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**VENTURE INVESTMENTS OF INNOVATIVE
PROJECTS AS A PROGRESSIVE FORM OF
INTERRELATION OF BUSINESS UNITS
IN REAL AND FINANCIAL SECTORS
OF ECONOMICS**

Abstract

In the article the mechanism of venture financing of the innovative projects in accordance with the phases of the innovative process is presented, the measures of efficiency of the combined investment with the participation of venture capital are revealed, the modern features and prospects of the development of Russia and the Republic of Tatarstan's venture infrastructure are studied.

Keywords: *venture, venture capital, innovation activity, phases of an innovative cycle, risks of venture capital, venture infrastructure.*

JEL Classification: *G24.*

Objective: The goal is to investigate the possibilities of using the tools of venture financing as a progressive form of innovative interaction between financial and real sectors of Russian economy and its regions.

Methodology: The philosophical, scientific functions (historical and logical) and specific methods for the economy (scientific abstraction, functional analysis, modeling, method of graphic presentation) were used to achieve this goal. The method of scientific abstraction made it possible to consider the etymology of categories and concepts in the sphere of venture capital circulation. By applying functional analysis the cause-and-effect relations were revealed for the capital assets interaction of the real and financial sectors of the economy with the use of tools of venture capital industry. Modeling and method of graphic presentation gave the possibility to disclose the stages and phases of an innovation process, mediating by venture capital instruments.

Results: The reasons for the limitations of the number of traditional financing forms of economic entities innovative activity were investigated. The features of the origin of venture capital as a symbiosis of financial and human capital were disclosed. The peculiarities of the functioning of venture capital in the USA, Europe, and Russia were described. The authors presented the model of single-phase form usage of venture capital in the innovation process. They developed a formula to calculate the efficiency of a combined method of capital investing in an innovation process. The institutional capabilities of the venture capital model of financial and real sectors interactions in the Republic of Tatarstan (Russia) were revealed.

Originality: The author proposes a new systemic alternative to use the venture financing innovation in Russia in accordance with the phases and stages of the innovation process and with other traditional investment instruments.

Limitations in investments in traditional forms of business unit innovative activities are optimized by such an innovative form as venture capital. Works on etymology and economic contents of the term “venture capital” showed its organic bond with financial capital, structure of the latter being quite heterogeneous in general trends. From the moment of its emergence the financial capital consisted of banking and industrial capitals. Historically financial capital in certain conditions was presented only in a money form. Time proved that this category is specific by being enriched with new financial forms of the capital, which in term depend on development not only of banking and industrial capitals, but on other forms and markets (for example, fictitious capital and capital market). At present the transformation of financial capital is continued. It is becoming a special type of the capital, including trading capital based not only on monopolies financial assets, but on medium and small capitals.

Financial capital absorbs elements of such type of the capital as human capital resulting in provision of investors not only with money assets, but also with economical and organizational-management facilities (managerial skills, business conduct experience, etc.). It happens in terms of high uncertainty and risk of loss of the money assets. Human capital investments mean investing with personal health, knowledge, skills and motivation (of an investor and/or a hired specialist) in this or that innovative project. It results in specific symbiosis of financial and human capital – venture capital, providing effective use of innovations and taking into consideration character demands of the innovative process.

The initial meaning of the term “venture capital” was closely connected with etymological meaning of the English word “venture”, which means an enterprise on the one hand and risk on the other. Research of the major theoretical and methodological approaches on determination of the capital category, extraction of its major characteristics, and study of the types of capital in their interrelation showed many sides and complexity of the term “venture capital” which in our opinion essentially excludes its usually known rendering. Taking into account the performed research of the term “venture capital” it is possible to distinguish between two major approaches: the American one and the European one.

The American rendering of the term “venture capital” can be called limited. In the USA venture capital is understood to be acting at early stages of high-technology enterprises formation. National Venture Capital Association (NVCA) of the USA defined “venture capital” as the capital provided by professionals of the sphere supporting the start-up and quickly developing companies having substantial potential of competitive development on a managerial line. From the point of view of J. Nuechterlein, an America economist and Chairman

of “NGC investment”, venture capital presents financing companies at early stages on the contrary to shares buyout or diversification. According to the American approach the deals of MBO/MBI type (management buy-out – buy-out by external management, management buy-in – buy-out by internal management) should not be included in the venture capital. Venture capital is understood as a form of direct investment.

The European interpretation of venture capital is wider. In Europe this term includes all types of share investments at all stages of development of medium and small companies, which use high technologies and are not quoted at stock markets. In Europe venture investments include nontraditional deals with purchase of the shares using credit resources, investments into companies that are in unsatisfactory financial condition (hereinafter named as problem companies) and initial public offering of the stocks (IPO). Due to such a wide term venture capitals in Europe are often identified with private capital investments, which present any capital investments in private closed companies. In the USA deals with the use of credit, investments in problem companies and IPO are not determined as venture capital. However, statements of the American specialists, whose interests in venture funds management, while working with developed companies, lie in the field of reduction of major investment risks, are not fully correct. High risk element stays in developed companies because in majority of cases it is connected with innovations in organizational and managerial plan.

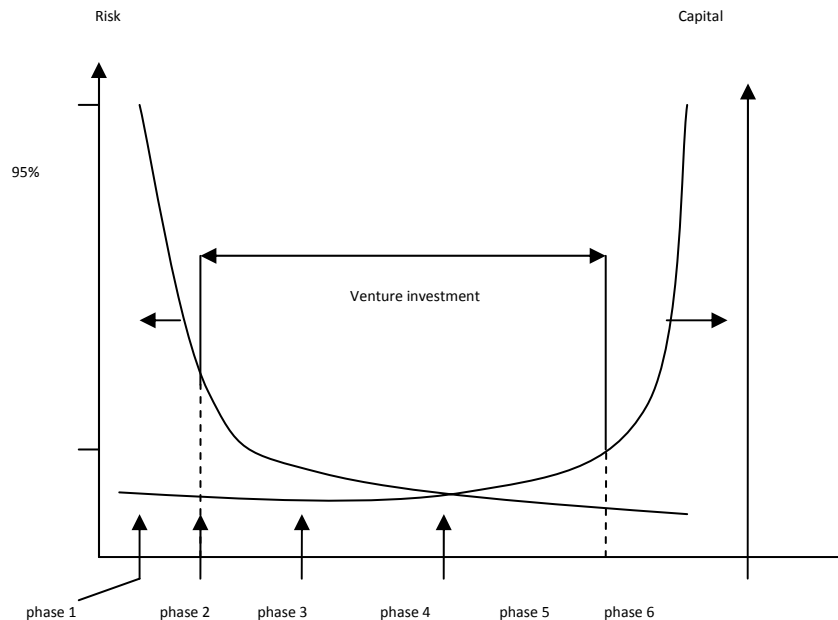
In the Concept of Venture Capital development in Russia a rather brief definition of venture capital and venture investment is given: the venture capital is a source of funds for direct investment in private enterprises, shares of which are not quoted and not sold at stocks in exchange to share in their stock capital.

In venture business glossary issued by Russian Association of Direct and Venture Investments (RAVI) this term is added in relation to venture used for scientific research, research and development work, new enterprises purchase, increase of working capital and balance structure improvement.

In our research the European interpretation of venture capital is used in relation to specific economical and political status of Russia, innovative investment of enterprises, which are of high risk at early stages of their development, as well as to enterprises functioning at the stages of an innovative business expansion restructure process, transformation, diversification, and others. From our point of view, venture capital is a financial and credit form of innovative interrelation provision for real and financial sectors of economies being a unity of economic affairs of business units in formation and use of financial assets and entrepreneur skills of a specialized innovative investor, aimed at the realization of innovations oriented on high profit or other effects. We consider this definition to be quite substantial in complex essence and contents of the venture capital.

The analysis showed that in all variety of venture capital definitions there is a problem of systematic definition and rendering of venture investments in innovative interrelation of business units in real and financial sectors of economics. We think that the study of the essence and showdown of the venture capital contents must be performed regarding the development of the objects reason for venture investments and units, forms and principles of its realization. We are referring to innovative interrelation of business units in real and financial sectors of economics, which provide start-up and development of venture relations.

Figure 1. Possibility of phase use of venture form of financial and credit procurement of an innovation cycle



where:
 phase 1 – creation,
 phase 2 – development engineering and invention,
 phase 3 – research and experiments,
 phase 4 – real innovation,
 phase 5 – distribution and commercialization,
 phase 6 – innovation consuming.

Innovation interrelation investment through the system of phase use of venture capital in innovation processes is given at Figure 1. It is shown that innovation processes start in creation phase of fundamental sciences, activate at phases

of production and market and transform at phases of utilization of these processes results in tradition. Ideally venture company activity should result in production of a pilot sample (point B). Exactly from this moment standard algorithm of investment, functional and cost analysis and mass production are started. The right curve shows that relative costs of venture capital in case of mass production exceed corresponding capital investments in fundamental science twice. Basic principles of venture investments are market mobility and adaptation, venture case localization and diversification, investments diversification and integrity.

Analysis of foreign and domestic practice of venture investments in innovative interrelation of business units showed that real profit rate of the whole venture case in conditions of perfect competition usually results in 39% to 63% (at inflation rate of 4%) substantially prevailing investments effectiveness in other sectors of economics. In Russia this index is fixed in the range of 17%-25% with a higher level of inflation. Venture investments funds input in invested company in the middle of the XX century was: 44% in financial management, 43% in corporate strategy, 41% in ideas exchange, 33% in marketing, current issues discussion 32%, management recruitment 10% and 7% for others.

Let's consider the key parameter of innovatively active countries in relation to the share of venture capital in the country economics. Estimation data on venture capital status in GDP shares were the following in the countries: the USA – 1%, Great Britain – 0,8 %, France – 0,3%, GFR – 0,2%, Japan – 0,05%. Annual venture investments in Russia up to 2010 did not prevail 0,02 % of GDP. As far as innovative projects and programs are unique, high-risk, high-cost and long-term objects of investment, we recommend applying mechanisms of mixed, combined traditional and innovative investment. Under combined traditional and innovative investment investor redeems costs of one innovative project realization by previous project profit. Number of innovative projects in combined scheme must be determined by relation of the budget of innovative activity of a business unit during a certain period of time to medium costs for one project. The following synthetic formula is offered for estimation of effectiveness of the combined method of capital investment in innovative projects of business units:

$$E_p = R_k (P_i/C_p), (1)$$

where:

E_p – relative net effect of innovation commercialization,

R_k – possibility of expected profit,

P_i – integral profit for the whole period of S – curve life cycle,

C_p – integral amount of expenses during the whole period of S – curve.

Based on this estimation innovative package is formed containing innovative projects different in relation to “risk – profit” scheme, which is necessary for business diversification and productive efforts of financial and economical indexes with regard to degree of risk. Risk term is an essential condition of the “venture capital” category and is directly connected to definition of expected profitability of venture investments. Higher the risk that venture investor takes under realization of project or company investment, higher the profit is expected under investment and higher is the shareholding demanded by investor as provision of assets invested in an enterprise.

Risk factors may be more or less early stage of business unit development, as well as general condition of development in the sphere, region and economics of the country in general. Classification of venture capital risks is given in Table 1.

Table 1. Venture capital risks by phases of investment process

No.	Venture investment phase	Risk functional belonging	Type of risk
1	Acquiring a share in the capital of the invested company	Incompatibility with economical, social and technological schemes	Risk of undisbursed investments
		False strategy of innovative development, ignoring traditions	Risk of alternative possibilities of capital use
2	Acquiring a share in the capital and monitoring	Production, technological, managerial risk	Risk of future losses of a business unit, its illiquidity
		Untimely estimation of the capital gains, transformation of innovations into traditions	Risk of investment resources depletion
3.	Selling a share in the capital (realization of investments)	Financial risk, absence of agreement in interest of investors	Risk of financial failure of venture investments
		Renewal of economical system scheme	Risk of necessity of new investments and violation of terms for selling a share in the capital

Risk environment of investments of a ventor investor is closely connected with income group, realizing venture capital specifics defined by principle “risk – profit” which is as it is shown in Table 2, distinguishes it from banking investments or investments of a strategic investor. These differences are in the following.

Table 2. Differences of venture investments from other types of investments

Investment resources	Banks	Strategic investors	Venture investments
Stock investments	–	+	+
Credits	+	–	+
Long-term investments	+	+	+
Risk business	–	–	+
Investors part in company management	–	+	+

First, venture investment is impossible without principle of “approved risk”. It means that capital investors preliminarily forecast possibility of stock losses when invested company has high risks in exchange to a higher profit rate in case of success.

Second, investments of venture type suppose long-term investment of the capital, where the shareholder plans the term of investment for 3 to 5 years in general to verify the project to be prospective and 5 to 10 years to sell share in the capital.

Third, risk investments are placed not as credit but as a share in capital stock. Incorporated business units as a rule use law status of partnerships and capital investors become partners with responsibility limited by amount of share. In dependence of the share which is set at the moment of investment risk investors have right for corresponding future profit gains from the invested company.

Fourth, venture entrepreneur apart from a strategic partner rarely inclines to acquire control stock of company’s shares. Usually this stock is around 25%-40%.

Fifth is the high grade of personal interest of investors in new enterprise success. This comes from high project risks as well as from status of co-owner of corporate venture. That is why risk investors often do not limit with investments in funds and provide different consulting, managerial and other services.

Realization of these peculiarities is observed in venture investment process of innovative interrelation of business units which passes as it is shown in Table 3, several stages. Their quantity and duration depend on the life cycle stage venture investment is performed.

Table 3. Venture investment stages of innovative interrelation of business units

Start stage	First stage of investment: Pre-start-up capital – investment needed for preparation of innovations implementation feasibility study. Start-up capital – industrial engineering of innovations and production of a pilot batch, investments needed for start of production
Investment in expansion and development of a business unit	The second stage – providing working capital for support of initial growth, no profit. The third stage – company expansion, sales growth, self-repayment achieved. The fourth stage – transitive investments for preparation of company for reconstruction into a stock company
Selling a share in the capital of a business unit	Traditional stock acquiring – acquiring ownership rights for a new company and transfer under personal control; privatization – possibility of shares acquiring by owners of company managers

A separate institutional type of risk capital market in sphere of stocks distribution is interacting with every stage of venture investments.

Comparative analysis of venture investment system of innovative interrelation of real and financial sectors of economics in different countries allowed classifying their specifics given in Table 4. Under given conditions Russian

economy has drawbacks in provision of venture investment profitability to be considered. Russian form of venture capital differs from classical form. Thus, if European venture capital presents major capital development system, in domestic capital may be characterized as a capital reconstruction more. Presence of major scientific and technological separation from worldwide level in a range of industries is observed. Essential volume of venture investments in developed countries is realized on a base of big industrial enterprises which possess technological, stock, technical, intellectual, financial, and credit provision. Their transfer channels provide interrelation and approval of market demands and innovative possibilities. Besides that prevailing form of domestic investments do not participate in high-technology sectors of economics limiting formation of domestic competitive advantages.

Table 4. Comparative characteristics of venture capital specific features in the USA, Russia, and Europe

Specification	The USA	Europe	Russia
Invested business units	26% – Early stage, 41 % – Expansion, 10% – Shares acquire, 22% – Development	23% – Early stage, 52,8% – Expansion and development, 19% – Shares acquire, 5,2% – Others	15% – Early stage, 85% – Development (Reconstruction)
Specialized participants	Entrepreneurs, big industrial companies	Bankers, technical engineers, engineers, accountants, auditors, consultants	Financiers, scientists, engineers
Widespread form	Investment at early stage of business development	Investment at late stage of business development	Investment at late stage of business development
Finance and credit system of provision	Stock market, banks, IPO	Banks	Banks
Goal of investment	Technological innovations	Working capital	Working capital
Approach	Industry type	Type of shares acquire	Type of shares acquire
Taxation, adapted to venture industry	Yes	Yes	No
Usual market entry	Stock market (IPO)	Stock (IPO)Trade sale	Strategic partner
Presence of infrastructure for investment in young high-technology innovative companies	Yes	Yes	No

The following factors can be named positive in development of venture investment in domestic economics: presence of projects drawn to the stage of commercial use. Moreover in a range of cases launch of such projects demands relatively small share of personal investment, the rest part of necessary invest-

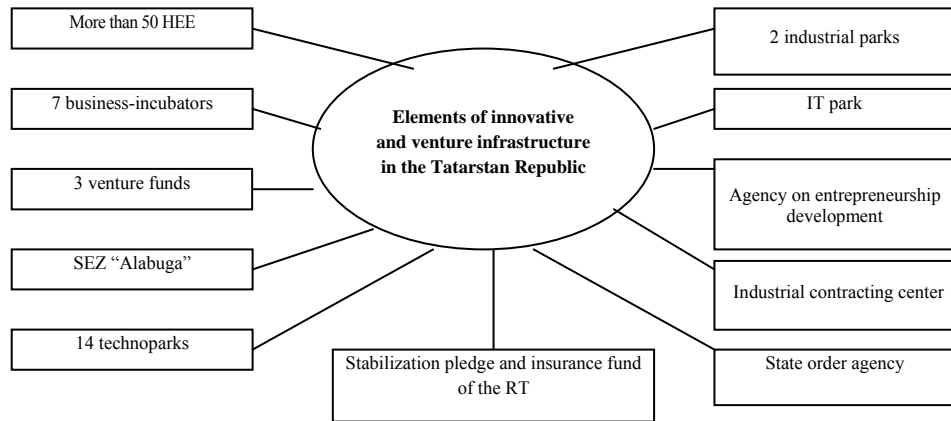
ment can provide loaned funds; presence of substantial number of projects possessing big export potential simplifying the task of attracting financial and credit resources; personnel high qualification.

At the same time contemporary domestic economics has obstacles for development of venture investments in Russia. Most of them are condition to macro-economical factors and lack of agreement on interests between business units of real and financial sectors of economics. Besides that in many projects due attention is not paid to investor motivation. Major technical advantages of technology are emphasized ignoring interrelation of innovative process with financial and credit provisioning, big industrial companies' facilities are not used in due force for development of innovative relations in economics.

Analysis showed a certain specifics in venture and innovative industry in Tatarstan Republic.

Institutional structure of venture investment system in Tatarstan Republic given in Figure 2 makes it possible to classify its objects (innovative structures demanding investments) and units (potential venture investors). Institutional system objects of venture investments in Tatarstan Republic are higher educational establishments (HEE), techno parks, business incubators, industrial and geoinnovative enterprises of Tatarstan Republic (OJSC Technopark "Idea", "Kama technopolis", special economic zone (SEZ) "Alabuga", etc.), scientific research centers, laboratories, innovative companies of medium and small business. Units of venture investments system in Tatarstan Republic are banking and non-banking credit organizations of the Tatarstan Republic, investment, leasing, factoring companies, "Venture investment fund of the Tatarstan Republic", "Cooperation fund on development of venture investments in small enterprises in scientific and technical sphere of the Tatarstan Republic", private investors. Also an integral part of venture investments are state and municipal authorities (the Ministry of Education and Science of the Tatarstan Republic, the Ministry of Economy and Industry of the Tatarstan Republic, etc.) lawfully providing development of state and business partnership in realization of innovative interrelation of business units in real economics.

Figure 2. Elements of innovative and venture infrastructure of Tatarstan Republic



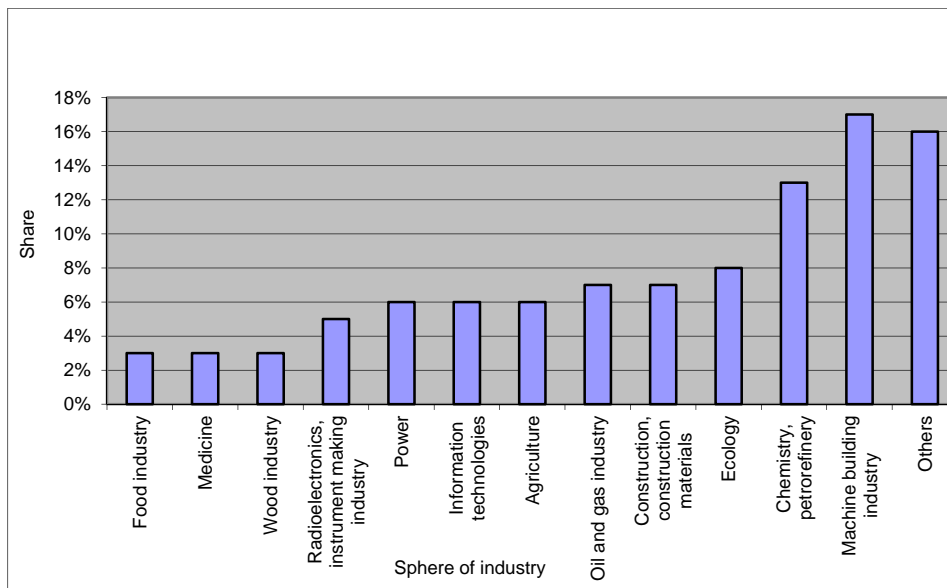
OJSC Innovative and production Technopark “Idea” is the most active unit enforcing development of venture investment in Tatarstan Republic. Database of Technopark “Idea” has more than 400 projects at different stages of development. Majority of projects are at the stage of scientific research (33%) or at stage of research and development (34%). Correspondingly 18% of projects are at the stage of idea formalization – studied by technical and commercial council of technopark and expert council and 15% of projects in technopark are at the stage of incorporation – planning and organization of production and entry to the market. Thus technopark is majorly busy with R&D work under projects.

Technopark “Idea” projects classification in different types of industry is given in Figure 3.

Analysis of the following diagram shows that projects are spread in industries in direct ratio to the grade of attraction as innovation and priority of industry in the Republic. Thus, innovative projects are mainly found in spheres of machine building, chemistry and petrochemical industry, oil and gas extraction. Therefore a certain misbalance is observed in favor of industries as stated above. It is explained by the fact that business units in the above mentioned spheres are financially stable and able to implement innovations by corporation of new structures responsible for the realization of ideas. This approach is proved by statistical figures showing that innovations are mainly invested from personal funds of big industrial companies. At the same time the goal of venture investments in innovations is in harmonic development of all spheres of regional economies including consumer market, medicine, communications, electronics, IT, bioengineering and acquiring of communicative, and synergetic effects in

this relation. Taking into consideration specific venture business oriented to receive bigger profit in comparison with alternative directions of capital investment we need to state that venture investor in some degree is indifferent in what spheres of industry to invest. It is important for him to have guaranteed profit and return to his assets. With this respect it is necessary to study possibilities of approved innovation interrelation of business units of real and financial sectors of economy realizing venture capital in innovative processes.

Figure 3. Classification of projects of innovative and production technopark “Idea” (the Tatarstan Republic) by spheres of activities



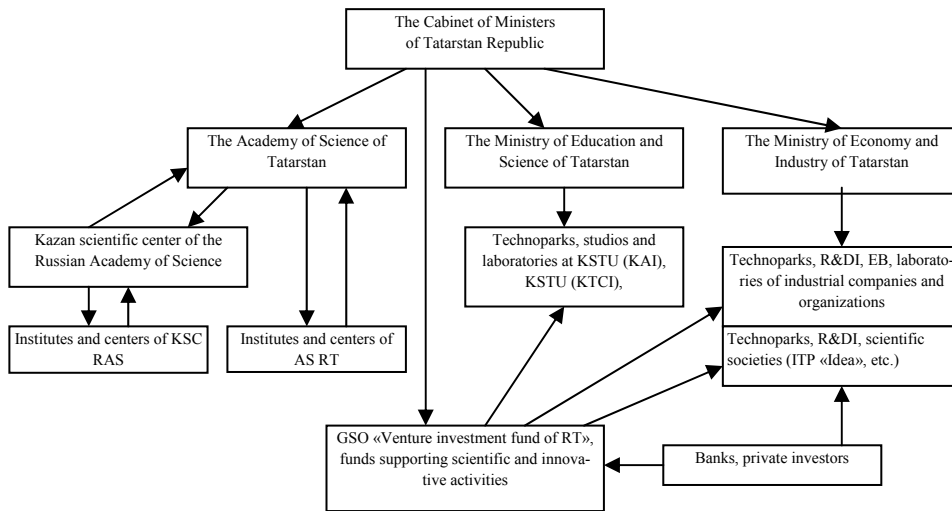
Source: Innovative and production technopark “Idea” official website: Официальный сайт, <http://www.tpidea.ru>.

Analysis of these processes in Tatarstan Republic showed that they need further development built on the following directions: creation of responsibility center for venture investment profitability, forming motivation of big and small business unit for realization of their innovative facilities, financial and credit, institutional provision of innovative interrelation of business units of real and financial sectors of regional economies, innovative direction of local science.

It is considered reasonable to create united center on innovations and technologies transfer in Tatarstan under the Academy of Sciences in the Republic which would accumulate innovative projects ready for investments. State and private partnership organizational issues among venture investors may be solved

by creation of venture funds created on state and private assets. At Figure 4 existing scheme of venture investment objects in Tatarstan is given. In acting system of venture management the Cabinet of Ministers of the Republic of Tatarstan determines priority of scientific development in the republic and transfers them to Academy of Science of the RT and the Ministry of Economy and Industry in the RT. Based on these priorities every ministry and the Academy of Sciences of the RT promote development of these or those projects in corresponding institutes, laboratories and technoparks they are working with.

Figure 4. Model management of venture investment objects in Tatarstan Republic



In the course of our research under these directions of development it was discovered that the major problem is in the fact that is distanced from scientific society of the republic, its innovative direction and exists separately notwithstanding rich informational, technical, institutional and laboratorial bases. Interrelation among technoparks at HEE, R&DI, laboratories of ministries and departments, enterprises and organizations of Tatarstan Republic is unordered. This conclusion allows emphasizing necessity of coordinated interrelation of financial, credit and institutional provision of development in innovations in Tatarstan Republic. The Ministry of economy and Industry of the RT as well as the Ministry of Education and Science of the RT closely interrelate only with innovative technoparks in terms of their responsibilities under their activities. In contemporary conditions it is necessary to organize work of major participants in

venture investments in a united system with defined executives and units of responsibility on results of activities in scientific projects of high priority.

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