

## **Subprime Venture Investment of Knowledge-Consumptive Enterprises for the Purpose of Design and Commercialization of Hi-Tech Products**

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**Abstract:** Without innovative hi-tech industry the economy of the country focused primarily on the raw component is very unstable. Therefore, it is needed to develop this trend. Venture investment is definitely the most significant tool in development of the knowledge-intensive entrepreneurship. The main problem consists in insufficient development of venture investment of knowledge consumptive high-tech enterprises being accelerator of the innovative activity in the regions and in the country in general. Today in the developed and developing countries venture investment is the main source of extra budgetary financing of the innovative activity of enterprises. On the global economic scale venture investment is estimated at about 300 billion dollars. However, in the Russian Federation the amount of the venture capital forwarded to the innovative activity of enterprises makes from 1-3% of the above-mentioned sum. For comparison, the United States of America have the specific share of the venture capital of 65-75% of the venture investment on the global scale. The trend of sustainable, progressive development of venture investment is clearly expressed in China, Korea and Singapore. In this regard, it shall be noted that venture investment in the Russian Federation develops not as fast as wished it to be.

**Key words:** Venture investment, knowledge-consumptive hi-tech enterprises, commercialization, hi-tech products, venture investors

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### **INTRODUCTION**

As of today there is no shared vision of the interpretation of the concept 'venture investment'. This is explained by complexity of the term under investigation. Great number of interpretations of the term 'venture investment' is explained by focusing the attention of researchers on a specific area of activity. Researchers of investments in innovative activity of knowledge-consumptive hi-tech enterprises distinguish the area of application of venture investment and its main characteristic. During the process of learning the limits of the term 'venture investment' many researchers use different approaches.

According to the researcher of this study, great number of interpretations of the term 'venture investment' indicates that the variety thereof may be divided into two units. Interpretations of the term that characterize venture investment narrowly and deeply may be referred to the first unit. Interpretations of the term that characterize the term broadly and superficially with account for different perspectives may be referred to the second unit.

One of the research tasks is performing comparative characteristic between the bank lending and venture investment.

The essential task of the study is identification of the general and necessary objectives of a venture capitalist and entrepreneur representing a knowledge consumptive enterprise performing innovative activity aimed at output of hi-tech products. Beside identification of goals it is needed to arrange them in the single direction to avoid the conflict of interests between the parties.

Identification of positive factors of venture investment in respect of the subjects participating in the venture business process, design of the researchers classification of functions of venture investment of knowledge consumptive hi-tech enterprises is the next task the other faces.

The completing task of the study is learning the venture investment methods based on relations established between the venture business entities. The procedure proposed by us suggests performing the present research as follows:

- Studying the conceptual framework
- Identification of peculiar features of the venture investment of design and commercialization of high tech products
- Substantiation of the necessity of the government support of establishment and development of venture business and innovative activity
- Summarizing and classification of the venture investment functions
- Investigation of methods of venture investment of design and commercialization of high tech products

### **MAIN PART**

At the beginning of our study we focus attention on the terms related to knowledge consumptive high-tech entrepreneurship in particular, 'high technologies'.

The term 'high technologies' is quite widely used in the world practice and also has the abbreviation hi-tech. Within this study we will adhere to the following interpretation of the term: "A product deems to be high tech if production of it requires involvement of specialists of high educational level and the product itself or the relevant manufacturing technologies contain the know-how elements-in this case high-tech business may be considered as profitable activity related to design and output of a high tech product".

In 1997 in the Saratov Region one of the first laws in Russia concerning innovations and innovative activities' was adopted (Zavyalov, 1997). Within this document innovations mean the result of the research and engineering and research and development activities constituting intellectual property.

The activity of individuals and legal entities based on the use within this activity of intellectual property items provided with the documents of title is considered to be innovative.

The main objective of innovative activity is implementation of innovations that have been obtained during the process of performance of fundamental and applied research and development works and research and engineering activity by means of practical mastering.

The world practice shows that venture investment is one of the efficient methods of implementation of the knowledge consumptive hi-tech projects aimed at development of innovative activity of knowledge consumptive hi-tech enterprises.

The word 'venture' originated from the English word venture which means 'to risk to dare put at stake'

(Raizberg *et al.*, 1998). For the 1st time the term 'venture capital' as such was used by Arthur Rock (Vorontsov, 2002) famous Californian financier, businessman, multi-millionaire.

However, until now there is no shared vision of the interpretation of the concept 'venture investment'. This is explained by complexity of the term under investigation. For example, by interpreting the term of venture investment the representatives of the Russian venture association take as the basis the main function of the capital. Other researchers of investing in the innovative activity of small knowledge consumptive high-tech enterprises specify the area of application of venture investment and its main characteristic.

During the process of learning the limits of the term 'venture investment' many researchers use different approaches. Thus for example, the researcher I.V. Kudina focuses attention on the two approaches: European and American ones.

In the United States of America, the process of investing capital in the knowledge consumptive hi-tech enterprises at the early stages of their development is referred to venture business. These stages of the enterprise development are called 'seed' and 'start up'. From the perspective of the National Venture Capital Association (NVCA) of the United States of America venture investment means the process of the capital investment by venture capitalists being experts in the specific business area. They provide significant support to knowledge consumptive hi-tech enterprises, developing enterprises in the knowledge consumptive sphere and enterprising existing in the form of a concept.

The research economists of Australia and America treat the definition of venture investment from the perspective of focus on particular aspects and interpret it as subprime capital investment designated for knowledge consumptive high-tech enterprises at the development stages with the potential of future growth for receiving high margin.

In Europe venture investment started developing much later than in the United States of America (in the 70's only). By this time new trends of development appeared in the venture investment practice. Within this context interpretation of the venture investment concept features a wider meaning. It includes enterprise investment at different stages of its development including the later ones when significant financial resources are required for enterprise acquisition. The European Venture Capital Association (EVCA) uses interpretation of venture investments as share capital. This capital is formed from different investment sources

for direct investment in the knowledge consumptive hi-tech enterprises featuring growth potential both at the initial stage and at the stage of enterprise extension and diversification (Dobyshevsky, 2003).

Beside that in Europe the concept of venture investment as financial instrument used for the enterprise development, redemption of enterprise by property restructuring is used (Vorontsov, 2002).

The Russian research economists interpret venture investment focusing on different aspects of this investment process. For example, V.I. Anshin and S.A. Filin put special emphasis on high riskiness of innovative venture projects and possibility of quick and significant return on capital invested. M. Bunchuk sees venture investment as long-term venture capital investments in the shares of the new knowledge consumptive high-tech enterprises for the purpose of receiving high margin. Given the positive enterprise development this margin will be attainable as soon as the enterprise is listed on the stock exchange (internet resource of the "Russian Association for Venture Investment" (RAVI).

L.A. Vorontsov and L.V. Ivлина understand venture investment as capital investment in the newly-created enterprises not only at the early stages of the life cycle but also while being in difficulties.

M.V. Kudina interprets venture investment quite broadly and defines it as the process of investment by investor along with the concept owner for the purpose of financing the early stage of the enterprise development. Along with that she puts emphasis on the fact that financing may be performed as different kinds of transactions such as: purchase of shares of different kinds, knowledge transfer, transactions determining the specifics of the investor as such. The investor gets high margin in the form of stock dividends or rise in the cost of the invested knowledge consumptive hi-tech business.

The researcher in the venture business sphere A.V. Lukashev considers venture investment as the most efficient yet not the only one method of investment in the new knowledge consumptive high-tech enterprises.

According to Wikipedia, venture investment is interpreted as long-term subprime investment in the share capital of the knowledge consumptive hi-tech enterprises focused on design of the knowledge-intensive products, development and extension of the functional capabilities of these products for the purpose of receiving high margin on the capital invested (Lukashev, 2014). Within this context venture investment is considered as equity raising of the knowledge consumptive enterprises

creation of which is determined by implementation of the specific knowledge-intensive hi-tech investment projects in the innovation sphere.

Notwithstanding the great number of definitions of the venture investment concept all of them feature the main objective-venture investment shall stimulate the growth of the particular knowledge consumptive hi-tech enterprise as the result of provision of investment capital in exchange for the share of corporate stock or the majority stake. Within this study venture investment is considered from the perspective of wide coverage of the venture investment aspects (Volkova *et al.*, 2014).

Today in the developed and developing countries venture investment is the main source of extra budgetary financing of the innovative activity of enterprises. On the global economic scale venture investment is estimated at about 300 billion dollars. In the leading countries of Western Europe and the United States of America the total annual venture investment amount is rated at about 3 billion dollars. The trend of sustainable, progressive development of venture investment is clearly expressed in China, Korea and Singapore. In this regard, it shall be noted that venture investment in the Russian Federation develops not as fast as wished it to be.

Venture investment features a number of peculiarities as compared to other kinds of investment activities for example, lending.

This peculiar feature consists in the fact that capital is invested in small and medium as a rule, knowledge consumptive high-tech enterprises whose shares are not placed on stock exchange but are distributed among the shareholder investors. The objective of the venture business investor is rapid and maximal increase in capitalization of the investable knowledge consumptive high-tech enterprise.

As a rule, rapid and maximal growth of the enterprise capitalization may be achieved by means of using the knowledge-intensive hi-tech venture innovative projects (Plotnikov, 2012).

An investor expects that a knowledge consumptive hi-tech enterprise will use investment resources as a financial gearing for achievement of rapid and maximal growth and development of the investable enterprise (Plotnikov, 2013a, b).

Performance of venture investment proceeds without mortgage security. An investor, venture capitalist undertake all the risks related to investment in a knowledge consumptive high-tech enterprise; the other kinds of risks such as a technical, management, commercial, market, price, production risks are undertaken by the administrative machine of the enterprise. Another

advantage and peculiar feature of venture business is the fact that beside the capital the small knowledge consumptive hi-tech enterprises may use knowledge and experience of the venture capitalist (Plotnikov, 2013a, b).

The world practice shows that support and assistance of the state are required for significant development of venture investment. It is no secret that measures of the state impact exercise significant effect on the development of venture business in the United States of America (SBIC), Israel (Yozma), Finland (SITRA) and nearly all developed and developing countries of the world (Volkova *et al.*, 2014).

The meso-economic level of managing the processes of development of venture business and innovative development of knowledge consumptive hi-tech production is related to accounting of the peculiarities of development of different entities of the Russian Federation, their sizes, the level of the social-economic, industrial development, geographical location, innovative activity and investment attractiveness.

The positive factors of individual nature incorporate advantages to the subjects of venture investment: for small and medium high tech entrepreneurship as no significant cash flows and collateral in the form of real property, stock-in-trade, motor vehicles, special vehicles, equipment, intangible assets are required; for venture investors-due to the fact that this possible to get high margin on capital invested as the result of sales of stock or share in share capital of a knowledge consumptive high-tech enterprise by means of investing in the venture innovative projects aimed at creation of high-tech products; for the state and local authorities-due to improvement of the investment climate of the country and its regions.

The venture investment process incorporating the list of functions is considered by the researcher of the present study as the activity aimed at implementation of this kind of investment. Such activity represents the set of administrative works united by the object of investment and the tasks to be solved which allows distinguishing a few groups of functions.

The first group consists of the general functions ensuring the order and good organization of actions of all subjects of venture investment in order to achieve the goals and tasks set. We will refer the following to the functions of the first group: strategic planning and forecasting, organization of cash flows including investments flows, timeliness, accuracy rapid decision-making, monitoring and control, risk assessment

and minimization, motivation of the administrative machine of a knowledge consumptive high-tech enterprise.

We will refer to the functions of the second group the specific functions aimed at transformation and utilization of all kinds of resources during the venture investment process and performance of innovative activity (Plotnikov, 2013a, b). According to the researcher of this study, it makes sense to divide the specific functions by kinds: economic, managerial, research-engineering, social ones.

The economic functions of venture investment are: creation of new knowledge consumptive high-tech enterprises manufacturing products, applying the progressive technologies, increase in the margin on capital invested on the macroeconomic scale; redistribution of investment resources on the macroeconomic scale. Research-engineering function of venture investment is based on development and design of prototypes and progressive technologies and hi-tech products.

Administrative functions of venture investment are necessary for establishment of operational and quality highly effective management. They are aimed at formation of the system of regulatory administrative basis of an innovative knowledge consumptive hi-tech enterprise.

Besides, venture investment fulfills a number of important public-social functions. According to the researcher of this study, they include: satisfying the needs at the market, creating jobs at knowledge consumptive innovative high-tech enterprises, stimulation of creative and innovative activity in the knowledge-intensive staff of innovative enterprises.

Venture investment methods shall be considered from the perspective of relations established between the subjects of the venture investment process. As the result, the system of venture investment methods is constructed.

During the process of formation of relations 'investors' (investors' union)-venture capitalist the following methods may be used: the public-private partnership method; economic efficiency method; method of rational interaction of the venture investment subjects.

Within the relations 'investors' union-knowledge consumptive hi-tech enterprise the following methods may be used: method of selection of prospective capital investment targets; method of investment target diversification.

## **RESULTS**

Analysis of the great number of definitions of the 'venture investment' term allowed dividing the diversity

thereof into two units. Interpretations of the term that characterize venture investment narrowly and deeply may be referred to the first unit. Interpretations of the term that characterize the term broadly and superficially with account for different perspectives may be referred to the second unit (Fig. 1).

According to researchers of this study, venture investment of innovative development of knowledge consumptive high-tech enterprises is long-term

investments in the form of the real and financial investment provided for the purpose of acquisition of a share of corporate stock or the majority stake at knowledge consumptive hi-tech enterprises at different stages of their life cycle performing knowledge-intensive hi-tech venture manufacturing of products which promotes to high rate of increase in capitalization of these enterprises. Comparative characteristic of venture investment and bank lending is presented in Table 1.

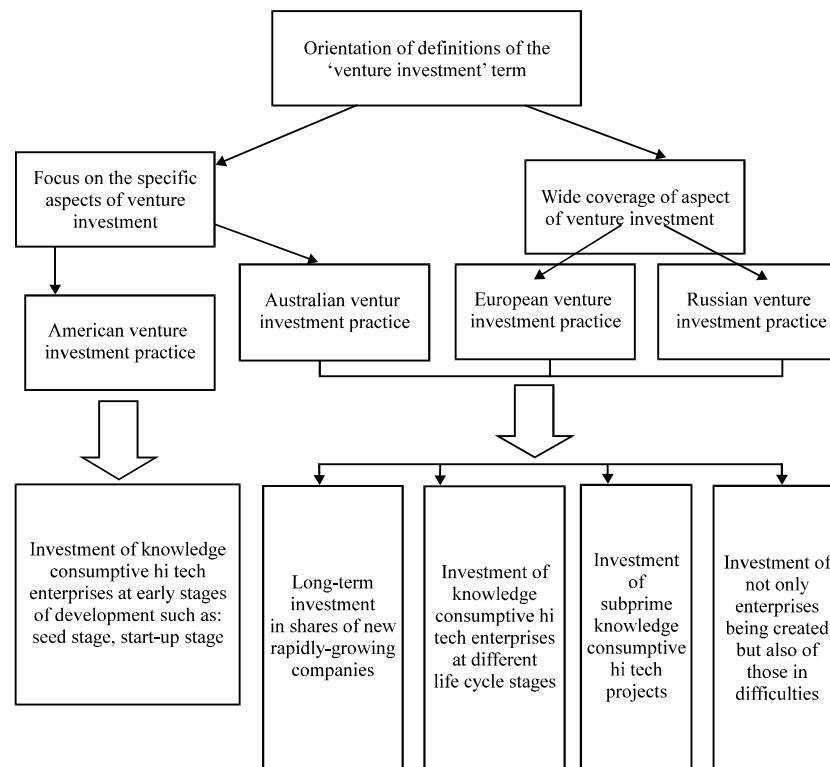


Fig. 1: Content of definitions of the 'venture investment' concept

Table 1: Comparative characteristic of bank lending and venture investment

Comparison criterion	Bank lending	Venture investment
Objectives	Repayment of loan amount with interest payment	Rapid and maximally possible increase in capitalization of the investable knowledge-consumptive hi-tech business
Beneficiaries	Legal entities, individual entrepreneurs	Knowledge-consumptive hi-tech innovative entrepreneurship
Investment targets	Specific credit contracts within the innovative projects to be implemented	Development of new knowledge-intensive hi-tech technologies, design of hi-tech products
Investor's tasks	Short-term financing knowledge-intensive hi-tech innovative projects	Financing of knowledge-intensive hi-tech innovative projects for the purpose of developing the enterprise and acquitting the share or majority stake at the investable enterprise
Investment period	Short-term, not >3 years	Mid-term and long-term from 3-7 years
Presence of collateral	Collateral may be in the form of: mortgage security, floating charge on stock, pledge of motor vehicles, pledge of special vehicles, pledge of equipment, pledge of intangible assets, etc.	Not required
Risk	Undertaken by the entrepreneur	Undertaken by the investor and venture capitalist
Use of the investor's experience in the project implementation	Is not used in any way in the knowledge-intensive hi-tech innovative projects	Is used. The investor participates in the innovative activity within the project implemented on the basis of a knowledge consumptive hi tech enterprise

In our opinion, in the Russian Federation it makes sense to use the two-level system of the government administration of establishment and development of venture business and innovative activity: implies state administration on the scale of the entire country (at the macro-economic level); consists in the state administration on the scale of constituent entities of the Russian Federation (at the meso-economic level).

According to the researcher of this study, the advantages of venture investment may be considered from two perspectives: individual and common one (Table 2).

In our opinion, the positive peculiarities of venture investment may also be considered from the perspective of common interests of all subjects of this kind of investment. In terms of this aspect of venture investment the positive peculiarities consist in eliminating discrepancies between the subjects of this kind of investment. In the essence of venture investment, there is fundamental principle of consolidation of objectives

and tasks on increase in capitalization of a knowledge consumptive hi-tech enterprise both to innovative entrepreneurship performing activity aimed at creation of hi-tech products, capital as method of realization of commercial activity and to the state power ensuring comfortable conditions of relations between the venture investment subjects. In our opinion, the venture investment functions may be divided into two groups: general and specific (Fig. 2).

Different investment methods are used within relations between the knowledge consumptive hi-tech enterprise and venture capitalist that are established during the venture investment process. According to the researcher of this study, investment methods may be considered as a set as at different stages of the venture investment process (seed and start-up stages, stage of achievement of joint success by a venture capitalist and knowledge consumptive hi-tech enterprise, stages of withdrawal from an innovative enterprise) specific methods are applied (Table 3).

**Table 2: Positive factors of venture investment of individual nature**

Subjects of venture investment	Positive factors of venture investment of individual nature
Knowledge consumptive hi-tech enterprises	Possibility of implementation of knowledge-intensive high tech venture projects Possibility of implementation of innovative potential for the employees of an innovative enterprise Commercialization of hi-tech products
Venture investors (venture capitalists, investors)	Receiving high margin on the capital invested as the result of sales of stock or share in share capital of a knowledge consumptive high-tech enterprise Gaining experience in promotion of the unique innovative product
State, local authorities	Growth of innovative activity of the region, country Improvement of investment climate of the region, country Territorial social-economic development of the region, country

**Table 3: Venture investment methods based on relations 'venture capitalist-knowledge consumptive enterprise'**

Venture investment stages	Method name	Method kinds
Seed and start-up stage	Methods of making decisions as to the most efficient capital investment in prospective innovative hi-tech products designed on the basis of a knowledge consumptive hi-tech enterprise; Methods of venture capital investment	Method of searching for an innovative enterprise offering prospective projects; method of study and identification of advantages of the venture capital investment target; method of selection of an innovative enterprise offering prospective projects; method of investment in ordinary shares of a knowledge consumptive hi-tech enterprise; method of investment in the form of a loan; method of investment in preferred shares of a knowledge consumptive hi-tech enterprise; credit granting method
Stage of achievement of joint success by a venture capitalist and knowledge consumptive hi-tech enterprise	Methods of joint management of an innovative knowledge consumptive hi-tech enterprise	Method of participation of the venture investor in meetings of the enterprise board; method of assignment of manager of the financial activity of an innovative knowledge consumptive hi-tech enterprise; method of calendar investment with determination of the capital ration
Stage of withdrawal from an innovative enterprise	Methods of withdrawal of venture capital from a knowledge consumptive hi-tech enterprise	Method of placing of shares of a knowledge consumptive high-tech enterprise by a venture capitalist on a stock exchange; method of sales of all or part of the shares owned by a venture capitalist to a large enterprise for the purpose of merging; method of sales by the venture capitalist of all previously purchased shares of a knowledge consumptive high-tech enterprise to investors performing investment at the seed and start-up stages; method of sales of shares of a knowledge consumptive high-tech enterprise to an investment company; method of redemption by the administration of a knowledge consumptive high-tech enterprise in whole or by parts; method of transforming an enterprise unit unto an independent business unit

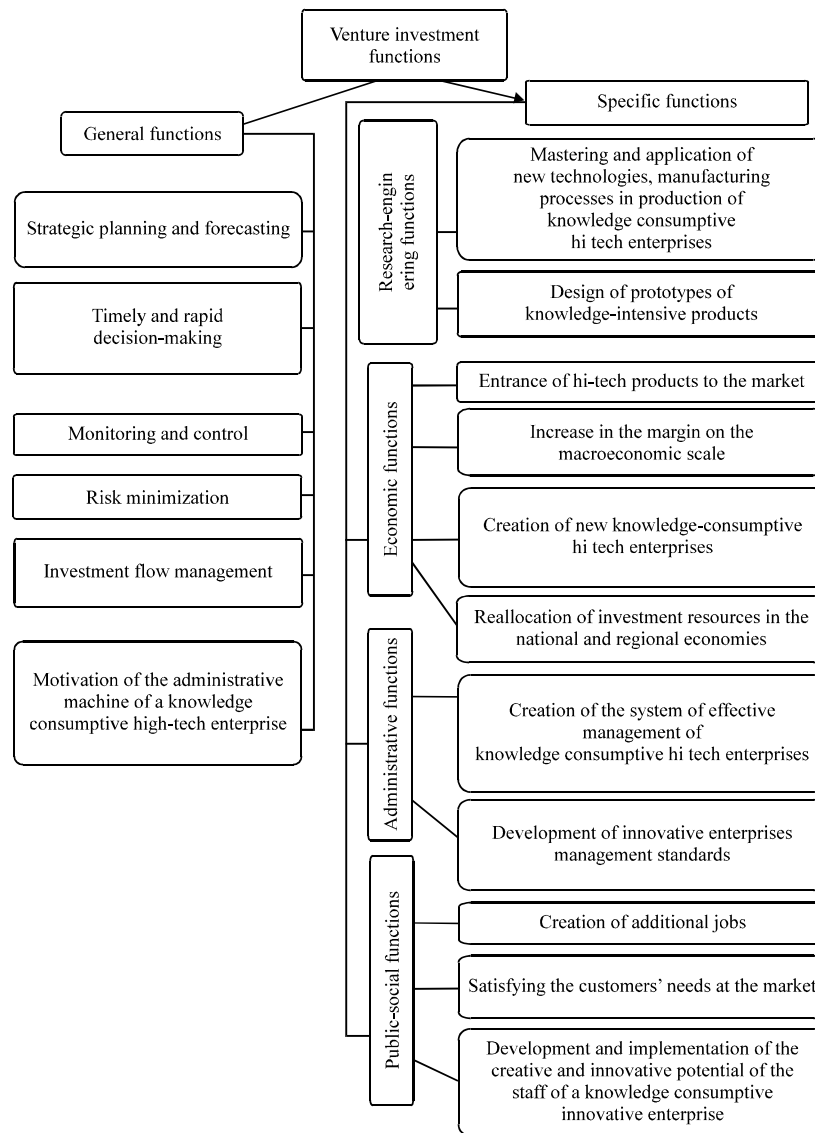


Fig. 2: Classification of functions of venture investment of knowledge consumptive hi-tech enterprises

In our opinion, development and improvement of methods of venture investment of knowledge consumptive hi-tech enterprises may be performed within participation of the government authorities of the regions of the Russian Federation in the venture investment processes and functions. In its turn, this will result in development, improvement and adaptation of the venture investment system at the meso-economic level.

## CONCLUSION

Thus, the study performed allowed detecting the problem in the sphere of investment consisting in insufficient development of venture investment of

knowledge consumptive high-tech enterprises being accelerator of the innovative activity in the regions and in the country in general. This is why, in our opinion, it is needed to popularize this kind of business, to broadly use the new models and mechanisms of venture investment of design of innovative products that would be competitive not only at the internal but at foreign markets as well.

In our opinion, the sources of private capital are underused in the national venture industry as compared to the developed countries, in particular, the leader in the venture business-the United States of America.

There is the objective necessity of deeper investigation of capabilities and models of use of the

private investors' funds. We believe that accumulation of this investment resource shall also be performed with the support of the state.

There is a quite extensive field of activities on structuring the venture investment risks aimed at minimization thereof, for example, dividing venture projects into three portfolios: venture projects of moderate risk, average risk and subprime projects. For each project portfolio there shall be designed investment models with the specific list of sources of investment resources and support tools both governmental and intermediary expressed in capabilities of different financial institutions such as banks and insurance companies.

## REFERENCES

- Dobyshevsky, S.M., 2003. Investment Behavior of Russian Enterprises. IEPP, Moscow, Russia, Pages: 340.
- Lukashev, A.V., 2014. Venture financing: Company valuation and corporate management. <http://www.tpprf.ru/common/upload/documents/activities/investment/analitic/mam04/2008081416592230.pdf>.
- Plotnikov, A.N., 2012. Application of the Venture Business Experience of Developed Countries in Russia. KUBiK, Saratov, Russia, Pages: 347.
- Plotnikov, A.N., 2013a. Venture investment models and organizational charts of their functioning. *Innov. Act.*, 2: 75-87.
- Plotnikov, A.N., 2013b. Prospects of development of venture investment in Russia. *J. Saratov Univ. Ser. Econ. Manage. Law*, 13: 144-148.
- Raizberg, B.A., L.S. Lozovsky and E.B. Starodubceva, 1998. Modern Economic Dictionary. INFRA-M., Moscow, Pages: 762.
- Volkova, M.V., A.N. Plotnikov and D.A. Plotnikov, 2014. Theoretical-Methodological Fundamentals of Development of the System of Venture Investment of Innovative Activity at the Meso-Economic Level: Monograph. KUBiK, Saratov, Russia, Pages: 310.
- Vorontsov, V.A., 2002. Main Concepts and Terms of Venture Financing. Nauka, Moscow, Russia, Pages: 240.
- Zavyalov, A.Y., 1997. Concerning innovations and innovative activities: The law of the Saratov region. *Innov. Act.*, 1: 6-9.