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Development of the System of Investment Support of Projects in the Industrial - Innovative Development of Kazakhstan

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ABSTRACT

The purpose of this study is to determine specific features of investment regulation mechanism aimed at providing effective implementation of projects in the context of industrial-innovative development of Kazakhstan. There the used the system of general scientific and special research methods providing the possibility to disclose processes and phenomena in their interconnection and development. In particular, these methods included assessment, theoretical modeling, classification, grouping and logical generalization graphical method, formalization, structural and logical analysis. The study concludes that Kazakhstan needs to focus on further development of innovative infrastructure and venture capital, that is, to build a complete chain on innovation support. The article identifies ways of venture capital development (domestic venture capital investments, investing abroad, investing in the country and abroad through public and / or private corporations, as well as the creation of technology companies). The authors proposed to consider financing the technology outside the country (by the example of Singapore), which will give the possibility to obtain venture funding experience to implement the transfer of relevant technologies to Kazakhstan and to attract more foreign investment to the country.

KEYWORDS
Investment support, innovative development, investment process, venture investment, economic environment

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Introduction

An effective national innovation system is a key mechanism for the development of innovative potential of the economy and the development of a qualitatively new competitive economy based on innovation. In this context,

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innovative development is the foundation that determines the economic power of the country's businesses and its perspectives i the world market. Innovative development is inherent in most enterprises of the developed economies, being both a factor and a consequence of economic growth of these countries. It is generally accepted today (Samuelson & Nordhaus, 2003; Zhuravleva & Malyshev, 1997), that innovative development should be considered as the forming process. Attraction and effective investment of financial resources presents an integral element of this process. Investment activity is among the factors that ensure economic development, including accumulatio of funds and their effective use (Bocharov, 2008; Igoshin, 2001). Therefore, functioning of the national innovation system can be considered effective only through the combination of qualitative and complementary components of investment support of innovative development.

Implementation of innovative development model of the Kazakh economy depends on a number of innovative projects that require a significant amount of resources as well as various sources and forms of their financing. In the post-crisis period, traditional approaches to the financial support of innovation and investment activity do not always bring positive results. The main obstacles faced by companies in the present economic conditions include the lack of own funds, high cost and low availability of loan capital, insufficient development of effective financing mechanisms, in particular, venture mechanisms, which are widely used in world practice. It is therefore necessary to find new tools of innovation management in the context of its investment planning, which is proposed by the authors of this study as a new direction of search for promising solutions.

It should be noted that investment support in terms of effective implementation of projects in the context of industrial-innovative development of a particular country (Kazakhstan) should be maintained at the two main levels: as specific areas of innovative activity (i.e., the aggregate of innovative projects having similar objectives, for example, improvement of certain quality parameters of a number of products) and as the individual innovation projects being implemented or planned in the country. In this regard, practical issues related to investment potential management as well as factors influencing the investment activity of domestic industrial enterprises have been little studied, which determines practical significance of this research.

Literature Review

The above problems were considered in a large number of research papers, which confirms relevance of this topic. In particular, significant contribution to the development of theoretical foundations of innovation and investment processes was made by many well-known researchers (Bloch & Bugge, 2013; Blind, 2012; Bleda & del Rio, 2013; Geels, 2013). Problems related to innovative modernization of the economy in general, and innovative-investment developments of the enterprises in particular, were discussed by the Russian researchers (Nurlanova, 1998; Ospanov & Mukhambetov, 1997; Orynbasarova, 2015). Both domestic and foreign scientists considered innovative development in the context of innovative potential development of both countries and separate enterprises identified effective methods related to commercialization of innovations (Hekkert, 2013), the integration of innovative project management in the company's general management system (Meissner, 2013). However, self-

financing deficit causes uncertainty with respect to the development of investment mechanism components in the context of effective implementation of projects related to the industrial-innovative development of a particular country (Kazakhstan). Solution of this problem demands further theoretical and applied studies.

Despite the large number of studies, their scientific and practical importance, as well as a number of issues related to investment support of innovative activity in Kazakhstan should be clarified and new approaches should be provided. In particular, investment mechanisms of innovation processes need further research and improvement.

Aim of the Study

The purpose of this study is to determine specific features of investment regulation mechanism aimed at providing effective implementation of projects in the context of industrial-innovative development of Kazakhstan.

Research questions

The above purpose implies identifying specific features of investment support of the country's innovative development based on identification of factors, principles and regularities that will be reflected in the development of investment support mechanism focused on innovative development of Kazakhstan.

Methods

The authors used the system of general scientific and special methods to study processes and phenomena in their interconnection and development. In particular, these methods included assessment (assessment of the country's innovation and investment potential); theoretical modeling (selection of optimal management decisions in the implementation of innovation and investment activities, elaboration of investment support mechanism to foster innovation activity); classification, grouping and logical generalization (classification of investment support indicators); graphical method (visualization of the theoretical and analytical aspects of the presented material), formalization (forming the components of investment support for the country's innovative development; structural and logical analysis (development of investment support mechanism of the Kazakh innovative development), etc.

Research theory was based on the key principles of modern economic theory and advanced general management concepts, strategic, operational and project management concepts discussed in research papers by domestic and foreign scholars, dedicated to innovation and investment management issues. The empirical and information background of this study is presented by normative and legislative acts regulating investment support of innovative activities in Kazakhstan as well as statistical data of the Kazakh enterprises.

Data, Analysis, and Results

Innovative development requires a system approach, because it is not considered in terms of unilateral cause-and-effect relationship leading from R&D to innovation; it presents interaction and feedback within the entire set of economic, social, organizational, financial and other factors that determine the

development of science-intensive industries and commercialization of innovative activity (Chetyrkin, 2001; Manaenko, 2013).

Innovative development should be understood as a qualitatively new level of balanced economic development determined by the introduction of innovative programs that ensure renovated capacity of the country's economic potential. Investment support plays a key role in the implementation of innovative development. In this context, technological progress has an enormous impact on the industrial development, which is embodied in the form of innovation (Meissner, Gokhberg & Sokolov, 2013).

Economic research papers consider the category "innovative potential" at different generalization levels (innovative potential of a particular innovation, subjects of innovation, economic environment, enterprises, industry, region, country, etc.).

The principal difference between the innovative and technological enterprises is determined by the fact that the first focus on the market potential of innovations, market environment, the market's ability to perceive innovation, the company's efforts aimed at sales promotion, market capacity assessment, promotion of goods. In these circumstances, the investment and innovation activity becomes complex due to the development of investment resources, which determine investment needs, related to the implementation of innovative programs.

The key specific feature of investment support of the country's innovation potential is determined by its role as a tool of expanded capital reproduction in the enterprises (Meissner, 2014). This approach gives grounds to consider this support as a major source of investment resources and funding for all activity areas of the national economy (Sergeev & Veretennikova, 2001). After all, investment support of innovative development is a key factor in the comprehensive development of investment and innovative activity, which provides dynamic development of regional economy and gives the possibility to generate financial resources for the country's social and environmental needs.

Thus, one has to deal with investment circulation (Weber & Rohracher, 2012), when investment activity is the basis for innovation, resulting in a continuous extended reproduction of fixed capital of the economic complex, which creates opportunities to meet the growing investment needs. Therefore, formation of investment resources should become the conceptual basis of investment support for the country's innovative development.

Presently, the world's leading scientists believe that innovation can be seen as a form of investment (Berg et al., 2015). Indeed, thanks to investing in innovation projects one can obtain fundamentally new economic effects, which can't be achieved by using conventional investments. In particular, these effects include:

- Production shift to the advanced technological mode;
- Creation of intellectual assets;
- Rapid growth of business costs;
- Development of new market outlets, etc.

Scientists believe that innovative investment presents a form of real investment, carried out in order to implement technological innovations into practical activities (Fainboim, Last & Tandberg, 2013).

Investment of innovative projects is based on a number of principles. Compliance with these principles determines the effectiveness of investment in innovative projects. One should consider the following basic principles (Marenkov, 2003):

Consistency. Project implementation presents a complex system, which includes a number of subsystems and components that provide achievement of the main objective - reliable operation of the economic system. Therefore, project implementation requires solution of complex system issues related to the overall structure of the project and to the mechanisms of interaction between its components and the external environment. Project implementation involves investors, businesses, design and construction companies, banks, insurance companies, etc., which have their own interests; however, all of them should contribute to attaining the main goal of the project – project implementation for their own benefit.

Adaptation costs. Adaptation costs of the innovation project refer to adaptation to the new investment environment. Adaptation costs include loss of output caused by production reorganization, additional retraining costs, equipment changeover, time loss, etc.

Financial ratio of terms. Obtaining and spending should be carried out in a timely manner; investments with long payback periods need to be financed by long-term borrowings (long-term bank loans and bonds).

Limited assets. Implementation of innovation projects should be performed keeping in mind that the number of reproducible and moreover, non-reproducible assets is limited, which may lead to subsequent reorientation to using other types of assets. In addition, feasibility study of modernization, reconstruction and technical re-equipment of fixed assets should take into account reduction of equivalent fuel costs for electricity production.

Comprehensiveness in building interconnections and components that form the mechanism of investment support for innovative projects. This principle can be summarized as follows: various controlling impacts on the innovation-investment system should take into account all various factors influencing the effectiveness of innovation and investment. Development of this mechanism is generated by the need to ensure stable functioning of the country's economy.

Considering components of the investment mechanism related to the innovation and technological development of Kazakhstan, one should keep in mind that selection of innovations that affect the sequence and methods used to solve problems of innovation and investment activity will depend on the impact of each type of innovation on the novelty and management tasks of innovation and investment activity. Development of the investment mechanism aimed at the innovative-technological development in Kazakhstan has the following objectives:

1) Managing project profitability and riskiness;
2) Creation of transparent information flows of projects to ensure investor's confidence in the right choice of investment objects;
3) Permanent improvement of Kazakhstan's investment image;

4) Determining strategic development directions of Kazakhstan.

The main goal of building the investment mechanism model describing the innovation and technological development of Kazakhstan is to ensure a certain level of return with minimal risk of attracting investment funds for the implementation of innovative ideas.

In this regard, investment support of the industrial-innovative development of Kazakhstan involves consideration of the logical sequence of investment resource development through public-private partnerships and investment in the key modernization stages of the national economic system as part of the investment mechanism of innovation and technological development of Kazakhstan (Figure 1).

As indicated in Figure 1, venture funds play a significant attention role in investment support of economic modernization and in the increase of innovative activity in the real sector. Venture mechanism of financial support of businesses differs from the traditional bank loan services.

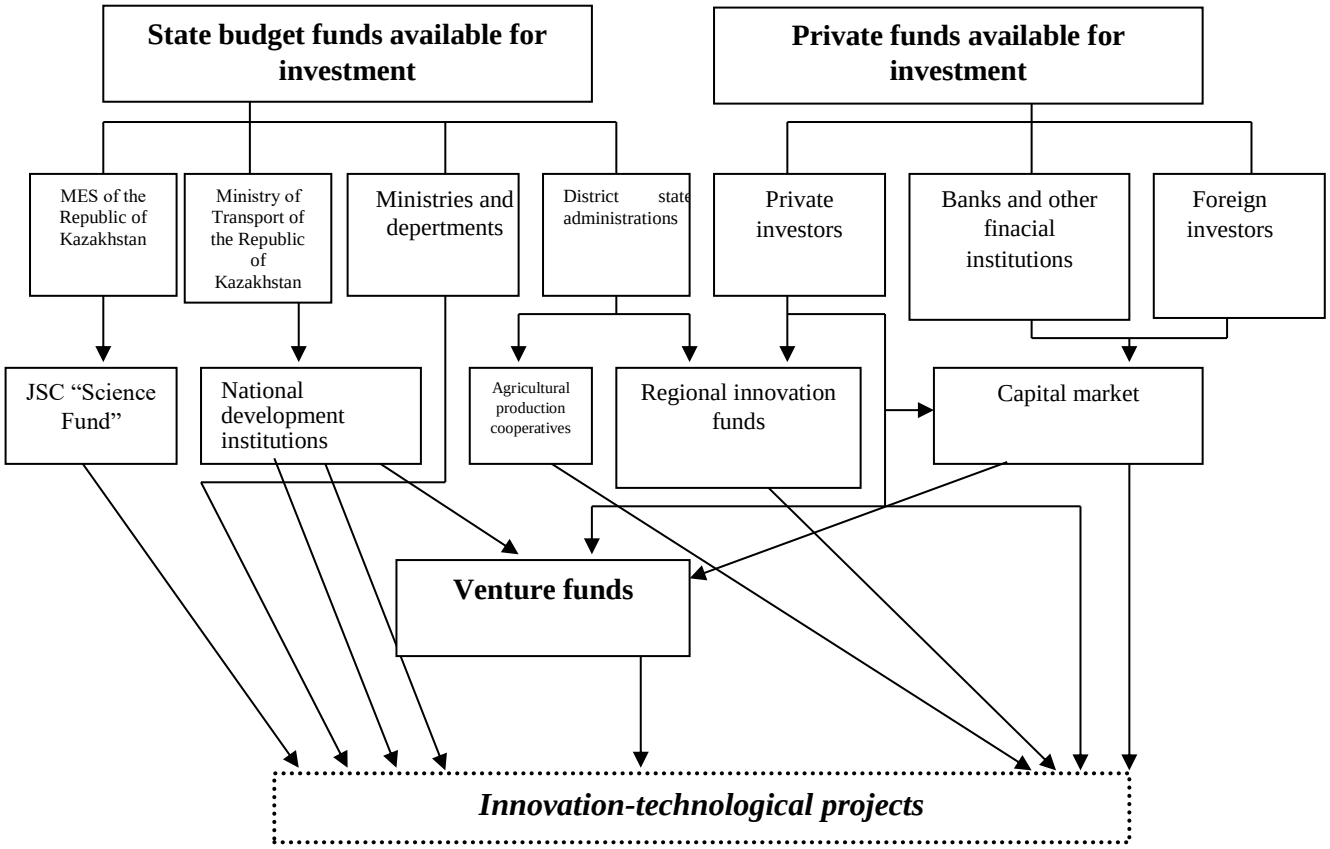

Figure 1. Investment mechanism of innovation-technological development of Kazakhstan.

Note: compiled by the authors

National development institutions are endowed with budgetary financial resources required for crediting investment and innovation projects, as well as

for participating in the statutory funds of the created and modernized enterprises in the manufacturing industry and infrastructure. They are intended to serve as a "locomotive" of economic growth and the development of export-oriented model of the national economy by supporting investment and innovation projects that for various reasons can not be funded and implemented by the private sector. These projects should contribute to the development of non-resource sectors and to modernization of the existing and creation of new industrial facilities, in turn contributing to diversification and improving competitiveness of the national economy.

The first difference lies in the mechanism of unsecured funding by the investor, who can only claim the portion of the assets of the invested enterprise, proportionate to the investor's share in the registered capital. In the case of successful business development, the investor can sell its stake and get a substantially higher amount compared to the invested capital. (For example, the initial cost of the package of shares of the company-manufacturer of telecommunications equipment, acquired by Sequoia Capital was $ 2.5 million, and a year later -$3 billion). Conversely, if the project is unprofitable, the investor shares the financial risk with the entrepreneur.

The second difference lies in the fact that investors are actively involved in project management in all phases of its implementation.

Thirdly, venture funding is closely related to the high-tech production, despite the fact that such projects are characterized by high degree of uncertainty. Empirical observations testify to the fact that this area has the largest potential reserve for gaining profit.

Domestic venture infrastructure presents a product of the state program aimed at the development of the national innovation system (NIS). The top-down construction of venture infrastructure with direct state support is a rather trivial example of large-scale projects aimed at diversification of the economy. The Kazakh venture capital infrastructure was based on the Israeli and Singaporean patterns. They were based on the creation of a "grandparent" of venture infrastructure - public fund of funds. Kazakhstan borrowed infrastructure from Israel and methods of integration with the global industry – from Singapore.

The choice in favor of Israel was quite justified - the Republic has its own resource base providing offers from local project initiators. The quality of these proposals is another story. Due to the high level of education and a decent financial support for R&D, Israel did not experience any problems with the generation of innovative proposals and with shortage of technical specialists. In parallel to the venture funds, the country developed a network of technological clusters, where universities and research institutes had sufficient resources to transform ideas into the attractive business projects. However, the network of national technological clusters hasn't justified its existence. Technological clusters can not generate sufficient professional projects – they lack innovation managers (Gupta, 2014).

Business environment presents the second difference from the Israeli model. The entire Israeli economy rests on small and medium-sized companies; in Kazakhstan, the share of these businesses in the GDP structure does not reach 30%, which leads to critical proportions - ten project initiators to one manager.

Kazakhstan borrowed the scheme of integration with the global venture industry from the Singaporean venture infrastructure. This implied building an open innovation system both for the capital, and for technology. Today, the National Innovation Fund (NIF) is a shareholder of 5 foreign funds located in the innovative activity centers - the United States, Southeast Asia, Germany, and Israel. Total investments in foreign funds make about $ 30 million. NIF has an agreement with each fund on access to the offering database. There are certain prerequisites for the transfer of technologies and for attracting foreign capital and expertise. However, the Kazakh integration into the global venture capital industry is insufficient.

Insufficient development of capital market in Kazakhstan has a negative impact on the "exit" of venture capital investors from the funded projects.

Development of venture capital in Kazakhstan requires a special holistic state mechanism, which should include simplified administrative procedures, creating the essentially updated regulatory framework, changes in taxation (focusing its motivation on the development of venture innovative investment in the real sector of the economy), changes in anti-trust measures taking into account the peculiarities of investing in the new, high-growth SMEs, the introduction of equal rights of small and large companies in terms of competition for government contracts, including R&D contracts, direct financial participation of public authorities in the development of venture capital investment in the country and its regions.

Determining the criteria of venture funds presents the most topical issue.

Pursuant to the experience of Western countries, venture capital funds typically invest shares of companies that are not registered on the stock exchange, they do not trade openly in the stock market and operate in knowledge-intensive industries (Grigoli, & Kapsoli, 2013). As a rule, venture investors buy shares, which number is less than a controlling parcel of shares. Their calculation is based on the fact that the company will use the obtained direct funding to create profitable business and it will enable them to profitably sell the acquired stake later, thereby obtaining a good profit. Specific feature of venture capital investment fund lies in the fact that that the controlling parcel of shares of the investee is usually kept by its managers. It should be noted that within the framework of an innovative project funded by venture capital funds, the venture capital firm independently assumes technical, management and price risks, and investors bear only the financial risk. At the same time, venture capital funds do not provide only financial assistance, they also assist the new company in the market research, find potential customers, send their own managers to establish business processes. Another feature of the venture fund is the payback period and the development of innovative projects, however particular focus of the company is very significant; depending on the project complexity, its implementation may last much longer.

Keeping i mind the aforesaid, it seems appropriate that the following key features of a typical venture fund be highlighted:

1) High risk;
2) Medium and long-term investments;
3) Higher income from investments in the form of capital gains rather than in the form of dividends;

4) Lack of guarantees (pledge, mortgage) for the venture capital fund;
5) Focus on SMEs with high growth potential;
6) Return on investment is carried out when the company enters the stock market with shares, usually through selling the share fraction with accreted value by the investor.

One should determine work and managing rules of venture funds. In this regard, competent authorities should develop standard work and managing rules of venture capital funds to be subsequently approved by the Government of the Republic of Kazakhstan.

In turn, venture capital funds will adopt their internal documents upon the standard rules taking into account their innovative sectoral focus.

At the same time, these standard rules should determine general regulations for all state bodies and institutions involved in innovative development in terms of the creation or participation in the shares (equity capital) of venture capital funds and legal entities that will be able to get venture capital investment.

Alternative development of risk (venture) financing

Along with transition of the Kazakh economy to innovative development venture capital industry will become an integral part of the national innovation system. By financing small and medium innovative enterprises keeping in mind that other financial sources abstain from risky investments and providing high growth of companies, venture capital investment becomes a trigger for modernizing the existing production facilities based on R&D.

Innovative development will provide further development of the venture industry; however, this requires a more favorable investment climate, which is closely linked to the presence of an appropriate legislative framework, creating optimal conditions for scientific and technological progress and economic development, which does not prevent the development of free enterprise and self-regulation industry in a free market environment. Here, preferential taxation is the most important factor that stimulates the development of high-tech production of competitive goods. This contributes to greater understanding and joint efforts aimed at solving common problems of economic recovery.

Judging by the experience of other countries, the greatest success can be achieved only by means of closely interaction between the public and private sectors in the implementation of public policy. That is, in order to attract private venture capital at the growth stage, the state should and can reduce the risk for private investors through investment, as a constituent and passive partner with a minor stake. Firms supported by venture capital played a key role in the innovative economic activity during 1990s in the US, UK and in other countries.

Thus, proceeding from the international experience, it is possible to determine several ways of venture capital development. These include venture capital investments within the country, investing abroad, investing within the country and abroad through public and/or private corporations, as well as the creation of high-tech companies.

Israel presents an example of venture capital investments within the country. This was determined by Israel's own strong scientific and technological developments that were stimulated primarily by the state.

Singapore presents an example of foreign investment. Having regard to the stage of venture capital development in the country and keeping in mind the absence of own innovative projects, the state fund "Temasek" has been investing in foreign venture capital funds that allows the country to develop relations in the field of venture business, to carry out transfer of technology and to attract foreign capital.

Japan presents an example of investment through corporations. Japanese corporations provide major investment in small promising high-tech companies established both in Japan and abroad; this allows corporations to save their own R&D costs and, in addition, to fund promising projects “outside” the main business of the corporation.

Another example is Chile. This country had unsuccessful experience in financing large R&D projects and focused on the acquisition of low-cost technologies in the agricultural sector, the creation of businesses based on acquired technologies and on further sale of the created companies.

Thus, Kazakhstan presently need to consider the Singapore example, which will provide the possibility to get venture funding experience, to transfer the required technologies to Kazakhstan and thus to attract more foreign investment to the country.

In addition, venture funding can be optionally developed by means of business angels. Business angels are wealthy individuals who use their own money (and often their own entrepreneurial and business skills) to support companies at early stages of their development. These people differ from other funding sources by their wealth and probably insight. Besides, there are other benefits: business angels fund companies in the early stages, they have business experience and knowledge of the industry, they can provide greater support to managers of investees during the unfavorable period, their plans are long-term, operational; therefore it is proposed to establish the principles, conditions and opportunities for the development of relevant environment for "business angels".

Additionally, one can attract large domestic companies, such as “Kaz Munay Gas”, “Kazakhmys”, ENRC etc., with a view to create own funds, which will acquire the necessary technology abroad, and will develop companies in the world market, by offering not only raw materials, but also products with added value.

In addition, before the large-scale use of venture capital, Kazakhstan needs to start increasing venture investment productivity through the development and promoting interest of its own public stock market.

Venture capital investments are developed in an interconnected world, where innovation and exchange of ideas are encouraged. This sector funds development of many new technologies and markets. Being steadily expanded, venture capital does not give explicit preferences to any specific industry. Venture capital is united on a global scale, which is reflected by the fact that new breakthrough innovations can take place anywhere in the world. In order to get access to the best opportunities, venture capital funds are expanding geographically, focusing at the same time on specific industry sectors. Venture capital funds also specialize in sectoral investment. In addition, venture capital investment plays a crucial role in promoting innovation as well as R&D

achievements in a number of technology-related fields, including biology and medicine, alternative and renewable energy sources.

In today's global economy, local knowledge, skills and technology are not sufficient for a country to remain competitive. There is an urgent need to maintain active links with the rest of the world. Cooperation in the R&D field as well as strong competition in the domestic market are essential preconditions for the development of innovation and technology in the emerging economies.

Improving the investment climate for innovative companies, creation and implementation of management reform programs, removing obstacles to competition and promoting the development of new knowledge and skills will become a good stimulus for the development of innovations.

In order to overcome isolation of research institutions from commercial and industrial enterprises, and to increase their co-operation, they should be stimulated by means of mini-grants, grants and venture capital that will provide the possibility to cope with the lack of projects and will allow stimulating private R&D in companies. Venture capital will get more opportunities provided broad participation of the private sector in the risk allocation and in the selection of venture projects. This requires active state involvement, since venture capital does not demonstrate high performance in the early stages on a standalone basis.

Thus, Kazakhstan needs to focus on further development of innovative infrastructure and venture capital, that is, to build a complete “chain” of innovation support. One should also expand the possibility of venture capital funds in terms of direct investments in innovative firms, both domestically and abroad.

In other words, Kazakhstan faces an acute problem of capital sources to finance innovative enterprises, especially in the early stages, and especially in the field of knowledge-intensive industries. Well-organized and managed venture capital may play a proactive role in solving this problem.

At the same time, venture capital development is instructive for Kazakhstan mainly in two aspects: in terms of its negative experience and I terms of finding solutions to the problem, taking into account national economic environment.

In addition to venture capital investment, attraction of financial resources to innovations is associated with the commercialization of innovations and with the creation of conditions required for the promotion of high-tech products. N. Marenkov (2003) considers commercialization as the process that implies allocation of funds for innovation and phase-by-phase control over their spending, including the assessment and transfer of completed and developed innovation results. In contrast to the command-directive economy, in which financing, innovation management and the transfer of the results were carried out separately, market commercialization processes combine these functions in order to focus them on a positive commercial (i.e., self-supporting) result.

The problem of research results implementation that remained unresolved from the time of the command-directive economy in Kazakhstan keeps its relevance today. Partial removal of the previous interdepartmental barriers resulted in a massive strengthening of horizontal linkages and created a new mechanism for concerted solutions, synchronization of funding within the full

cycle – justification, development of innovative projects and implementation of their results.

Commercialization of innovations was practically absent in the command-directive economy. The need for innovation was determined by each industry, based on its production profitability. This effectively excluded consideration of technology related to the consumption of products and services, which lead distortions in the pricing of innovative products, excluding the effect and costs. Solution of these problems requires a new, integrated technology related to commercialization of innovations. This technology is impossible without development of a new innovation infrastructure that could replace the disintegrated sectoral branch.

In a broad sense, commercialization implies transformation of ideas into money. Previously, the scheme was as follows: "idea - money - effect (money)", i.e., transformation of ideas into money. In the market economy environment, the innovation support scheme is different: "money - idea - money." Therefore, the present obstacle to the innovation process in Kazakhstan is the lack of commercialization technology and market infrastructure support of innovation reproduction according to the scheme: "Money - need - knowledge (idea) – meeting the need - money".

The mechanism of innovative process management, which is an integral part of commercialization, should be based on a model of decision-making related to technology promotion throughout all stages of full life cycle (FLC) of innovation. This model takes into account patenting, provides conditions for the realization of growth points (start-ups), the creation of additional income companies (spin-off companies), funding through foundations, banks, public procurement, human resources, marketing, service, access to the world market, the export of technology etc. Given market requirements, various states improved their national innovation systems, localizing its contradictions and eliminating the shortcomings.

In Kazakhstan, the national innovation system as an effective mechanism for technology commercialization is only being created. Most of its elements, once created existing under the command-directive economy are subject to structural and functional reforms with regard to the requirements of both domestic and world markets. The innovation system can be based on the interaction of institutions, organizations, enterprises and companies along with commercialization of innovations (Figure 2).

Innovation promotion within their FLC has certain patterns, which can be reflected through the information and logical decision-making model. The components of decisions include:

- economically justified need for innovation;
- expected result;
- level of competitiveness (competitive advantages of results);
- finance and investment;
- resource and organizational support (staff, space, scientific equipment, etc.);
- property rights;
- information support;

- innovation (product) cost based on the use of results.

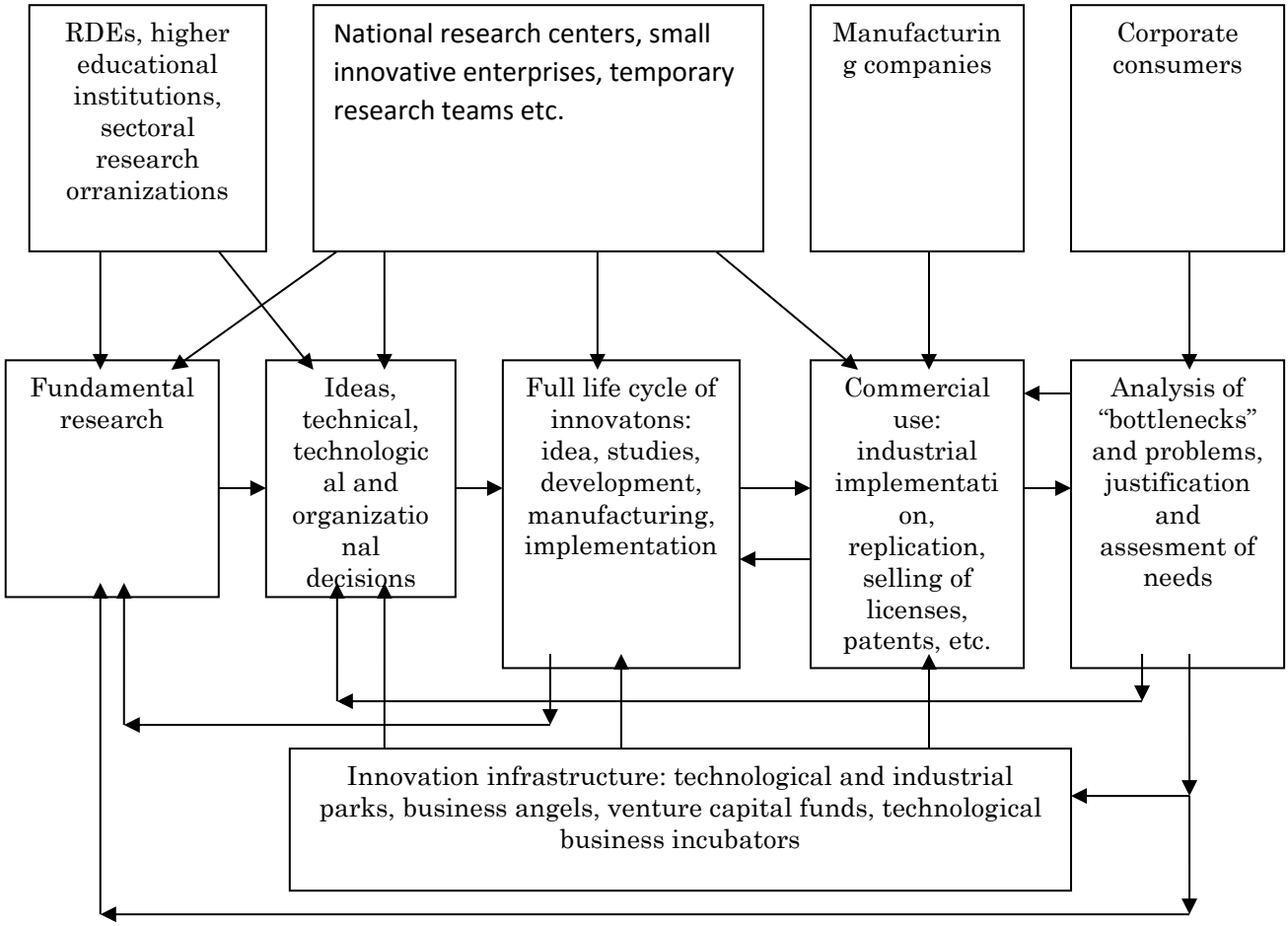

Figure 2. Interaction of institutions, organizations, enterprises and companies under high-tech sector commercialization.
Note: compiled by the authors using the source (Hemming, 2006; Engel, Fisher & Galetovic, 2014; Sergeev & Veretennikova, 2001).

Organizational support for the commercialization of high-tech sector depends on the characteristics of its management at the present stage and is inextricably linked to the legal and financial support. However, the solution of organizational problems does not exclude the creation of innovative centralized management infrastructure according to the requirements and conditions being effective at the moment.

Many countries have used prescriptive approach to stimulate innovation processes at the national and regional level (regions sometimes were the object of experiment). However, this approach can have the opposite effect without due regard to the market demand. Therefore, support and incentives should be implemented by improving management of public institutions and through development of public-private partnership.

Results of the analysis given in Table 1 allow considering the level of competence and protection of national interests, participation of businesses and society in innovation activities and technological commercialization.

Successful organization of a complex system related to infrastructure (legal, financial and organizational) support will provide the necessary conditions for Kazakhstan to achieve the level of production intellectualization close to the world standards, including development the post-industrial society. Implementation of national projects should be based on the development of sectoral and cross-sectoral infrastructure support of innovations.

Innovative development of Kazakhstan should be accompanied by a complex system of actions aimed at the creation of favorable conditions to determine development vectors under increased risk. These actions are mainly determined by the use of several components required for assessing the conditions of project implementation: risks, ecological and economic impact and the efficiency of specific innovation projects.

Table 1. Experience in organizational support of technology commercialization in the developed economies

Problems of organizational support	**Decision-making mechanism**	**Implemented in**	**Adaptation possibilities in the Republic of Kazakhstan**
Sufficiency, excessive or insufficient number of research institutes and scientists	The presence of the business sector, which owns 2/3 of all research capacity as a result of market regulators of innovation activity - supply and demand	EU	+++
	Development of technoparks, technological areas, technological complexes and multi-industry corporations	EU	+++
	Development of cluster scientific organizations, known as AN-institutions that integrate institutes and universities - technology sales offices	Germany	+++
Interpenetration and merging of science policies and technology with the industrial policy	Creation and development of new technological holding companies, oriented at the industry and commercial market (support in patenting, licensing, creation and development of spin-off companies, technology companies	Sweden (Karolinska)	++
State support to social and private initiatives	Public-private partnership development	Australia	+++
	Higher technological institutes as "virtual" research institutes of the existing companies and public research organizations	The Netherlands	+
	Building partnerships, cluster networks and platforms for public-private cooperation	EU	+++
	State support for the exchange of personnel	Germany	++
	Inter-ministerial program of cluster studies - seven programs aimed at	Finland	++

	improving the ability to cooperate across the entire research system and increasing reliability and flexibility of innovation activity, development of sectoral funds		
Selection of highly profitable results	Selection of highly profitable results of commercialization commencement	EU, USA	+++

Legend: (+++) - highly promising solution ; (++) – promising solution; (+) relatively promising solution.
Note: compiled by the authors by using the source (Hemming, 2006; Institute of International Finance, 2014; Sun, Mitra & Simone, 2013).

The main areas that need reforming (including the implementation of national projects) are:

- effective national innovation policy and its implementation;
- management of innovative systems;
- development and support of innovative clusters within the national innovation systems;
- development and support of all participants within the national innovation system;
- creation and support of innovative communications and databases in order to facilitate cooperation and partnership within the national innovation system;
- creation of favorable conditions for patenting in the public sector;
- introduction of tax incentives for R&D in the private sector.

Discussion and Conclusion

Methodology of innovative development is inextricably linked with scientific and technological progress and economic growth theory (Warner, 2014). One of the most important ways to accelerate economic development of Kazakhstan is to intensify its innovation. The leading role in innovation activity of the enterprise is played by investment security as one of the most effective forms of financing development and innovation. Investment providing implementation of the country's innovation potential refers both to consumers and investors as well as to the state and local authorities, scientific and technical organizations, suppliers, employees, etc.), and provides solution to most major tasks of economic development.

Results of this study provide the possibility to identify a number of problem research areas related to strengthening its ability to commercialize the results of fundamental and applied research, which include:

- development of the mechanism and monitoring of centralized innovation funding with a high commercialization potential;
- development and implementation of flexible forms of state support for innovative projects, specifying all the stages of full life cycle of innovation and the status of executors, including public-private partnerships and inter-private partnerships that use public funds;

- improvement of legislation in the field of innovation in order to provide the country's integration into the global innovation system;
- rational use of international best practices of technology commercialization, including diversification of scientific and industrial associations, the establishment of multi-departmental partnerships, economic clustering, stimulating consumption of new products and services.

In order to ensure the connection between science and practice in this article, it is important to determine priorities of industrial and innovation policy, which requires a sound strategic approach, because any mistake can result in irreparable losses.

Firstly, this refers to the areas of science and technology that shape the structure of the scientific-technical revolution, promising technological mode. Limited state resources should not be spent at funding pseudo-innovations based on the improvement of the existing generation equipment, thereby keeping technological backwardness and low competitiveness. Equally, it is dangerous to focus on the implementation of "raw" inventions and technologies, since the spent resources will not give proper returns.

Secondly, the economy of each state, its structure, technological needs, available scientific groundwork are original and unique. Hence, it is necessary to adapt the science and technology policies to the country's specific environment. Mechanical transfer of even the most efficient technologies in the environment that rejects them may appear detrimental and destructive. It requires careful selection and adaptation of the most efficient and promising R&D elements (Ramundo, 2013).

Mechanisms used by the state to solve the problems of investment support for innovation and technology activities in Kazakhstan, are not very effective, and often are inconsistent and fragmented, due to a number of reasons and factors: the lack of a system approach in the development of the state investment policy; imperfection of legal regulation of investment support for economic development; lack of investment management practices and control over the parameters of economic development in the crisis period; ineffectiveness of the current investment management system at various levels; insufficient use of instruments aimed at promoting regional development.

The problem of financial management quality in general becomes more topical: many available models that turned out to be ineffective should be replaced by the new ones, which could be more adequate to the emerging challenges. Major shortcomings of domestic models include the lack of effective social dialogue, underdeveloped form of economic democracy, non-observance of the rights of owners and shareholders. The problem is not simply to adjust the Kazakh management models in general and financial management in particular, but also to change the value parameters of the economy.

In order to increase interest in investment and technological innovation activities, it is appropriate to apply mechanisms and regulatory instruments, including models based on public-private partnership in the field of investment, adapted and implemented in the developed world (Institute of International Finance, 2014; Sun, Mitra & Simone, 2013). Such mechanisms include predominant use of fiscal levers (government funding, tax credits, a special

procedure for levying taxes, etc.); they are directed primarily at supporting high-tech exports and expanding domestic demand for innovative domestic products.

As regards the economy of Kazakhstan, one should also ensure legal protection of innovation performance, simplification of administrative procedures, clear regulation of innovation and technology commercialization, general increase in the attractiveness of the investment climate.

Research contribution of this paper lies in shaping investment support of innovative development of Kazakhstan based on considering specific factors, principles and laws that are taken into account in the development of investment mechanism of innovation and technological development of Kazakhstan. Practical significance of this research lies in the fact that the proposed investment mechanism of innovation and technological development and original recommendations for using the international experience in the improvement of investment and innovation activity in Kazakhstan will create sold background for the effective development of the national economy in accordance with the strategic objectives of the government. Research results can be used by the government to improve the economy.

Research prospects may consist in the development and adaptation of the complex administrative actions at various levels (at the macro- meso and micro levels) for effective implementation of the investment mechanism aiming at the innovation and technological development of Kazakhstan. In the future, one should also assess the impact of macroeconomic environment on the dynamics of investment in the technological innovation activities of industrial enterprises.

Implications and Recommendations

Thus, based on the international practice, it is possible to determine several ways of venture capital development, in particular, domestic venture capital investments, investing abroad, investing in the country and abroad through public and / or private corporations, as well as the creation of technology companies. Currently, Kazakhstan needs to consider the possibility of financing technology outside the country (by the example of Singapore), which will provide the experience of venture funding, transfer of technologies to Kazakhstan and attraction of foreign investment to the country. In addition, alternative development of venture financing can be provided through business angels.

Kazakhstan needs to focus on further development of innovative infrastructure and venture capital, that is, to build a complete “chain” of support for innovative processes. It is also possible to expand the possibilities of venture capital funds in the implementation of direct investment in innovative firms, not only domestically, but also abroad. In other words, Kazakhstan faces a topical problem related to sources of capital to finance innovative enterprises, especially in the initial stages, and especially in the field of knowledge-intensive industries. Well-organized and managed venture capital might be critical in solving this problem.

At the same time, development of venture capital practice is instructive to Kazakhstan mainly in two aspects: keeping in mind the negative experience and finding own solutions to the problem, taking into account national economic environment. It is necessary to concentrate on further development of innovative infrastructure and venture capital, that is, to build a complete “chain” of support for innovative processes. It is also possible to expand venture capital funds in

the implementation of direct investments in innovative firms, not only domestically, but also abroad.

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