready to invest in events with a high possible income, without paying attention to the possible risk. Accordingly, an investor with limited funds will be extremely careful about the risk when investing all his funds. In this case, the risk is more important than the expected return.

The reduction in the degree of risk is associated with a reduction in the probability of the volume of losses. To this end, there are a number of methods in which a large group of these methods involves the selection of other operations whose overall significance would be less risky. Risk management theory and practice has developed a number of fundamental principles that should guide managers: *first*, no more than the amount of available equity can be risked; *second*, it is necessary to take into account the consequences of the risk; *third*, you can't risk much to gain a little.

The risk management strategy applies a number of rules and principles, on the basis of which the choice of one or another option for decisions and way of risk management is made: **striving for maximum profit; optimal combination of profit and risk and high probability of a positive result.**

The risk can be identified in various ways - from complex analysis in the models of the studied operations to purely intuitive approaches. In Bulgarian practice, investors make decisions based on intuition, someone's authority and previous experience. Only a limited number of investors assess the risk by applying mathematical methods.

Companies often use a three-step approach to risk management.

First stage - identifying the types of risk that the company faces.

Second stage- determining the possible impact of the identified risks. Some risks are small (insignificant), while others are catastrophic for the company's potential.

Third stage - how to minimize any relevant risk.

In Bulgarian practice, investor risk is characterized by a subjective assessment of the expected amount of maximum or minimum return (loss) on investment. The greater the uncertainty in the economic situation when making a decision, the greater the degree of risk.

In this regard, the role of quantitative assessment of investment risks is special. The elements of the considered investment processes should be revealed and quantitatively measured, evaluated and compared, the interrelations, tendencies and regularities should be revealed and determined by describing them in a system of economic indicators, which is unthinkable without the use of mathematical methods and models. in economic analysis. Quantitative methods and models allow to simulate different economic situations and to assess the consequences of a given choice of solutions.

For decision-making in conditions of uncertainty and risk as mathematical tools is used the theory of mathematical games, theory of probabilities and mathematical statistics, mathematical programming and others[10].

Game theory is applied as a possible approach for making optimal decisions in the conditions of uncertainty, of opposing interests of different subjects, of conflict situations. For example, mathematical models can serve as matrix games of very simple conflict situations in the field of investment activity. Thus, game theory is applied in the struggle for markets of oligopolistic companies, in the planning of advertising campaigns when prices are formed in competitive markets, in the game on the stock market, etc.

Risk, as probability, involves calculating the uncertainty and quantifying the degree of risk. Probability assessment helps in decision-making to determine the possibility of research and forecasts for future actions.

In economic problems, the methods of mathematical statistics are reduced to systematization, processing and use of statistical data for scientific and practical conclusions. A key element of economic research is the analysis and building of interrelationships between economic variables. The study of these relationships is complicated by the fact that they are not in strict functional dependencies. It is often difficult to determine all the main factors influencing a variable (eg profit and risk). Many of these interactions are random, indeterminate, and the number of statistical surveys is limited. Under these conditions, mathematical statistics allows to build models and evaluate their parameters, to test hypotheses about the properties of economic indicators and forms of their relationships, which ultimately serves as a basis for economic analysis and forecasting, creating conditions to make informed investment decisions. Probability theory plays an important role in statistical studies of probability-random phenomena. Here the statistical testing of hypotheses, statistical estimation of the distribution of probabilities and the parameters included in them, etc. are used.

Risk decision-making methods should also be designed and justified within the framework of so-called statistical decision theory. The essence of applying the methods of mathematical statistics includes the analysis of empirical data on losses and profits that take place in one or another similar company or economic situation. The relative frequency of obtaining one or another economic result is established and the most probable forecast for the future is made.

A disadvantage of the statistical approach to measuring risk is the fact that it is based on the availability of statistics for past periods, while risk assessments are related to future events. This reduces the value of this approach in a rapidly changing economic situation. Meanwhile, the merit of this approach to risk measurement lies in its objectivity.

[10]Falin GN, Mathematical analysis of risks in insurance, M., 1994

In conclusion, it should be assumed that economic tasks that aim to find the best option in terms of some criterion (or criteria) for the use of available resources (labor, capital, etc.) are defined as optimization. Optimization problems are solved with the methods of mathematical programming. A necessary condition for an optimal approach in planning and management is the flexibility, the alternative to the situations in which it is necessary to make planning and management decisions. Such situations are the basis of the daily practice of the business entity (the choice of the optimal version of the production program, orientation to suppliers, formation of the portfolio of securities, investment in an optimal project, etc.).

Chapter two

Methodological bases of the analysis and evaluation of investment projects

2.1. Classification and features

The management of the assets of each company is carried out within its investment policy. The term "investment" comes from the Latin - investio and is understood as a long-term investment in an investment project. The goal is to receive future income after a relatively long period of time.

There are two key moments in the investment activity:

first, hope for future income, which, however, is not guaranteed.

second, investment activity is most often associated with long-term investments.

The main subjects of the investment activity are: the investors, the entrepreneurs, the users of the object of the capital investment and other subjects.

Investors are classified as individuals and legal entities on the basis of a joint venture agreement.

From the positions of the capital markets (ie in financial investments) there are two types of investors - shareholders and creditors. The former, by investing their funds, acquire the right to receive part of the current profit and part of the residual property in case of liquidation of the joint stock company. The latter receive the right to receive regular income (interest) and the face value of the securities acquired at the time of investment upon the occurrence of certain conditions.

Depending on the attitude to risk, investors are classified into three groups: risk-neutral; no risk appetite; prone to risk.

The first group includes investors who are willing to participate at a "fair" (acceptable) risk price (acceptable loss). The second group includes investors who do not even take risks when they are required to pay a lower price even than the acceptable

risk. In the third group we have investors who are willing to take risks even when they have to pay a price higher than acceptable.

The terms "investment" and "speculation" are primarily associated with two different approaches to investing. As mentioned, financial investment is the process of acquiring securities and other assets for which it is expected that their value will remain stable and for which not only a positive but even a predictably greater income. Speculative operations are associated with operations with the same assets, but in situations where their future value and level of expected income are much more unreliable and risky, but with expectations of much higher returns.

When future earnings are risky (not fixed), then investors reduce the current estimate of future returns by applying discount rate values. In practice, investment projects are grouped as low-risk, medium-risk and high-risk. For each type of them to determine additions to the usual discount rate, and the greater the risk.

The administration of the investment activity presupposes four main stages:

- *first*, research, planning and project development;
- *second*, project implementation;
- *third*, current control and regulations in the course of implementation;
- *fourth*, evaluation and analysis of the achieved results.

The main procedures in the course of planning require formulation of the objectives of the investment activity, research of the markets, review of the options in the conditions of various restrictions, formation of investments portfolio.

The stage of project implementation includes three phases: investment, project implementation, elimination of the consequences.

The assessment of the compliance of the set and achieved goals, in our opinion, should be the main task of the financial manager and should be performed, as a rule, after the completion of the project.

Techno-economic considerations (using information databases) should formulate the preliminary objectives of the investment, to determine the analysis and selection of the main ways to implement the project, its feasibility for the investor, to determine the sources of funding, to assess investment opportunities and to achieve of the technical and economic indicators of the project.

When more than two companies participating in the project, performing different functions, are realized, the so-called complex organizational structures for investment project management.

The classification of organizational structures is subject to certain principles depending on the content of the project.

The effectiveness of the use of one or another management structure depends on the content of the project, which is a set of goals, objectives and results.

At present, the requirements for the optimization of the organizationstructures are becoming more complex and complex. This has led to the emergence of more sophisticated tools for multifaceted automated design and modeling, allowing the creation of organizations including: administrative relations; horizontal processes; - information system; structure of goals and objectives; production-technological structure; socio-psychological aspects of organizationtion; financial and economic indicators.

The system for financing investment projects includes relevant sources and organizational forms of financing.

Project financing, as a basic form, requires the provision of financial resources for the implementation of investment projects in the form of credit. Recourse in project financing means the requirement to repay the amount provided in credit. The lender bears an increased risk by giving (from the point of view of the traditional bank loan) an unsecured or partially secured loan, as the repayment of this loan is carried out at the expense of the cash flows formed in the course of operation of the investment activity.

In practice, there is no unambiguous understanding of the concept of "project financing". This term is most often used in two senses: *first*, as targeted lending for the implementation of an investment project in any of these three forms; *secondly*, as a way to consolidate different sources of financing and complex use of different methods for financing specific investment projects and optimal distribution of the financial risks associated with the implementation of the project. At present, the second understanding of project financing prevails.

This shows that the management of investment activity is not insured by the need to overcome a number of crisis situations. The purpose of investment management is for management to provide positive indicators in terms of volume and dynamics of sales, profitability and financial sustainability of the company, as each country has a strong enough position in terms of insolvency, ie. to bankrupt companies.

Therefore, under the influence of changes in demand, companies face the need to radically change their structures and functions in the form of mergers and acquisitions, divisions and separations, transformation (reorganization) or most often a complex change in methods of functioning and solving the problem of survival or increasing efficiency through restructuring (reform).

2.2. Budget and profitability of investment portfolio

By investment portfolio we mean: *first*, the totality of all shares traded on a given market, weighted by the volume of their market capitalization, and *second*, the totality of shares included in a portfolio for calculating the market index (for example, the Dow Jones index). For some companies, portfolio investments are a major area of their business. They offer to potential clients, having free funds, services for the formation of a market portfolio with one or another level of profitability and risk.

When forming an investment portfolio, theory and practice recommend following the following basic principles:

first, correct distribution of funds by types of assets.

second, to take into account that the risk for investments in a certain type of securities is determined by the probability of deviation of the profit from the expected significance.

third, take into account that the total return and the risk of the investment portfolio may change through changes (variants) in its structure.

fourth, take into account that all estimates used in the formation of the investment portfolio are probabilistic.

The selection and implementation of projects in this portfolio is carried out within the investment budget and profitability of the company.

In practice, two main approaches are most often used to form the investment budget: *the first* is based on the use of the criterion - *internal rate of return (IRR)*; *the second* - of the criterion - *net present value (NPV).*

The logic of the first approach is based on the premise that all available projects are ranked in descending order of IRR.

The logic of the second approach when forming the budget of the investment project is based on the criterion NPV.

When there are limitations in the volume of investments, in our opinion the following approaches are possible: *first*, ranking the projects in descending order of the *return on investment index* (PI); second, the inclusion in the project portfolio should start with a project with the maximum importance of PI and continue until the affordable sources of funding have been exhausted.

The simplest solution assumes that all projects with a maximum NPV value should be included in the portfolio, where it does not have to be optimal.

Depending on the extent to which the projects in question are or are not amenable to division, there are two options.

In the first case, any part of the project can be realized on the basis of the share of investments and cash receipts.

In the second case, when the projects cannot be separated, the optimal combination is achieved by reviewing all the project options and calculating the total NPV value for each option.

The return on a financial asset is determined by the annual interest rate that reflects the return on capital invested in an asset. It can be perceived as factual and expected. Actual profitability is important in retrospective analysis. The expected return is calculated on the basis of forecast data in the framework of a simulated prospective

analysis and is used to make decisions on the acquisition of one or another financial asset.

The appropriateness of financial asset transactions cannot be considered solely on the basis of notions of their expected return. It is necessary to take into account the risk, embodied by the expected result in terms of space and time.

The risk assessment, considered in isolation, poses to the investor the problem of assessing the expected values of the initial parameters, ie. the expected return on the asset. Most often, three assessments are made: pessimistic; most likely; optimistic.

In conclusion, the following more general conclusions are made:

- in the analysis of the expediency of operations, three main tasks can be set: either achieving the maximum possible profitability; or obtaining the minimum possible risk; or obtaining an acceptable value of the " profitability -risk" combination;
- the profitability of the portfolio is determined by weighted average values of the profitability;
- when a risky asset is included in the portfolio, the profitability of which changes in one direction in direct proportion to the profitability of the portfolio, the risk in the new combination remains unchanged only if the variations in the profitability of the combined assets and the portfolio are the same;
- when the return on an asset planned to be included in the portfolio changes unilaterally in a correlated (dependent) relationship with its return, the risk in the new combination may change in any direction compared to the risk in the outgoing portfolio;
- when an asset is added to the portfolio, the return on which changes in different ways from that of the portfolio, the risk in the new combination is, as a rule, reduced.

These generalized conclusions allow to get an idea of the investment portfolio management. Furthermore, it can be indisputably concluded that any investment portfolio transactions are highly subjective and require not only (more or less) sound forecasts of market yield trends and of the assets planned to be included in the portfolio, but also with labor-intensive multivariate calculations within the simulation modeling.

2.3. Criteria for evaluation of investment projects

Portfolio investments are a form of capital investment. The investor invests in a portfolio of securities that differ in return and risk. Such investors are usually defined as institutional.

The investment portfolio of institutional investors generally includes from 50 to 500 types of securities. The lower threshold is determined by the need for a certain level

of diversification. Over 50 types of securities in the portfolio the risk changes insignificantly. The investor takes the following actions:

- the goals of the investments are determined - for example, maximum income with minimum risk;
- analysis by economic sectors - branches, sub-branches, sectors and branches in which the investment will be realized; by enterprises different in scale and stages of development; subject analysis for a specific enterprise and specific financial instruments;
- development of investment strategy - the efficiency of investments depends on the term for which they are made: investments with up to one year - monetary instruments; from one to three years - investing in bonds, over three and more years - investing in shares.

Investment management decisions must take into account the volume of investments and future cash inflows. Since the analysis and compared indicators refer to different time points, a key problem in this case is their comparability.

Critical moments in the process of evaluating a single project or in compiling the investment budget include:

- forecasting the sales volumes taking into account the possible demand for the products of the manufacturing company in which the investment will be made;
- estimation of cash income by years;
- assessment of the availability of the necessary sources of funding;
- assessment of the acceptable value of the price of the attracted capital.

The investment process is always associated with risk and the time factor increases the uncertainty. The longer the payback period, the riskier the project.Critical moments in the evaluation of the project are:

- forecasting the volume of sales in connection with the demand for production;
- cash flow forecasts by years;
- availability in time of the necessary sources of funding;
- the assessment of the value of the attracted capital.

These criteria can be divided into two groups: *the first*, based on discounted estimates and *the second*, based on reporting estimates. In the first group the time factor is taken into account, and in the second - this factor is not taken into account.

In the investment analysis, the management team must take into account two important circumstances: *first,* that no criterion can be considered unconditional; *second,* in the literature and in practice there are other variants of the names of the criteria.

The first group includes the following criteria:

- Net Present Value (NPV);
- Net Terminal Value (NTV);

- Profitability Index (PI);
- internal rate of return (IRR);
- Modified Internal Rate of Return (MIRR);
- Discounted Payback Period (DPP).

The second group includes criteria such as:

- payback period of the investment (Pay Back Period - PVP);
- accounting rate of return (ARR).

The net present value and the profitability index, as well as the internal rate of return, play a particularly important role. The economic interpretation of the NPV criterion from the positions of investors has the following logic:

- when NPV is less than 0 - the project is at a loss and is rejected;
- when NPV is equal to 0 - the benefits for the company do not change, but the decision on the appropriateness of the project needs additional arguments;
- when the NPV is greater than 0 - the income for the shareholders increases and the project should be accepted.

The Profitability Index (PI) is defined as the ratio between the sum of the discounted elements of return on earnings and the initial investment. The profitability index also provides for comparing the discounted elements of return on earnings with the initial investment, as a ratio.

Unlike the net present value, the profitability index is a relative indicator. It characterizes the degree of profitability per unit cost, ie. investment efficiency. Due to this, the PI index is very convenient when selecting a project from several alternative projects having the same NPV values. This criterion is preferable in the formation of a portfolio of investment projects with limited volume of funding sources.

The internal rate of return (IRR) is used to assess the effectiveness of investments and is equal to the discount rate, where the net discounted value of the investment project (NPV) is zero. The IRR indicator is measured in percentages and means the maximum allowable level of costs for the funded project, upon reaching which the project implementation has no economic effect, but also does not bring losses. This indicator characterizes the safety reserve of the investment project.

The modified internal rate of return (MIRR) is an analogue of the IRR, but is used in the analysis of projects of different nature. The calculation algorithm provides for the implementation of several procedures. First of all, the total discounted value of all outgoing cash flows and the total increase in the value of all receipts (with discounting) is calculated, as the increase is realized at the price of the source for financing the project. Next, the discount rate is determined indicating the total discounted value of the cash outflows and the increased value of the revenues, which in this case represents the MIRR.

The MIRR criterion always has a one-way meaning and can therefore be applied instead of the IRR for non-ordinary cash flows. The project is accepted when the MIRR is greater than the value of the source of funding for the project. The MIRR criterion is fully consistent with the Net Present Value (NPV) criterion and can therefore be used to evaluate independent projects. For alternative projects, inconsistencies between these criteria may arise when the projects are significantly different in scale or have a different duration. In this case, it is again recommended to use the NPV criterion without ignoring the occurrence of cash flow risk.

In conclusion, when assessing the effectiveness of investments, it is necessary (appropriate) to take into account the impact of inflation. This is achieved by adjusting future revenues at the rate of inflation or the discount rate. The most correct in the calculations is the methodology, which provides for the correction of all factors influencing the cash flows of the compared projects. The main factors are the volume of revenues and the volume of variable costs. Adjustments can be made using different indices. For example, the price indices of a company's output and the raw materials it uses may differ significantly from the inflation index. These recalculations are used to recalculate new cash flows, which are compared using the net present value (NPV) criterion. In practice, the methodology for adjusting the inflation rate by including different discount rates in the calculations is more appropriate.

CHAPTER THREE

Cyclical dimensions in risk management in project investments

3.1. Risk management in investment projects

The main task of risk management in investment projects is to optimize the values to neutralize the adverse effects of risk factors, ensuring the successful implementation of the project.

The process of risk management in the project by the management starts with *the investment idea*. It, in turn, is associated with risks in the economic environment and technological risks.

Risk management planning is a process of adopting the relevant decisions for a specific project. This process includes decisions on the organization, staffing the risk management procedures of the project, selection of preferred methodologies, data sources for risk identification, time interval for situation analysis.

Qualitative risk assessment includes a qualitative analysis of the identified risks and the identification of those that require a rapid response. This assessment determines the importance of the risks and the means of response. The availability of supporting information makes it easier to prioritize different risk categories. Their qualitative

assessment refers to the conditions for their occurrence and to determining the impact on the project with standard methods and tools. This avoids the uncertainty that is often found in projects.

Quantitative assessment of risks determines the likelihood of their occurrence and the impact of their consequences on the project, which helps the management group to make the right decisions and to avoid uncertainty. The analysis of project risks begins with their classification and identification, ie. with their qualitative description and determination of what types of risks threaten the specific project in the given environment under the existing economic, political, legal conditions. The algorithm of risk analysis in our opinion includes: *first,* qualitative analysis; *second,* quantitative analysis; *third*, risk minimization; *fourth*, risk control.

The methods for risk reduction can be divided into three groups - *diversification, risk reserves and risk insurance.*

The analysis of the risks in the investment project requires from the management an approach to the risk not as something statistical, but as a manageable parameter, on which it is possible and necessary to influence. This implies striving for their minimization and compensation with the help of the methodology and the concept of acceptable risk.

At the heart of the *concept of acceptable risk* is the statement that it is impossible to completely eliminate the potential causes that can lead to undesirable developments and deviation from the chosen goal. However, the process of achieving the chosen goal can be developed by making such decisions that provide some compromise level of risk, called acceptable. This level corresponds to a certain balance between the expected benefit and the threat of loss.

3.2. Risks and diversification

When deciding to acquire a portfolio of assets, the investor should pay attention to the expected return and standard deviation of each portfolio.

The expected rate of return (average value of return) is defined as the sum of all possible rates of return multiplied by the corresponding probability of obtaining them.

Suppose that the expected return on A shares is 10% and on B shares is 15%. If all the capital is invested in shares "A", then the expected return on the portfolio will be 10%. In the same variant for shares "B" - 15%. When investing the capital in equal shares, the expected return on the shares will be:

(0.5*10%) + (0.5*15%) = 12.5%.

After the end of the year, the actual significance of the profitability of shares "A" and "B", and therefore of the portfolio as a whole, may not coincide with the preliminary expectations.

The risks for one of the assets are measured by the standard deviation of the income on this asset, and the risk for the portfolio - with the standard deviation of the income from the portfolio.

When money is invested in some kind of financial assets to create a portfolio of securities, the investor is dependent on the fluctuation of its exchange rate. Therefore, capital should be invested in shares of several companies, although it is understandable that efficiency will also depend on exchange rate fluctuations, but no longer on each exchange rate, but on averages, which, as a rule, fluctuate less because as the price of one of the securities increases, it may decrease of another, and the fluctuations can be mutually repaid.

Such a portfolio of securities, containing the most diverse types of securities, is defined as a diversified portfolio.

However, in order to measure the risk of the portfolio, it is necessary not only to know the variation in the income of the individual securities, but also the degree to which the income of the pairs of securities fluctuates together. It is necessary to know the correlation of income of each pair of assets in the portfolio.

The fluctuations take into account not only the size of the deviations of the possible values of the return from the average, but also the probability of this deviation. In this sense, the variance shows the measure of uncertainty and the expectation of the investor, who estimates the future return as average for all possible values. This circumstance allows Markovic to consider profitability as a measure of investment risk.[11]

Markovic's diversification strategy suggests that as the return on the assets of a single portfolio increases, the variation (and therefore the standard deviation) of the return on that portfolio increases. The "miracle" manifests itself in a negative correlation of the expected return on assets.

In our opinion, the main way to reduce individual risks is *to diversify the investment portfolio.* The degree of this diversification depends on the amount of securities, their structure and the degree of interdependence. The more structured the portfolio and the more independent the shares are, the more diversified the securities portfolio will be. Theoretically, with the help of diversification, it is possible to completely eliminate individual risks by including securities of various types in the portfolio. As a result, the aggregate risk of a fully diversified portfolio will be determined only by the magnitude of market risk.

The market risk of the portfolio, unlike the non-systemic one, cannot be eliminated by diversification. Other protection methods are used to reduce market risk. This risk can be significantly reduced at the expense of qualified work on forecasting

[11]Project Management Institute, Organizational Project Management Maturity Model (OPM3) Overview 2003

and internal planning, self-insurance and insurance transfer of part of the risk to other persons or organizations through hedging, futures transactions, offering options. Hedging is becoming an increasingly common way to reduce risk, ie. creation of counter currency, trade, credit and other requirements and obligations. Hedging is widely used by companies specializing in the processing of raw materials in order to insure the projected level of income by transferring the risk to the other party. Hedging is a working scheme that allows you to exclude or limit the risk.

In conclusion, it should be noted that complete exclusion of risk in investment activity is a very rare phenomenon. Let's for example an investor-creditor provides money in debt to another person. The debtor gives the creditor a receipt-obligation to return the money with the addition of a fixed interest rate. This receipt is the simplest form of security. At first glance, the operation is risk-free, because, even in the event of a waiver, the return will be enforceable in court, as the debtor's home is fixed as security for payment. In practice, the risk persists because, as a result of a fire that could destroy the collateral, the debtor will become insolvent, and as a safeguard against this risk, the creditor may acquire an insurance policy at his own expense, guaranteeing payment in case of fire in an amount sufficient to repay the debt with interest. At the same time, the actual efficiency of the investment will be lower.

3.3. Solutions and principles in terms of risk

Regardless of the reasons for the occurrence of investment risk, it is natural for each entity to wish to reduce the possible losses associated with the risk. Therefore, the goal in developing any risk management model is to ensure the successful operation of the risk project. This goal is proposed to be achieved by solving the following main tasks: *first,* revealing the possible economic risks and *second,* reducing the financial losses associated with economic risks and increasing efficiency.

The appropriateness of taking a specific decision in the economic situation in question, which by its nature contains a certain degree of risk, can be determined by quantitative risk assessment. This assessment is especially important when there is a possibility to choose a specific solution in a set of alternatives. In this case, too, there are possible variants in which there is a different efficiency, ie. lower costs and higher results (riskier solution) and vice versa, when the degree of risk in one option will be lower than in another.

Decision making is one of the most important functions of a manager. Decision-making is necessary in situations where there is some uncertainty. If the decision is obvious, only the sanctioning (confirmation) is required from the manager.

The main line for finding solutions is determined by the consistent reformulation of problems and tasks. The creative result is associated, above all, with a new "introduction" of problems and tasks. In terms of content, this is not only supplementing the description of the problem with new information, but also systematizing the

information and revealing the new relationships between the conditions of the tasks, ie. restructuring of problems and tasks.

The search for solutions is defined as a stage of generating alternatives, as it is very important to expand the field of possible solutions so as not to miss the most effective options. The expansion of the many possible solutions is supported by various heuristic techniques based on reformulation of problems and tasks.

In order to make a choice from the set of generated solution options, their preliminary evaluation is required. An evaluation criterion is needed for this purpose. Two main understandings of the criterion are analyzed.[12]

The first understanding is related to the objective function, i.e. the function linking the options for solutions with the achievement of one of the goals.

The second understanding for the criterion is related to its essence as a kind of evaluation rule.

Comparing many alternatives on many criteria, taking into account different probabilities for the implementation of solutions is a difficult task. There are normative models for making multi-criteria decisions, which prescribe certain ways to evaluate and compare decisions.

Research on multicriteria solutions is conducted in two contexts.

The first context is related to the study of the process and strategy of multicriteria solutions.

The second context, in which the decision-making of the subject is examined, refers to the motivation for the choice.

The use of each of the risk management methods leads to a redistribution of current and expected financial flows. For example, in insurance, part of the own funds is directed to the payment of insurance premiums. Therefore, when diversifying the risk through insurance (transfer of part of the risk) it is necessary to go to the refusal of part of the investment (income). As a result, there is underinvestment of the project and loss of income.

Thus, one of the most current problems in the management of investment projects is the selection of preferred solutions and the evaluation of their effectiveness.

3.4. The subjective factor in risk decisions

[12] Kerzner, H., Project management: a systems approach to planning, scheduling, and controlling, Hoboken, NJ: John Wiley & Sons, 2009

Psychological problems inherent in the subjective factor, on the way to effective risk allocation and management are related, above all, to the irresponsibility or unfavorable choice of individual subjects.

At the heart of "homoeconomicus" behavior, economists view purposeful behavior that is clearly structured by goals, means, and outcomes. This behavior is characterized by a number of common features. First of all, in this behavior the goal is perceived as a property or condition of the person himself. On this basis, it is assumed that in "homoeconomicus" there is a certain order in the structure of goals, which can be represented as a "tree of goals".

The efficiency of the individual's activity is determined by how advantageous the relationship between his labor contribution and the remuneration for this contribution is seen. Sometimes attempts are made to determine what is exchanged for what: money for working time; social recognition and safety against work and loyalty to the organization; opportunity for creativity and free labor against higher productivity and quality, etc.

Therefore, the experience of successful business structures shows that the success of investment activity largely depends on the personal characteristics of investors. Entrepreneurship constantly requires from a subject engaged in active economic activity, certain qualities, both genetically set and acquired in practice, as well as by studying other people's experience and obtaining the necessary knowledge for business.

Researchers of the problem of the personal qualities of the investor reveal a rich variety of different knowledge and skills. For example, the US Small Business Administration believes that an entrepreneur must have the following five most important characteristics that ensure his success in the most risky business:

- energy, the ability to force oneself to work;
- the ability to think;
- the ability to build relationships with people;
- communicativeness;
- knowledge of technique and technology.

The average investor, in our opinion, is constantly in a situation of choosing between competing goals. Driven by the search for benefit, he considers, predicts, chooses and constructs his behavior in such a way as to improve his own situation.

Practice shows that it is difficult to determine where the ability to predict ends and where ordinary luck begins. By definition, risk management decisions are made in conditions of uncertainty, therefore, there are several options for the development of events. In the end, only one option is realized. Nor do the accusations (or congratulations) about the wrong (or correct) decision make any sense, as they are expressed after the information received, which was absent at the time of the decision. The adequacy of the risk management decision should be considered in accordance with the information available at the time the decision was taken by the entity.

The manager's intuition also plays a special role in solving risky tasks. Intuition is the ability to find the right solution to a problem immediately, as if suddenly, without logical reasoning. The intuitive solution arises as an inner enlightenment, revealing the essence of the studied question. Intuition is a mandatory component of the creative process. Psychology considers intuition in relation to sensory and logical knowledge and practical activity as direct knowledge in its unity with the mediated knowledge acquired in advance.

The basic rules for risk management decisions can be reduced to the following:

- there should be no risk more than the available capital allows;
- the consequences of the risk should always be considered;
- one should not risk the big for the small;
- a positive decision is taken only in the absence of doubt;
- in case of doubt, a negative decision is made;
- one should not think that there is always only one solution (it is more likely that there are other solutions).

The main task of any manager, regardless of his hierarchical level and object of management, is to manage human behavior, because all production processes, ultimately, are carried out through the interaction of people in the management process. In other words, each production structure is a system of behavioral type, ie. depending on the behavior of the people that unites them. And, therefore, the main task of the manager is not only to direct this behavior in a positive aspect, but also to strive for this behavior to be as consistent as possible with the objectives of the project.

To this end, the manager should have the following qualities:

- responsibility and obligations in two aspects - to subordinates and colleagues (inside the company and in the external environment);
- purposefulness, quality allowing to solve very complex problems, located on the border of the possible;
- knowledge in the field of management science;
- ability to value one's own time and the time of subordinates;
- rigor and ability to encourage and sanction;
- ability to speak concisely and clearly to express one's thoughts.
- ability to listen and remain silent where, with inappropriate intervention, just dissatisfaction is provoked.

One of the most complex qualities of a manager is the ability to make non-standard decisions in standard situations, to make non-standard (in a sense unexpected) moves in cases that seem perfectly defined. Such a manager is a mystery to his subordinates and therefore they treat him very carefully. Unusual behavior often leads to the desired results with minimal effort and great efficiency.

3.5. Practical recommendations

There is no "only true" strategy for choosing an investment portfolio that suits all investors equally.

The arsenal of portfolio formation methods is quite extensive and the following principles are usually recommended.

*First,*correct distribution of funds by types of assets. Experiments have shown that the profit depends up to 94% on the choice of the type of investment instruments used (shares of large companies, short-term government policies, long-term bonds, etc.); 4% of the choice of specific securities of a given type; at 2% of the valuation of the moment of purchase of securities.

*Second,*the risk of investing in a particular type of securities is determined by the probability that the profit will deviate from the expected significance. The estimated value of the profit should be determined on the basis of the processing of the statistical data on the dynamics of the return on investments from these securities in the past, and the risk as a rms square deviation from the expected profit.

Third, varying the structure of the investment portfolio to change the expected return and risk. There are various programs that allow you to construct desired proportions of assets of different types (for example, minimizing risk at a given level of expected profit or maximizing profit at a fixed level of risk, etc.).

Fourth, to take into account the probabilistic nature of all estimates used in compiling the investment portfolio. The construction of the portfolio should take into account the presence of some main factors - *a formed securities market, a certain period of its operation, market statistics, etc.*

Although investors can generally choose from thousands of different assets when structuring their portfolios, in practice their "menu" is limited to a few key products offered by financial intermediaries. These include: bank accounts, mutual funds (consisting of shares and bonds), as well as real estate. In developing and structuring the "menu" of assets offered to customers, the intermediary company should use the latest advances in financial technology. We must also take into account the fact that everything in the world of finance has its price.

In general, it is believed that active management of shares on the stock market can earn up to 20-30% per year, with a risk of maximum losses of 10-15%. However, depending on the greater or lesser degree of aggression, these two quantities can vary considerably.

When structuring the portfolio, experience shows that the following requirements must be met:

First, search for the optimal type of portfolio from the possible set.

Second, rational combination of the risk and the return of the portfolio by changing the relative share of the securities with different levels of return and risk.

Third, assessing the liquidity of the portfolio.

Fourth, determining the initial structure of the portfolio and the possibility for its change taking into account the market situation.

Fifth, looking for options to further regulate the portfolio structure.

In the conditions of Bulgaria, with a deepening process of changes in the ownership structure, the system of portfolio objectives may change.[13]

Investing in securities in Bulgaria is still in the process of intensification. The payment of decent dividends takes place in a limited number of joint stock companies. The purchase of shares is mainly carried out by investment funds (by virtue of their nature) or for the purpose of acquiring controlling stakes. For this reason, creating a portfolio of securities is associated with many risks. This risk is inherently aggregated and includes many types of specific risks - liquidity, credit, capital, etc.

Conclusion

In the dissertation work an analysis of the methods and systems for risk management in the investment activity is made.

The investment risk assessment is considered depending on the decisions made by investors; from the influence of unknown or unambiguous factors on the results and consequences for these decisions; from the expectations for the future development of the investment process and its impact on future results.

An important role in the characterization of risk in the investment activity is assigned to the distribution of future results and planning of the distribution of the respective risk counteraction in the form of expected values, variances, standard deviations and variations, the specific values of which depend on the distribution of subjective probabilities.

When justifying risky decisions, three main approaches are distinguished. Their choice is given to the expectations of managers or investors in terms of their ideas about the future development of market conditions, their propensity or restraint to risk, as well as the availability of free capital for their implementation.

In the conditions of the real investment process the main task for risk management is the adaptation of investments to the future state of the economic or investment environment by using different methods for transforming the projected distribution of future positive results.

The assessment of the sustainability of investment decisions for business development is proposed to be carried out on the basis of simulation options in terms of factors and their impact on future results, although they do not give an unambiguous assessment of the risk of future project implementation.

[13]Gargarov Z., Kolev N. Finance and financial relations S. 2018

The use of risk management methods based on diversification allows the implementation of different management strategies, both defensive and offensive, depending on the expectations of decision-makers. The conclusion is that the possibility to reduce the risk at the expense of diversification among risky assets, without reducing the expected level of return, is limited. The problem with the use of diversification as a method of risk management is justified by the availability of free investment capital, the need to justify additional investment projects and justify the implemented risk management strategies.

An important role in the risk management process is provided for the possibility of using options as a form of transferring the risk of price changes or other risks to third parties. The problem with the realization of this opportunity is related to the choice of partners and ensuring their interest in the implementation of the investment project.

The subjective factor is assessed through the ability to solve two main tasks - forming a team and organizing the activities of this team. The economic behavior of the management and the team is associated with awareness of the goals and the choice of means (methods, methods of action) to achieve them. At the same time, it is assumed that the nature of the means is determined not so much by the purpose as by the conditions, circumstances and possibilities, without which it is difficult to talk about the subjective usefulness and the order of preferences. Namely, this is connected with the possibility to build the hierarchy of goals according to the degree of desires and the order of preferences, based on which it can always be determined which of two goals is preferable and that the change of each achieved goal is followed by another goal. follows the order of preferences for the development of the investment process.

IV. REFERENCE ON THE CONTRIBUTIONS TO THE DISSERTATION WORK

The following scientific and scientific-applied achievements can be derived in the doctoral thesis:

1. An approach for diversification and reduction of individual risks in the process of realization of an investment portfolio in periods of economic turbulence is presented. A strategy is also proposed to reduce the uncertainty of investments in the complex situations of the financial markets, by combining different types of uncertainty from the impact of the integrated risk in the investment activity.

2. Arguably substantiated methodology for application in the investment practice of a multi-criteria model for the optimization of an investment portfolio with maximum degree of efficiency and achievement of maximum return at a certain level of risk or by minimizing the risk at a given level of return. The effect is through diversification of the investment portfolio to limit the impact of market risk for the entire portfolio from the individual risk of the financial instruments contained in it.

3. A classification of the advantages and disadvantages of different types of management structures (for vertical and horizontal integration) in the process of construction and implementation of investment projects, with their inherent set of goals, objectives, results and expected types of risk. The functional, matrix, project-target, mixed (hybrid) organizational structures (including substructures of different types) are taken into account, which take into account the peculiarities of the investment project.

V. LIST OF PUBLICATIONS ON THE DISSERTATION

1. Ediz-Hanif Baqzidov Saidov, Planning – key factor in project management, Invitation International conference of doctoral students and young researchers, "Emerging Markets Economics and Business", 10th Edition, Oradea, 22 November 2019.

2. Ediz Saidov, Effective project management - a requirement for every corporation, Anniversary conference "Bulgarian dream - the positive concept", NBU, Sofia, 6 June 2019.

3. Ediz Saidov, Budget and profitability of a financial portfolio, Pogledi magazine, edition 5, n. 9-10, p. 96-114, 2018.