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The role of research universities in the development process of National Innovation System in Azerbaijan

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Abstract

This dissertation is particularly concerned with the relationship between operation of research universities and development of research universities in the world and Azerbaijan. The role of innovations and development in technologies is crucial point in knowledge based economy. On this study the current conditions in national innovation systems in different countries as well as in Azerbaijan, the role of research universities in national innovation systems and development tendency of national innovation systems regard to development the role of research universities was learned. There was also taken into consideration different educational institutions, technoparks, business lab, inchubators that perform as a research university in national innovation system all around the world and in our country. As a source of data used several books, articles by many authors, different reports from different organizations such as World Bank, UNESCO etc. Additionally, in statistic indicators foreign countries also were taken into account as well as Azerbaijan. In this study at conclusion it is obvious that, the role of research universities in development of national innovation system follows positive tendency development, oppositely, in our country this tendency still is not observed.

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Introduction

1.1 Background of the Study

Innovation and technological changes have always been one of the main parts of growth. Furthermore, during the period of crisis and increasing international competition, innovation were taken into account as necessary source of companies' competitiveness in the world. It is obvious that businesses do not operate on an isolated island, so working in environments may have either positive or negative impact on innovations. The conception of National Innovation system is the main theoretical mechanism that takes into consideration and integrate the value of economic environment for companies' potential to innovate. In addition, the national innovation system is the basis of an innovative process of technology and information in businesses. Innovation and technology improvement are the result of a complex link among performers in institutions, universities, and government research institutes. The meaning of a national innovation system for policymakers helps to bring to light crucial points to expand innovative performance and competitiveness.

Actually, the role of research universities is an organization that provides advanced education for academic professionals, policy makers, state and private sector professionals involved in complex international economies of the 21st century. In addition to supporting economic development, these universities have major social backgrounds, serving as cultural institutions, public comment and criticism centers and intellectual centers. Coming to the role of research universities in national innovation system, there should be paid attention on three frameworks- the "national systems," "Mode 2," and "triple helix''. These frameworks take into account a part of the research university, the importance of strong links between universities and other institutional actors in the economy, in the knowledge-based economies innovation processes. And both "Mode 2" and the "Triple Helix" argue that interactions between research universities and industry, in particular, have grown. The Triple Helix

dissertation points out that the Innovation and Economic Development Capacity in the Information Society plays a more important role for the university and creates new institutional and social formats for the production, transfer, and application of data, dependent on university, industry and government elements.The role of the university in the information society comes from a few specific developments. The impact of a large government policy on the strengthening of universities and other society, in particular, business contacts, as well as the tendency of firms to use research infrastructure for R & D purposes, and hence, to the state that provides a large part of the University's funding.

This framework is very limited in relation to the change of the characteristics of industry and government research institutions. However, failure in all these frameworks is a definite principle to evaluate the power of such relationships and indicators to guide data collection.. Successful cases of government role in interaction between research universities and national innovation system, such as US Bayh-Dole Act that allows private sector companies to purchase patented research from universities backed by public funding. Exemplary examples in the Asian region, such as the NUS Entrepreneurship Center of the Singapore National University, Tokyo University, Tohoku University, and the Kyushu University of Japan, have been instrumental in joint research by researchers in the region. Korean Science and Technology Institute, Tsinghua University in China, Hong Kong Science and Technology University, Indian Mumbai Technology Institute, Malaysian Multimedia University, Mahidol University of Thailand and National Taiwan University.

Considering Azerbaijan's experience with the role of research universities in the national innovation system, there are a number of important issues. Educational institutions play a key role in the development of the national education system. On the one hand, the number of technoparks grows, as the industrial groups increase, on the other hand, innovative innovative departments, business incubators, innovation management and education quality management universities. For example, "Business

Incubator Center" e-education department, project management department at UNEC and ADA University, Ganja State University's Innovation Management Department, Baku Engineering University technopark help these higher education institutions function as research universities in national innovation system.. In my opinion one of the main contributions by government of Azerbaijan to national innovation system is "AZERBAIJAN 2020: LOOK INTO THE FUTURE" CONCEPT OF DEVELOPMENT that includes new changes in innovation policy. Actually this project by government based on to ensure long-term sustainable economic development, form a knowledge based economy and speed up the creation of science intensive technology and products (work and service), expanding innovative activity will one of the main fields. In this connection, the development of science will be prioritized on the basis of its history in our country and global tendencies, and the process of effective integration into progressive world science will be continued. Additionally, it refers to stimulation the financing of science besides state funding, from other sources. There is also claimed that in order to create an innovative economy within the country, the link between science and production will be strengthened and the necessary mechanisms will be created in order to carry out particular scientific studies in line with the requirements of the market.

To conclude, considering innovations role in economic growth, research universities have significant role in development of national innovation system with providing advanced knowledge for the academic profession, policy makers and other parties of this system. It also is important to emphasize besides in the world in Azerbaijan the role of educational institutes as research universities is undeniable.

1.2 Purpose of the Study

The purpose of study includes define importance of innovation and technological development in different economies and current situation national innovation system of different countries in the world as well as in Azerbaijan. Furthermore,

examination of expanded role of research universities in improvement of national innovation system also is a part of purpose of this thesis.

1.3 Research Questions

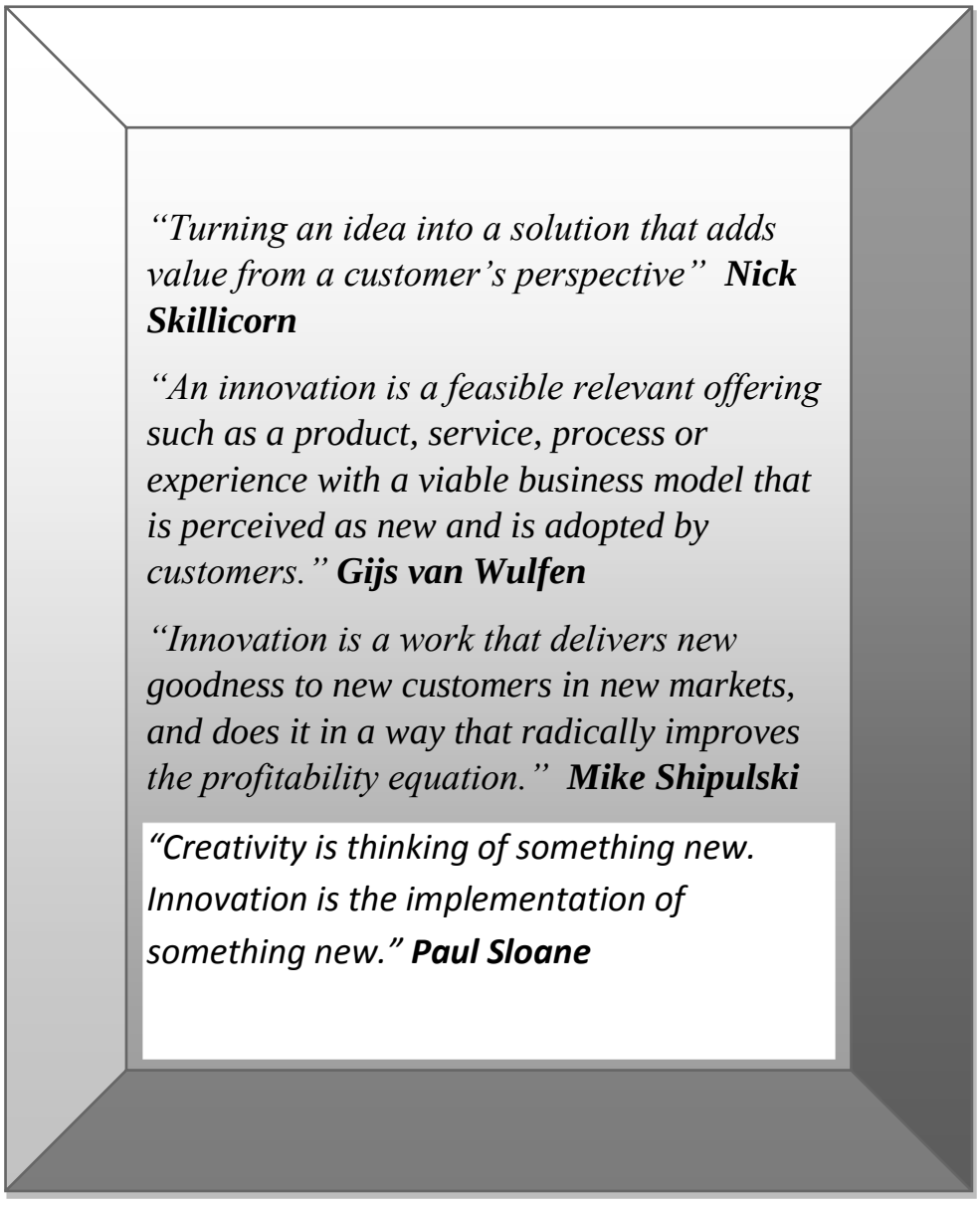
This research also will answer these questions:

- The current conditions in national innovation system of different countries in the world and Azerbaijan;
- The role of research universities in tendency of development of national innovation system in different countries as well as in Azerbaijan

2. Theoretical Review

2.1. Innovation and national innovation system

Innovation and technological competetiveness have always been main mechanism of growth. Furthermore, during crisis and increasing international competition, innovation was taken into account as necessary source of companies' competitiveness in the world. Throughout history the role of innovations in economy development of innovations and innovating ways were researched in different manners by scientists. So, first of all experts tried to define innovation so, there is appeared several definitions.



Basically, innovation is considered as product and process innovation. In product innovation there is talk about a new product which performance features are expanded, be materialised in the simplest manner. Additionally, product innovation is a definition for both goods and service innovation.[4]

The conception of innovation comprises process and profit. According to different literatures, the innovation as a process refers to change of production process in order to simplify or apply new developed method. For instance, changes may include important changes in techniques, equipment or software due to increase cost-effectiveness of manufacture process and improve quality and produce a new product.

Looking in details on historical background and development of the innovation there can be found some connection between classic economics and emerging of concept of innovation. Because, classical economics began in 1776 when the book "Wealth of Nation" by Adam Smith was publicized. On his book he emphasized that, besides specialization of employees on their work, contribution of scientific work and others, technical progress-innovation is one of the most significant source of productivity growth that provides accumulation of capital.

It is important to mention the name of Karl Max, because he is the one of the economists who mentioned about innovation in his works. As stated by him, Karl Max claims that, the reason that motivates investors is corresponding between innovation and surplus value. Moreover, when manufacturer introduces new and higher method of production, then can sell the goods, above their individual, but under their social value.[2]

The importance of technological innovation was recognized also in works of Ricardo. According to him, who made discovery of the machine, new method of production, and applied it usefully firstly, would enjoy advantages by gaining great benefit for a time. However, in proportion that the equipment (machine) comes to general use, from the effects of competition the cost of the production will include price of the commodity produced, while the investor(capitalist) will get the same amount of

money profits before. Ricardo also clearly defined the fact that, monopolization of new technological knowledge for a long time is unable. Furthermore, sooner or later it becomes general good.[7]

Neoclassical point of view in innovation and innovation economics play role in order to extent of neoclassical production economics. In this approach, "production function" one of the most significant characteristics is link between outputs and technology. In the production function, technology determines how transformation of output to input will be provided. Moreover, in the studies of Freeman and Soote technology is an external factor to provide continuous benefit and increase the productivity of inputs and its transfer is not difficult. [3]

According to Nelson and Arrow research, many neoclassical economists claimed that technological innovation and technological information did not capture the characteristics of the non-exhaustion and could therefore prevent markets. For example, markets cannot be effectively allocated resources, and should therefore be set up to influence the policy process. For example, markets can not effectively allocate resources and, therefore, the government's technology and innovation policies should be set up to affect processes to allocate resources. [2]

Concept of innovation was researched by economists of Evolutionary economics too. It is interesting to mention that, Evolutionary approach gained prevalence especially after the publish of the book "Evolutionary Theory of Economic Growth'' by Nelson and Winter (1982) in innovation economics. This approach of Schumpeter considers technological innovations as a long-term economic development engine. Therefore, technological innovation processes play a major role in evolutionary analysis. In evolutionary theory, technology should not be considered only as physical process, where the inputs are replaced to the outputs. There is also claimed that, technological information and how this information is utilized in the company is also important. And innovation is not only limited with product and production process, but also includes improvements in management, information, finance etc. The one of the

differences between neoclassical and evolutionary theory is making superior point the processes of technological innovation and learning. [1]

It is worth, to say the name of Joseph Alois Schumpeter, because one of the main contribution to explanation of the concept of innovation belongs to him. Although since the late 1880s there have been proofs of the use of the term "innovation" to mean something new, none of first precursors of innovation have been as authoritative as the Joseph Alois Schumpeter. In his works, especially "Theory of economic development" Schumpeter report that, development is historical process of reasonable changes, substantially driven by innovation which he divided into five types:

- introduction of a new product or a new species of already known product;
- appliance of new methods of production or sales of a product (not yet proven in the industry);
- opening of a new market (the market for which a branch of the industry was not yet represented);
- use of raw materials or semi-finished goods for new sources;
- such as the creation or destruction of monopoly position.[6]

Generally, there are 4 types of innovation:

- Great innovation.

As a result of innovation, revolutionary new knowledge are applied on the production structure, governance and the speed of economic development.

- Radical innovation.

It results in scientific ideas and inventions it becomes possible to make significant changes on technological systems and emerge new production sectors .

- Principal innovation.

Replacement of existing techniques with new one results with great inventions and scientific-technical suggestions to create a new technology , keeping the fundamental scientific principles

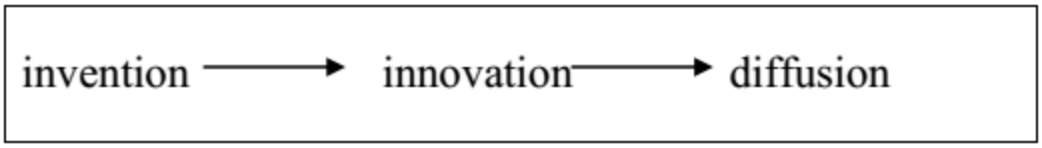
- Improved innovation.

Innovation that directed to improve. As a result, there is emerged new,advanced technology, facilities, products and techniques.

- Simple innovation.

Techno-economic parameters of technology and technology used in production stored for a while.

It is important to point the Schumpeterian trilogy that divides the technological change process into three stages is often taken into account to provide a useful classification.



The first stage is the invention process, embracing the generation of new ideas. Invention shapes a new thought having a potential to apply into economy. The frequency of inventions was determined by scientific knowledge, and the invention was accidentally dispersed over time.

The next stage is the innovation process enclosing the improvement of new thoughts into marketable products and processes. The first and foremost application stage of invention is innovation. Developing innovations is defined by the technologic and economic conditions, in which the manufacture (making innovation) is. Innovations may be reinforced in certain periods and sectors, because many complementary (small) innovations may be needed in order for a radical innovation to be able to use its all technological potential. In other words, after a radical innovation, technologic transformation follows a certain way. The third stage is the diffusion that, include spreading of new products across the potential market.[6]

It is obvious that, most of developed and developing countries form such National Innovation System that relevant their interest. The approach of national innovation systems emphasizes that information technology and information flows of people, businesses and businesses are the basis of an innovative process. Innovation and technology development are the result of a complex relationship between actors in institutions, universities, and government research institutions. In this case, discovering and applying new technologies, new production process that oriented new knowledge, utilizing stimulating methods are preferred. Because, innovation is one of the main and important factors, and by applying it, there is emerge significant transformations in economics and science, such as improvement of technological processes, realization of results of research etc. Forming of National Innovation System has great role in optimization of link among sectors during development period of innovation economics. In developed countries National Innovation System consists of different institutions such as firms, research universities, high schools etc. According to different literatures, it worth to emphasize that, National Innovation System is the main source that implements innovation policy of government and it is clear that technological zones have portion in development of economics. Otherwise, government gets benefit via construction of National Innovation System. Technological zones are approved as a main part of this system. Furthermore, it was proved that, small innovation organization gain more profit when they act "under the one ceiling". In this case economic development may get more benefit from such method of operating. Technological zones include technoparks, inchubators, technopolicies etc. [7]

Researchs show that, technoparks are the most appropriate form for operating of different innovation structures, because, comparing with other innovational structures technoparks have several advantages on multifunctional characteristics and ability of solvency of wide range of issues. The aim of technoparks is to provide convenient environment for development of small and medium science-oriented innovation

organizations and converting results of researchs to production process and product then,introduce it to market. There are several structural centers that technoparks include:1.innovation techno,education center,consulting center,information center,marketing center, industrial center,finance-insurance, center accounting-auditing center, strategic research center. Technoparks are considered as main motivating force of innovational economy in the world. There is a great role of technoparks in development of technologies in United States of America, India and China. The Sector of Information and Communication Technologies became one of the superior sectors in USA in result of development in relevant technoparks. According to the statistics given by International Association of Science Parks there are approximetly 260 technoparks in the world. There are several purposes to set up technoparks. They are:

- Converting knowledge and inventions into technology;
- Transformation of these technologies into commercial product, in this way gaining cost-effectiveness on national expenditures;
- Transmit(introduce) of new technologies to industry through(via) research universities or small scientific entrepreneurship;
- Establishment of research universities and scientific organization;
- Supporting of research universities and scientific organizations in business area, reconstruction of current structure of industry and reducing rate of disproportional development of regions. [14]

Besides technoparks there is another structure of National Innovation System is inchubators. Inchubators are such structure that provides businesses which require material, financial, organizational, educational-pedagogical and managerial assistance in order to emerge and develop in unstable economics. The one of the main advantages of this structure of National Innovation System is operating without requiring budget expenditures. In other words, business inchubators are considered to help businesses on the beginning via consulting services, rent of

equipments etc. and make their profit, benefit by proportion in the future profit of the assisted firms. Setting up these inchubators within educational institutions give a chance them to act as research universities to maintain development in new technological knowledge and innovation. The first businnes inchubator was established in 1959 in America. Now the number of business inchubators is nearly 1500 all around the world. In European Union countries business inchubators are called Business and Innovation centre. There are two basic types of inchubators that provide assistance to new innovation companies and innovation entrepreneurship. The first type include such inchubators that operate independently. The second type includes the inchubators which operates as a part of technopark. Nowadays, there are emerge virtual inchubators in result of improvement of e-commerce and internet network. There are some functions of inchubators:

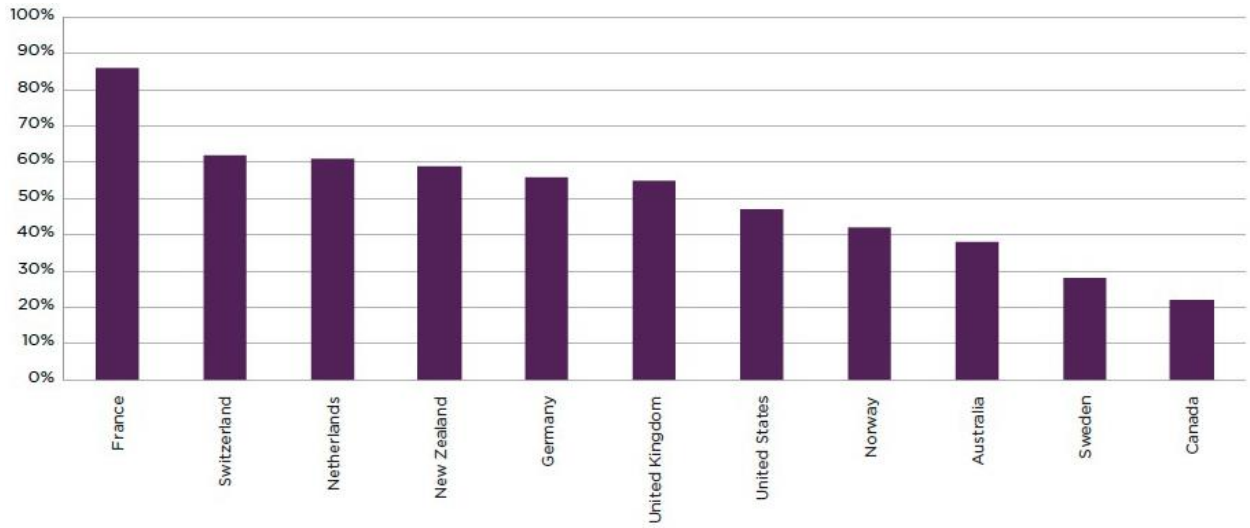
- Evaluation of commersion potential of innovation project that new company will state;
- Implementing appropriate marketing research;
- Defining of source of innovation product and partner who will act as consumer. [19]

Another structure of National Innovation System in technopolicies that cover huge area. Technopolis is a modern scientific-industrial complex that contains universities or any other high school, academic-research universities, as well as residents that were provided with social infrastructure. The aim of establishment of technopolis is putting together academic research on new technologies in leading sectors, and providing appropriate environment for development of scince-oriented production.

The theory about establishment of technopolis was recognized for the first time by Japan in 1880. According to this theory, there is intended to accelerate implementation process of scinetific-techno policy of government, establishment of

educational-production campus-technopolis in order to link research and production, applying the latest improvements in result of these research to industry. One of the main characteristics of technopolis in Japan is considering of scientific technological factor as a priority in whole economy and regional strategies. Speaking about the fact, that the Japanese government considers science and technology as one of the leading factors in the overall economic and regional strategies of the state. Stimulation and application of cutting edge technologies in implementing scientific-research activity in the formation of technopolis, the power of research centers, government undertake of 1\4 part of spending on subsidizing cost in the field of universities and laboratories [6]

Looking in details over current role of technopolis in France, the French economy is characterized by a large scale of industry, financial and public sector dimensions. As a result, the direct participation of the state in the planning of French economy in science is wider than in other western countries. The influence of the government on the development of industry and science is similar to the Japanese influence, but the sources of this influence are different. The division with state, private and academic sectors is less noticeable. In addition, there is characteristic high rate of decentralization of industrial research in fewer firms. According to the ministry of Science and Technology, there are approximately 1600 investigations and trials that industrial companies are engaged, of which 1400 are permanent . Only 200 enterprises have more than 60 scientific workers. At the same time from 1400 registered companies, 800 are used by 20 other scientists. At least 8.6% of firms fulfill approximately 2% of government orders.[20]



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This diagram shows the profit contribution of innovations to economy in 2015.

To sum up, these indicators different in different coutries. And from all these information, it is clear that, after emerge of innovation and establishment of National Innovation System

- The role of science in economic development has been more clearly revealed
- Strength of scientific-production relationships, and consistent effectiveness of arrangement scientific research purposefully.

	Number of researchers in thouthands	Scientific Research Costs.mld Dollar	Scientific research expenses % To GDI 2014
USA	1260	398,2	2,64
China	811	120,6	0,76
Japan	647	148,7	3,02
Germany	265	84	2,4
Russia	492	33,7	1
Source:The Global İnnovation Report 2016.UNESCO			

2.2. Research universities: theoretical approach

Research universities are central to the 21st century global knowledge economy and serve as a "crown" for secondary education in the world. The crisis in the world economy in 2008 has a negative impact on the position of research universities, in the development of a knowledge-based economy. In addition, a number of countries, such as the United States, the United Kingdom, have declined the budget financing for research universities and continued until 2010-2011. Of course, some Asian countries, such as Japan and India and China, did not finance, responding to the crisis by paying more attention to the role of research universities in the economy. As a result, the losses of the crisis were not so deep. According to Charles Dickens, the position of research universities in the economy is the best and the worst. An important role of global academic relations and research position in international economics is considered as a center of sustainable economic development, stability and competitiveness. There have been some changes in the appointment of research universities compared to the past. In addition, at the beginning of the 21st century research universities mainly concentrated on physics, chemistry, mathematics, and so on. He has worked in some scientific fields. However, there was a need for research universities after increasing the importance of global changes and innovations in the economy. The place of research universities aimed at developing the national innovation system and developing the economy, in addition to improving the field, especially in the economy, is increasing globally.

Some of the features identified by successful research universities at the top levels of global rankings can be described as follows:

- All successful research universities are part of a different academic academy hierarchy and support their mission.
- Except for researchers in Japan and the United States, research universities are mostly public institutions. Although private research universities appear in

Turkey among Latin American and Roman Catholic universities, they can rarely assist the private sector research university.

- Research universities are expensive organizations. There are more financial needs to attract the best staff and students, and provide the necessary infrastructure for good research and teaching. Cost per student is higher than higher education. The faculty has enough wages, well-equipped libraries and laboratories, and there are examples of spending on scholarships for students who need it.
- Research universities should have adequate and long-term budgets; Over time, sufficient funding or heavy budget changes may be unsuccesfull.

There are several challenges which research universities may face during operation. Research universities often face the same problems as higher education, despite the distinctive features. The issues discussed here, of course, affect countries and institutions in different ways, but everywhere will be felt together. In this and other issues, much more can be learned from national and comparative practices. The success of the research university is an adequate and stable **funding**. Research universities gradually increase funding from potential donors by selling and consulting intellectual products and funding students. Research universities require relatively higher fees than higher education institutions compared to higher education institutions. Private research universities in the United States are already doing so. However, although many of the world's public are willing to pay higher rates to public research universities and to pay higher than a student research university, high payments are not allowed due to historical compact or legal restrictions. As mentioned earlier, discussions on these issues take place in the UK and in some US countries. Research universities need to spend more and gain life without the government's sensitivity. The global economic crisis, which took place in the early XXI century, has had a significant impact on research universities. As mentioned earlier, the impact is changing worldwide, but overall results can be a potential

support to higher education institutions in East Asia. The East Asian countries are better organized than their Western counterparts and are trying to join the top of the global research elite. For example, since 2010, India has increased investment to the university by 31 percent and finances excellence programs to support leading universities in China.

During the reporting period research universities will be challenged to maintain leadership **autonomy** and to make substantiated academic decisions. Research universities are alarmed by the fact that they are part of government agencies subject to bureaucratic rules and complex units. Research universities require autonomy to set their own way to perfection and manage their resources and accountability. Pressure to prove the value and evidence of many stakeholders ends historic autonomy standards for many research universities.

As noted, research universities are a public body in almost all countries. As a result of state funding, pressure on **privatization** of public universities is almost everywhere. This tendency hinders research universities because these organizations are mostly engaged in public welfare, as key research and student trainings are held in extensive training. When research universities are forced to pay professors and professors to pay for professions, this policy affects the quality and focus of their research and has a real potential to destroy their core mission.

Globalization is both a benefit and a curse for universities. Research universities are at the center of global information knowledge and networks. They bring new ideas and knowledge into the higher education system and the country and allow the academic community to participate in international science and scholarships. In the Internet, people can use global knowledge, but the resources of the international community of research universities and academic community are easier and more effective. In many countries, research universities can be the only organizations dealing with global networks. Creating research universities at non-existing universities or universities that work as research universities is a global phenomenon.

There is no secret to establish or maintain research universities. Not surprisingly, many countries wishing to establish such institutions resort to successful research universities at academic centers. As a result, an unofficial global research model, in particular, revealed the US research university. Therefore, the global model has inevitable national characteristics to reflect the specific academics and social realities of local conditions. New research universities reflect this unofficial global model with national and local change. Regardless of the challenges and difficulties faced by higher education in the upcoming period, the research university will be the key element of every higher education system and most of the economy needs.

2.3. Characteristics of research universities in different countries

The development of world-class research universities was China's first goal in the late 19th century. Many Chinese research universities are primarily created to promote higher education and develop the nation. The Chinese government has adopted this goal as a national policy priority in 1998, and it is believed that success is credible in many parts of the country. First, over the past 20 years, the expansion of higher education has produced a highly qualified specialist. According to McKinsey Quarterly, only one in ten engineers have the right to work in multinationals.[21]

One of China's major research universities is Shanghai Jiao Tong University. The Chinese Ministry of Education and the government of Shanghai municipality are working together. Strong management at SJTU has been protected. University leaders play a key role in the planning process and form an expert group that creates a powerful management team. The University organizes seminars, conferences and seminars to exchange views with both university politicians and university teachers, and continually review plans. The enforced process combines strong leadership with the entrance and participation of the faculty, and combines both ideas both on top and bottom. Steps have been taken to establish world-class topics, institutions, institutions and then universities. Plans provide solid basic and diligent action to implement the second phase of the 985 Project, which plays a leading role in the SJTU strategy by providing a key direction for the university's development. Another element could be described as a "cluster" that uses and integrates various supporting elements and resources to move towards excellence in the STC's work, for example, from the university and outside of the world, experts have been invited to prepare procedures and policies. Experts are internationally-trained practitioners: university managers, key management division directors, school and department deans, external panel is a member of China International Engineering Consulting Corporation. Foreign experts were expected to have an independent and critical view to analyze the situation of the university and offer constructive suggestions and actions. Finally, the program of

action at SJTU was quite expensive. Funding has been carefully planned and distributed to various departments, institutions and projects. SQTU should consider the university's work globally in order to maintain and strengthen rapid development; ie, all aspects of university quality at the SJTU, such as the quality of the faculty, research superiority and talent development, should be assessed and compared with international standards. This comparative approach converts the university's overall goal to certain performance indicators and, ultimately, determines the current position of the university, defines clear goals and trends for future development, and prepares appropriate measures. SJTU, since 2007, has conducted medium and long term divisions and school assessments. The University aims to develop a world-class faculty by 2020 and to participate in international advanced science and technology research that is in great demand for a range of academic and national strategic development.[17]

India's Technology Institute (IIT) has been the perfect island in research universities in India. IIT, which began as innovation in the field of technology education beyond the conventional university system, increased in the 1950-63 period, more than the original five established in the 16th century. Degrees given by IITs are recognized all over the world and are respected. The diverse lifestyle of IIT graduates and the achievements they have acquired through various professions have had a great impact on the IEC brand. IIT Bombay has to name the project because the IIT implements research and consultancy projects sponsored by Bombay government organizations and privately owned industrial enterprises. Government, Science and Technology Department, Electronics Department, Space Department, Aviation Development Agency, Atomic Energy Department and Oil and Natural Gas Commission. Some research projects are funded by international organizations. There are many industries, including foreign collaboration and consulting projects. On average, teachers in almost any year deal with about 400-500 sponsorship projects. Sponsorship research projects require innovation, active group work and the creation

of the most up-to-date research facilities. These projects reinforce the interaction between the institution and the industry, and the higher education in India has weakened. Sponsor-based research and advice are also an additional source of income. IIT Bombay has developed precise rules for the distribution of revenue from the commercialization of its intellectual property. IIT The Bombay Industrial Research and Consulting Center coordinates the sponsored research and development projects and provides the necessary correlation of the industry and other sponsors of the research. Under the auspices of this center, academic departments, centers and schools have developed experimental structures in aerodynamics, biotechnology, low temperature physics, microelectronics, microprocessor applications, remote sensing, robotics, telematics and other fields. The most up-to-date laboratories and institutions that have been painfully built for decades have been a source of great pride for the institute. [17]

A number of different university ratings have been created in the Russian Federation. If you are looking at the top 10 institutions (among 1600 Russian universities) in this ranking, the lists are almost identical. A university that has not existed 20 years ago now looks at the top 10 in the All-in-One School of Economics (HSE). At present HSE is the largest social and economic research and education center in Eastern Europe. It operates in four Russian cities: Moscow, Nizhny Novgorod, Perm and St. Petersburg. There are 120 (120 divisions) faculties, over 120 continuing education programs (business administration, business management doctor and business e-governance master) and 21 research institutes. It has 1500 faculty members and 500 research staff members. There are over 16,000 full-time students and 21,000 pupils in HSE continuous education programs. Today, almost all humanities, social sciences, economics, computer sciences and math courses are offered. According to the University's prestige, the 2009 National University Entrance Exam is considered to be the third highest in Russia. HSE The academic research focuses on the theoretical basis of modern institutional economics and economic sociology building, primarily

supporting the effective modernization of the Russian economy and society. This focus is on keeping HSE's strong position in Russia and obtaining additional funding from the government and the private sector. University researchers provide critical access to policy development in diverse areas: education and health modernization, innovation, effective policy perspectives, development of public administration and civil service reform, improving the competitiveness of the Russian economy and developing tools for dynamic industry policy, government statistics (since 2002) improves other issues. HSE has its own strategy against a Research University Model. These include: talent attraction, sufficient resources, effective management and management systems. The strategy to attract the best students of HSE has been described previously. Thanks to this strategy HSE attracts active and dynamic Moscow secondary school graduates. The key element in the strategy of applying a world-class research university model has been attracted by talented teachers and researchers. HSE has faced the lack of specialists in some subjects in Russia. Therefore, different approaches to the establishment of strong academic groups have been applied to various socio-economic sciences. In the field of applied mathematics, Russian long-term traditions and internationally accepted academics.[13]

Since its inception, HSE has sought all resources and conditions for their efficient work to ensure the mobilization of talented scientists. HSE uses a concept of entrepreneurship to diversify funding sources. Along with the federal budget today, there are four major financial resources: the basic higher education market, the continuing education market, research and consultation. Over the past few years, the federal budget allocation for students and the capital expenditure has been about 32 percent of university revenues, and 17 percent on the basis of reimbursement from students who are involved in the costs. Sustainable education programs are 17 percent, research portfolio portfolio is 14 percent, donations and sponsor support amounts to 12 percent, and other sources are about 3 percent. In recent years, budget financing has increased. In 2016, the HSE has lobbied for additional funding from the

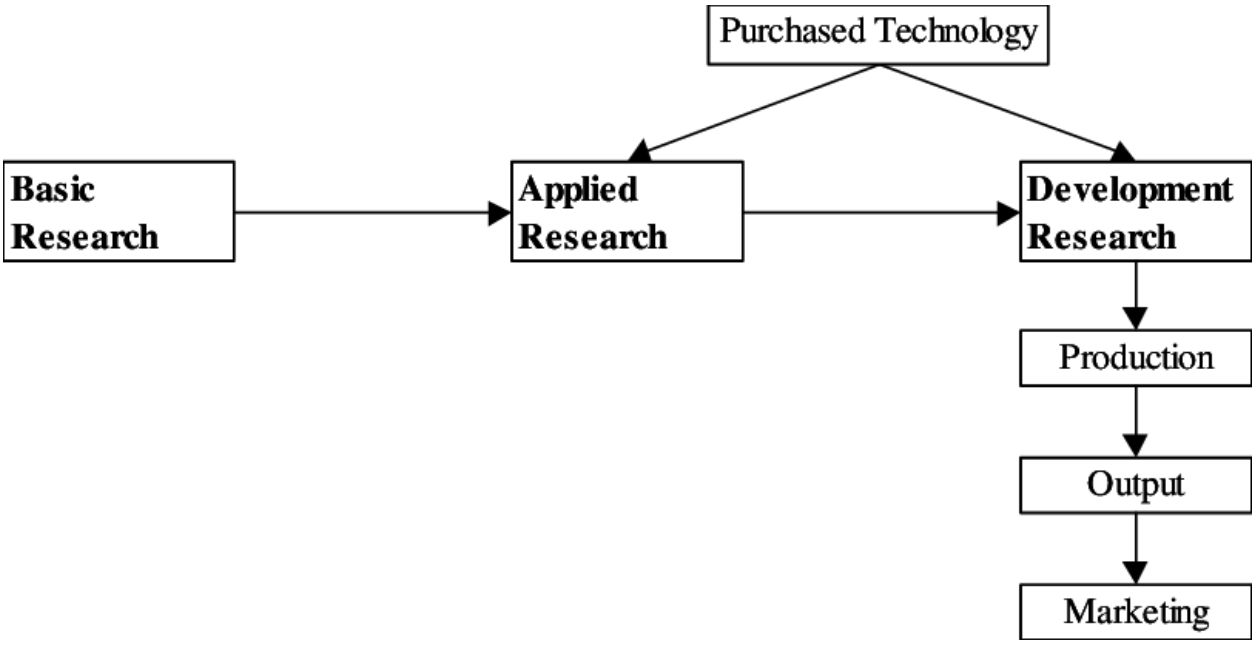
government to support its major research program. The government has approved this additional annual financing of $ 15 million in 2014 and has expanded its research activity. Organizational and governance issues cover several aspects of HSE development: autonomy, organizational structure, hierarchy and management culture. All Russian public universities have similar management systems in shaping the conditions for formal academic democracy and autonomy. The inner management and management culture combines high transparency and good vertical control with a rector. However, this system does not have checks and balances. One of the critical functions of the centralized management system is the efficient dissemination of sufficient resources to finance various contracts. The stimulating centralized system, based on the expert's opinion, has been described as the most effective method of estimating researchers and professors in an indefinite academic environment.[13]

Selection of priorities is crucial for any university to place itself in the global educational market. A new university can follow researchers' well-being and well-established universities by joining existing projects and networks. This type of strategy creates absolute results and HSE followed by joining a number of international comparative research projects and inviting Western scholars to introduce young Russian researchers to advanced research areas. However, this approach rarely creates a rare research profile and competes with international research universities.

2.4. The relationship between development of national innovation systems and research universities

The economically significant "outputs" of university research have been in various forms and variations in time and in different areas. Others include: Scientific and Technological Informatics (capable of increasing the effectiveness of R & D industry in industry by focusing on more productive research), equipment and fixtures (firms used in manufacturing processes or their research), skills or human capital (dissemination of new knowledge and prototypes of new products and processes (network of scientific and technological capabilities). Universities are widely recognized as critical institutional actors in national innovation systems. As Edquist points out in its research, the exact definition of "national innovation systems" is somewhat unusual,new, but most of the great literature on the subject describes them as institutions and actors that influence the creation, development and dissemination of innovations. Literature on national innovation systems emphasizes the importance of strong links between these various institutions in raising national innovation and competitiveness, and this focus is especially on universities in national innovation systems. [2]

"Linear model" of the innovation process has proved to be both useful and necessary to promote innovation in key research funding. The Bush argument is expected to be part of a "market failure" to fund key research by Nelson (1959) and Ok (1962). He has widely criticized this description of the innovation process (see Kline and Rosenberg, 1986, for such a rebuttal of the linear model). In the 1970s and 1980s, many US politicians have pointed out that the Japanese economy has proved to be unnecessary or inadequate for fundamental research to improve the nation's innovative performance.



The “linear model” of innovation process

Another view from the point of view of university research focuses on contradictory "norms" of academic and industrial research. Scientists' "fundamental" research activities are contrasted by comparing research with industrial scientists and engineers simply because there are many examples of university researchers who make important contributions to technology development, major research developments in industrial laboratories. Paul David and colleagues claim that academic research norms are significantly different from those observed in industry. Professional recognition and advancement for academic researchers are primarily dependent on their disclosure and publication. The frequent disclosure of the results and the methods used to achieve them in most cases are in the center of scientific research. Innovation updates, on the contrary, rely heavily on restrictions on disclosure of privacy and research results. The importance of these "cultural differences" for conducting and disseminating research may be more important than the closer relationship between university and industry researchers. [6]

Another conceptual framework, recently applied to the role of academic research in the "post-modern" industrial societies, is the "Mode 2" research concept, identified by Michael Gibbons and his colleagues. The Mode 2 research is associated with a more

interdisciplinary, pluralist, "networked" innovation system than the previous one, where basic corporate or academic research institutions are less relevant to other organizations. Gibbons and other scholars claim that the growth of the Mode 2 study reflects the enlargement and diversity of information needed for a scientific study reflected in this section of Pavit's. Increasing diversity in entries is related to cross-sector collaboration and more interdisciplinary research. Because "Mode 2" provides a mutually beneficial interaction of more researchers and other actors in any field of research because scientific research norms can be less effective in major research areas, such as biomedical research. The "Mode 2" framework definitely leads to some features of modern innovation systems, in particular the increased institutional co-operation by many scholars. However, claims that the sources of knowledge have become a more different need in modern innovation systems, does not mean that university's role as a fundamental research center will be reduced. Several studies have suggested that "Single sources of institutional co-operation and diversification in information resources have increased, but support for the" Mode 2 "claim, which indicates no such reduction.[14]

The role of research universities in the development of the National Innovation System may also be reflected in the Third Helix dissertation. The Triple Helix dissertation suggests that Innovation and Economic Development in the Information Society play a more crucial role for the university and create new institutional and social formats for transferring data, hybridization of university, industry, and government elements and application of data. This vision, along with the creative destruction seen as just natural innovation dynamics, also covers the three institutional areas of the university, industry and government, as well as the creative upbringing at their intersections. The role of the University in the Information Society is evolving from a few specific developments. First, the last addition of the "third mission" of the university is to involve socio-economic development, with the traditional academic missions of teaching and research as well as the most important

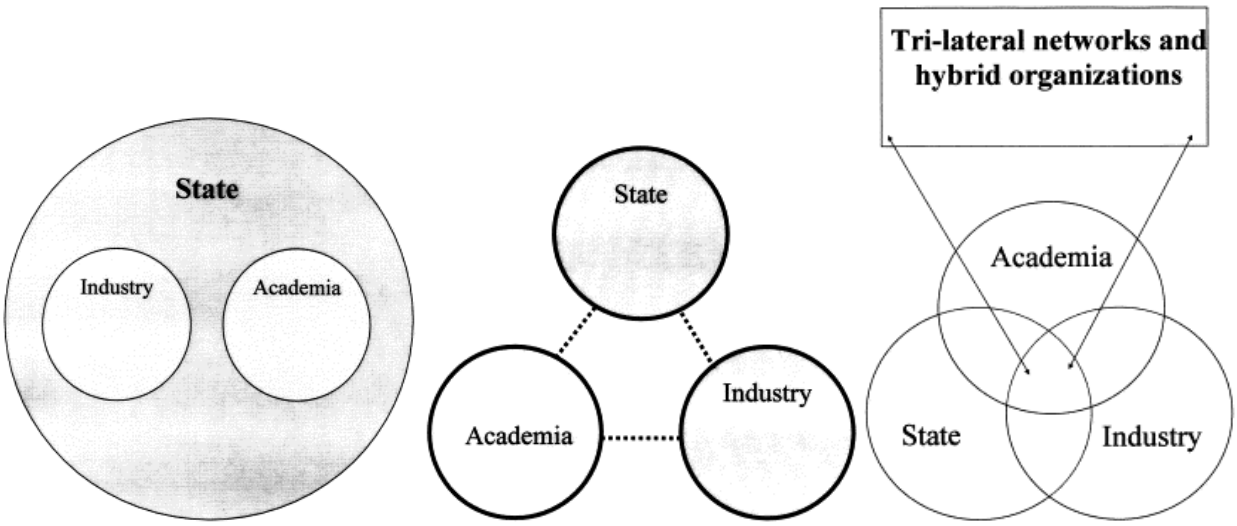
"second academic revolution." This is a strong government policy that affects the strengthening of universities and other society, especially business relationships, as well as the costs of using the University's research infrastructure for R & D goals and providing a substantial portion of the University's funding. Secondly, the continuing ability of the university to provide new ideas, skills and entrepreneurial skills has become a major gain in the knowledge society. Students only have different academic subjects, business, culture and so on. It can be trained and promoted to become a new generation of entrepreneur and business makers, helping to create economic growth and jobs. For example, Stanford student StartX is a real-life project of students from Jyväskylä (Finland), which has 90 founder and 27 companies in less than a year or the Academy of Applied Science of Applied Sciences University of Applied Sciences (Academy of Applied Sciences). Universities also extend their skills to educate individuals through new training modules such as entrepreneurship and incubation programs and non-disciplinary centers, science parks, academic spin-offs, incubators. Third, universities have changed their position of technology generation, from traditional human resources and sources, to a new source of technology and transformation, and formalities to formalize formalities only.

A true body of Triple Helix literature has been developed from the main imprint perspective:

The perspective of a neo-institutotional - a sample of research, comparative historical analysis that explores various configurations arising from the relative deployment of the university, industry and government structures, and their movement and redistribution, and others turn into a center of gravitation around them. For example, in statistical mode, the government plays the role of managing, managing academia and industry, and limiting their ability to initiate and develop innovative changes. For example, the US, Russia, China, some Latin American and Eastern European countries. The laissez-faire regime characterized by the intervention of a limited state in the economy (for example, the United States, some Western European countries),

the other two areas of industry supportive structures and limited role in the innovation: the university is largely a provider of competent human capital and government largely as the regulator of economic mechanisms.

In a transition to a Information Society, a balanced regime emerges that the university and other information agencies are progressing in partnerships with industry and government, and even in joint initiatives. A balanced model offers the most important concepts, because the best environment for innovations is the intersection of areas. It creates a creative synergy and turns into a process of "innovation in innovation," creating new places and new organizational formats for interaction, as well as performing individual and organizational actors as well as "" other weaknesses or failures. The relationship between this creative process and the institutional fields of the university, industry and government is constantly being restructured as a "infinite link" to increase innovation, to create new relationships with new technologies, new firms and a continuous systematic effort.



(1)A ‘statist’ model (2) A ‘laissez-faire’ model (3) A ‘balanced’ Triple Helix model

A neo-evolutionary perspective, inspired by the theory of social systems theory and mathematical theory, sees the University, Industry, and Government as a jointly

developed subsystem of social systems. Through mutual reflexive sub-dynamics, interconnected through some of the repetitive networks and organizations that reorganize their institutional arrangements. These interconnection forms are part of a two-way communication and distinction process: a variety of selective interaction between functional, science and market, institutional, university, industry, and government-specific and public oversight. In addition, internal differences in each institutional field create new relationships and relationships between industry links between universities, or strategic alliances between companies, and new network integration mechanisms.

Institutional areas are also regarded as selective environments, and institutional communication among them serves as a mechanism for creating new innovation environments and providing the "regeneration" of the system. Triple Helix systems are a series of analytical frameworks from the perspective of system theory:

- Components: Institutional areas of the University, Industry and Government, each encompassing large-scale actors;
- Relationships between components: co-operation and conflict resolution, collaboration leadership, substitution and networking;
- Functions: The Triple Helix Space is described as a series of activities: Knowledge, Innovation and Consensus Space. [11]

3.Azerbaijan experience

3.1.National innovation system of Azerbaijan

Sustainable economic growth is not possible without structural changes in the national economy, diversification, innovation, raising the role of science, as well as increasing investment. These include the direction of investment in a certain area of the economy, on the other hand modernization of the economy with the growth of innovations, market demands adequate investment resources. Today, the key issue is the innovation that will have an impact on Azerbaijan's sustainable economic growth determination of priority issues of economic development. Speaking of the rapid development strategy, the government of Azerbaijan is an economy has identified five main directions of modernization: "From these aspects the first is the innovative development of the Azerbaijani economy. This direction envisages the acquisition of modern technologies by the Azerbaijani companies, ensuring the production of new, competitive products and expansion of export markets. The experience of countries operating in market economy shows that innovation plays an important role in the development of material production. This is more important for our independent country since the technological level of material production in our country is much lower than in other developed countries. the quality of most industrial products does not meet the requirements of world standards. The key factors that create the innovation system in Azerbaijan and the expansion of innovation activities are as follows:

- ensuring economic security, the use of new technologies in international economic relations;
- Implementation of state policy in scientific and technical and innovation spheres;
- the necessity of replacing scientific results with the traditional way of managing and applying new methods

- the necessity of creating jobs for all types of labor and, first of all, highly qualified personnel.[9]

The establishment and successful functioning of the national innovation system is crucial for the implementation of the above mentioned goals. There are a number of factors that prevent the establishment of a national innovation system, and it is impossible to eradicate this system. One of these factors is the existence of a large-scale existence of "mastering farming" in the country and its steady development. parasite ", which hampers a number of significant processes that ensure the formation of market relations artificially, but at the stage of development, in the recovery of production. Secondly, there are no single innovation programs in the country so far. There is no mechanism to establish favorable conditions for innovation projects. There are no legislative documents regulating relations in this area. As a third factor, it is possible to demonstrate that the system of intellectual property assessment in the republic is not created. This, on the one hand, leads to the artificial downturn of the cost of privatized objects, on the other hand complicates the participation of scientific research institutes in innovation activities and weakens the interest in it. Another factor is the creation of an intellectual product market in the republic. Intellectual product market is a key prerequisite for creating a national innovation system. Without commercialization of technologies and ideas, it is impossible to find the proper way of consulting services in the republic, as well as the lack of proper formulation of intellectual property market.

Innovative development of the Republic of Azerbaijan depends largely on the following factors:

- the existence of a network of new technologies, new techniques, ideas and knowledge;

- availability of a network of new production facilities based on new ideas and technologies;
- the presence of a financing system for the participants (enterprises and other entities) listed in the production processes;
- the existence of a mechanism for regulating relations between all parties.[11]

It should be noted that the innovative economy in developed industrial countries. Creation has a strong impact on the division of society into groups and new classes. In the West, some authors have talked about the emergence of new classes. The role and power of "intellectual workers", and others. The development of a "professional administrator class" and so on. started writing about. They all look at the economic aspects of the new class of society. Of course, the new base of the new community is the economy. However, the innovative economy group of people who produce economic values in the creative process forms. The author of the creative idea was American sociologist, Professor Richard Florida, who directly linked the development of the creative community with the innovative economy. The distinctive feature of the creative community is that the main function of the work of its representatives is to "create new forms of importance". In Richard Floridan's imagination, the creative division is divided into two parts. The core of the Creative Focus is the people who work in science and technology, architecture, design, education, art, music and entertainment industries that are the creator of new creative content, ideas, technology. The creative team also includes a large group of creative professionals working in a range of "high-tech, finance, law and health, business management" fields. These people take part in the creative solution of specific problems, using their complex knowledge. This usually means higher education, and hence high human capital.

Globalization puts high demands on the competitiveness of the national economy. Today, the country's competitiveness is one of the most prestigious concepts in the global economy and politics because it does not only cover purely economic

guidelines, but also evaluates the economic outcomes of important non-economic events. How to measure the country's competitiveness? The simplest tool for this measure is the indicator of the overall gross domestic product. The higher the figure, the country and its population are so rich and the quality of life is high. Fortunately, Azerbaijan is ahead of Armenia and Georgia in the global competitiveness rating. In 2011-2012, Azerbaijan ranked 75th among 133 countries in terms of technological readiness rating in the world and ranked 42nd among 133 countries according to the innovation rating. Accordingly, our country ranks 61st out of 139 countries for the 2012-2013 rating and the 139th among the 139 countries according to the technological readiness rating.

Indicators	2012-2013	2013-2014
12. Innovation rating	133/42	139/61
12.1. Innovation potential	133/29	139/40
12.2. Quality of scientific research institutions	133/39	139/77
12.3. Research and development firm expenses	133/65	139/88
12.4. University-Industry Cooperation on Research and Development	133/55	139/92
12.5 Government guarantee for high technology products	133/16	139/36
12.6. Availability of scientists and engineers	133/49	139/78
12.7. Beneficial patents	133/72	139/90
Source: World Economic Forum, Global Competitiveness Report		

In order to support National Innovation System In Azerbaijan, government administration signed different significant documents. Bright examples are:

“AZERBAIJAN 2020: LOOK INTO THE FUTURE” CONCEPT OF DEVELOPMENT and “Azerbaijan strategic road map-2025”.

According to “Azerbaijan strategic road map-2025”, Innovations are important in ensuring the dynamic and sustainable development of the economy. The development of this area depends, first of all, on the formation of favorable innovation environment. Innovations play a key role in the continuing renewal of the technical and technological base and the production of new products and services that are competitive in the world markets. The purpose of the national innovation system is to create different sectors of the economy to provide more modern and flexible activities, to train highly qualified and skilled cadres, scientific workers, to develop research institutes on a modern basis, to increase the inventiveness of the inventors, to engage them in modern production processes, as well as marking innovative ideas or inventions. Internationally, national innovation systems create the basis for the competitiveness of the economy and the country's export potential, and the acceleration of economic activity. The level of use of innovative products and innovation potential in different countries of the world depends on the level of formation of the national innovation system. Separate legislation on innovation activity in the Republic of Azerbaijan but there are a number of laws that stimulate and promote innovation policies. From this point of view, "About Patent", "About Science", "Intelligence the protection of property rights and the fight against piracy Laws of the Republic. Elements of innovation infrastructure in the territory of the Republic of Azerbaijantechnology parks within public and private universities, business incubators, scientific and innovation centers, and high technology parks. One of the fundamental principles of the National Innovation System is the recognition of patents. Despite the fact that the Republic of Azerbaijan is a member of a number of international conventions on patent, there are certain difficulties in recognizing patented inventions in other countries in Azerbaijan. Conceptual issues related to innovation promotion and human capital development are detailed in the

"Strategic Road Map of the Republic of Azerbaijan for the National Economy Perspective".

Countries	High-tech export (mln dollars)	Number of patents (per peorson)
USA	141,5	359,8
Germany	142,5	255,1
China	348,9	0,5
Russia	4,6	15
Azerbaijan	1,6	5,5

First of all innovation to systematically build national innovation policy the draft law on its activities will be considered. In this context Improvment the legal framework for creating high-tech parks, one of the key elements of innovation infrastructure in the territory of the Republic of Azerbaijan. Improving the legislative framework for the implementation and financing of innovation-driven projects will also be used in the practice of creating widely used venture capital centers in world practice.

The stimulating mechanisms will include the following issues:

- stimulate innovation in high technology parks and business incubators;
- applying discounts to companies operating in high technology parks and business incubators created both by government agencies and by residents;
- coordinating the activities of coordinating bodies that define and implement state innovation policy;
- improving the legislative framework for the venture capitalization activities;
- Implementing incentive measures to attract venture funds as well as foreign investors to fund innovative initiatives.

According to “AZERBAIJAN 2020: LOOK INTO THE FUTURE” CONCEPT OF DEVELOPMENT, particularly, there is taken into consideration supporting innovation policy in Information and Communication Technologies field. Transition to information society, innovation oriented and knowledgeable based economy, the introduction of ICT in state and local self-governing bodies, and expansion of e-services, as well as information security, the full satisfaction of society's information products and services, strengthening competitiveness and export-oriented ICT potential, and training of highly qualified specialists and researchers positions. In the coming years, the ICT infrastructure will be developed and modern electronic the provision of services will be expanded, and rural settlements including broadband, cheap and high-quality Internet access throughout the country will be made. Distant education, e-commerce, tele-medicine and other modern services wide application will be achieved, the protection of electronic traders' participants and legislation will be improved to ensure safety. The application of ICT in the regions will be expanded, the digital readiness of the population and the integration of the country into the global information space.[11] [10]

3.2. Research universities in Azerbaijan

As above mentioned, except in United States of America and Japan, educational institutions and structures of national innovation system such as technopark, business inchubators etc. are considered as research universities that focuses on development of national innovation system. The government unites production forces and, in principle, implements new mechanisms: several different profile industrial parks are created in the country and new business incubators are created. Technoparks are, first of all, focused on mass production, which is intended for the localization of relatively large factories and factories and supplying products to foreign markets. The job of business incubators is somewhat different. Coverage of the ICT sector, a small business or innovative business, scientific research, business ideas for the development of agriculturеare. The first business incubator was founded in the Guba-Khachmaz economic region, the second was in the Aran economic region and the third one was in the chemical industry park in Sumgayit, mainly covering the industrial sector.[16]

Recently, Azerbaijan has been actively working to create industrial parks. The continuation of dynamic development necessitates the acceleration of the formation process based on the existing natural resources of the country's industries and the creation of a substantial value added. Therefore, it is planned to build modern industrial towns in Ganja and Mingachevir, Garadagh district of Baku.

In general, it was necessary to create an industrial block format in smaller regions of the country. It is planned that such industrial zones will be set up primarily in each economic zone in Azerbaijan and then in other regions of the country. The first preparation for the creation of the industrial block has already started in Neftchala.

It is noteworthy that the degree of development of business incubators and technoparks in Azerbaijan, the development of industrial zones fully complies with the modern global trend. Unlike traditional technoparks or office centers, industrial neighborhoods have centralized educational institutions and business labs.

Additionally, there will also be space for the catering facilities and the common space of comfortable pedestrian zones. [12]

As a result of Mr. President Ilham Aliyev's efforts and abilities, many economic reforms have been implemented and, ultimately, favorable conditions for individual entrepreneurswas created. Creation of technoparks in Azerbaijan began in 2012. Sumgayit Technology Park (STP) was commissioned by President Ilham Aliyev on 22 December 2009.[13]

Initially, such parks will be created in Baku, Sumgait, Ganja and Mingachevir. Since then the field has been expanded and technoparks have been established in these areas. Establishment of technoparks plays a major role in the development of the non-oil sector to prevent imports from foreign countries, which is important for the country's economy.It should be noted that the STP, which construction started in 2007, is one of the few institutions in Azerbaijan's non-oil sector, a priority in the creation of technoparks in the region, and is a complex of large-scale factories specializing in various manufacturing industries. STP, a unique project in the region, is fully capable of satisfying the demand of both domestic and foreign markets. The establishment of the technopark in Sumgait is a significant boost to Azerbaijan's economic development and the history of Sumgayit,restoration of traditions. STP, a giant-scale project of innovative industrial construction in Azerbaijan, provides investors with the most appropriate working conditions and a comfortable business environment. The goal is to provide investors with great opportunities.[

After establishment of technoparks as research universities, there was planned to set up new kind of research university that calls “claster Research Universities” which operates based on Claster Model. As noted by the Ministry of Economy and Industry, the cluster model is a mechanism that has been implemented since the 1960s and 1970s. "Clusters - establishing mutual trade links by sharing common infrastructure, technology, single market, workforce and services that arise in a geographical area

that operates in the same or similar sector, and is complementary to each other, to communicate and interact are entities consisting of entrepreneurship entities ".

The creator of the theory of cluster is American economist Michael Porter. It sets the cluster as "a group of related companies operating in certain geographically-defined areas and complementing one another." Clusters are built in the form of a "triple spiral" (business, state, and science). Creation and development of clusters is an effective mechanism for attracting foreign investments and activating foreign economic integration. The main phenomenon of the cluster is that every participant not only achieves the purpose of his work, but also increases the efficiency of both his opponent and his partner.

Clusters also provide for a closer relationship between universities and industrial enterprises, and facilitate the establishment of educational institutions that help to develop a particular area. Stanford UniversityLocated near the Silicon Valley cluster, clusters of innovative technologies can work closely around the Massachusetts Institute of Technology or Cambridge University. Regarding the application of the cluster model in the country's industry, the Ministry of Economy and Industry considers that the vertical industrial cluster in Azerbaijan (from the production of goods to the final consumers supply chain)The cluster reflects the same as the model. But because it does not cover all qulafication clusters, it is difficult to say that these clusters were exactly created in those areas.

Ministry of Economy and Industry Institute of Economic Reforms and Scientific Researchthe research scientist, director of the Baku Engineering University Technopark, spoke about the promotion of the clustering process, saying that "there is a certain cluster model in the cluster model, as well as auxiliary in other areas related to this area. This gives favorable conditions for the development of innovation entrepreneurship in the development of high technologies. The cluster positively affects the development of both entrepreneurship and innovation. "

Another structure that operates as research universities in national innovation system is business inchubators. Business incubators in Azerbaijan are considered to be the most favorable business environment for companies that start new businesses. Incubators offer buildings for newly established companies and provide them with the necessary management, regulatory and accounting support. The creation of a business incubator requires up to two years from one year. Once the business incubator starts its business, receipts from customers should cover current expenses. Some services and professional training opportunities can be offered to entrepreneurs and incubators. By doing so, he will receive additional revenues. All these gains should be re-invested in the development of the center. It is important to evaluate the effectiveness of business incubators in terms of the number of companies that succeeded in successfully completing their business and continuing their work outside the incubator wall. First of all, it should be noted that the technological business incubator is the one who starts entrepreneurial activity and businessmen working in the scientific and technical fieldproviding a range of services on the basis of a special contract for the production of innovative activities and production based on new technology and on favorable terms. Technological business incubator relationships with selected enterprises are regulated on a contractual basis.In Azerbaijan there are 3 types of business inchubators. There are several forms of business incubators, depending on the purpose (creation of new jobs, development of innovation-oriented entrepreneurship, etc.):[11]

Business incubators focused on entrepreneurship development and development: These business incubators lease offices and provide various services to those who start entrepreneurship activities to accelerate the process of creating new firms. These types of business incubators are the most widely spread in the world as well as from the first ones.

Business incubators aimed at the development of entrepreneurship in the specific business entities and in a particular sector of the economy: These

business incubators are created to engage in entrepreneurial activity of a certain group of population (e.g. rural population, women, and youth) or to provide services to the region's weakly developed sector of the market (e.g. clothing production). Such incubators are particularly important in the development of regions. The main goal is to develop areas that are unique to each region, but are less developed. The entrepreneur receives extensive information about the business area that he / she wants to operate during the incubation process, and helps him / her build a business strategy, taking into account the specificity of the field. The entrepreneur will predict the risk interest rate of the field before it starts operating in a specific area. This, in turn, insures him from insolvency.

Technology-business incubators aimed at the production of new products: These incubators, which are usually created by innovation and technological centers and scientific parks, serve to develop new technologies and accelerate their application. Implementation of innovative business incubators and entrepreneurs in the scientific and technical field, and innovation activities on the basis of new technology. and on a preferential basis, provide a variety of services. Enterprises operating in technological business incubators can be subjects of entrepreneurship, primarily engaged in the premises of the economy. Technological business incubator's relationships with selected businesses will be regulated on a contractual basis.[9]

Actually, business inchubators operate within educational institutions or business organizations. Bright example is business inchubator that operates as a part of UNEC. Innovative Business Incubator was established by the Resolution of the Scientific Council of the Azerbaijan State Economic University No. 128.6 dated April 29, 2014 and registered on May 20, 2014 at the Ministry of Taxes of the Republic of Azerbaijan. Aims of this business inchubator are given below:

- Implementation of the task of creating youth, business incubators for information technologies in higher education institutions, which prepares the

relevant specialties within the state program of Azerbaijan Youth in 2011-2015;

- Improving their social security by involving UNEC's faculty members in education and science-innovation projects;
- Educational and methodological, logistical, psychological and financial support for the development of young managers and entrepreneurs in Azerbaijan and the establishment of start ups[9]

Another research university in Azerbaijan that operates in order to develop National Innovation System is “ADA Innovation Center”. ADA Innovation Center) started its official activity on April 15, 2017, aiming to contribute to the development of Startup and Small Business in Azerbaijan as an educational institution. The Center will first provide services for ADA students, and then for other students. The goal is to help students develop practical skills and capabilities, provide them with the opportunity to apply knowledge, prepare students for real business and industry, and help them build education and business relationships. During the school year, trainings for business, IT, and other practical skills are being held. During the second semester of the year, the Idea Race is announced and the winners are selected, and ADA Foundation provides students with opportunities to share their ideas and ideas.[22]

“SOCIAL INNOVATION LAB” Business inchubator is an innovation center that combines incubation and various acceleration programs. Social Innovation Lab is a leading innovation center in Baku and provides solutions to various business and social challenges through innovative approaches to building sustainable business models. The goal is to teach entrepreneurship and entrepreneurship basics through the most up-to-date approaches, tools and methodologies, to build and inspire graduates' success stories. It is possible to get positive results using potential and resources. This business inchubator operates as a part of Baku Engineering University.[22]

3.3. The role of research universities in development of national innovation system of Azerbaijan

In the context of the integration of Azerbaijan into the world economy, the problem of the country's economy's innovation and competitive ability emphasizes the need to understand and adapt the global market and globalization process criteria. Thus, the formation of international innovation networks for the modern world, and joint scientific and technical research and development of different countries and corporations are characteristic. Formation of the national innovation system in itself is the creation of necessary legislative base on various directions, identification of scientific and technical priorities, management of the scientific-research sector, logistics of the research and development sector data base update and so on. This is a requirement for the implementation of measures one of the most important measures is administrative - organizational organization of scientific research method to a program-specific method. Such a link does not require the entire cancellation of the administrative-organizational method, and in general, this is not about eliminating the organizational method. The issue is in the right consensus of these two methods. [16]After this point, we will analyze the programmatic organization of the scientific research. It should be noted that the programmatic organization of scientific research is provided by granting grants by donor organizations to various scientific projects, and through the direct funding of concrete projects. In general, this approach involves the funding of a scientific research project, rather than any scientific organization. Therefore, it can be argued that scientific research carried out in the private sector takes place on a programmatic basis as a whole, and in the analysis of external experiences it has come to the fore. By the way, it is possible to evaluate the program-oriented organization of scientific research based on the structure of the scientific research sector financing.

Financing of scientific and research sphere in Azerbaijan

Years	2009	2010	2011	2012	2013	2014

Total costs mln manats	15,9	27,5	88,9	92,1	109,8	122
Share in UDM by%	0,2	0,2	0,2	0,2	0,2	0,2
Share of budget expenditures in%	1,2	1,3	0,8	0,8	0,7	0,6
Source: Azerbaijan Statistical Office						

Table Indicators confirm that there is a problem with financing the country 's scientific - research sphere, but the issue is that budget allocation scan not be solved at the expense of increase. Experimental investigation revealed that the crucial role in the financing of the research sector is private sector and the share of this sector in funding is higher than 70%. In this regard, it is necessary to pay attention to the structure of the financing of the scientific research sphere and the indicators of the table below provide the necessary impression of the issue.

Sources of funding for scientific research

Years	2000	2005	2009	2010	2011	2013
Budgets.mln.manat	10,8	21,3	66,1	81,8	98,5	82,9
Out-of-budget funds	0,7	0,4	0,7	1,8	0,8	0,7
own funds of Institutions	2,9	1,4	8,7	6,1	6,9	5,6
Customer's funds	1,5	3,7	13,3	2,1	3,5	31,5
Source: Azerbaijan Statistical Office						

The Table Indicators create the necessary bases for detecting the situation it is clear that, in this structure of funding, the overall organization of program - purposed organization of scientific - research work has very limited scope, but at the same time it should be noted that the share of the state budget in financing does not indicate the

low level of program - purposeful organization of direct research activities. it is obvious that the absolute majority of appropriations from the country's budget are spent on an administrative basis, and the share of the newly established Science Development Fund is limited to a smaller amount of up to 8 mln manats a year.

Thus, the overall objective of the research is that the program-oriented organization is not widely used yet, but this is more clearly evident in the sectoral division of research funding. Therefore, consider the distribution of funding for research.

It should be noted that even these indicators do not provide detailed information on the overall organization of such research activities, and the increase in the share of the higher education sector in recent years is not an endorsement of the broader programmatic organization of scientific research. It is a mistake to understand that scientific-research work as a whole is fund-raising only for individual projects. The program-oriented organization of scientific researches generally involves the implementation of projects that focus on direct innovation processes or examine problems that are of utmost importance to the country's public political, moral and cultural interests. However, we have summarized the general information on the effectiveness of scientific research work carried out not only in the sector of the sector, but also in the higher education sector, and even in the private sector, and it has been understood that the level of addressing specific research goals to concrete goals is quite low. Together with all these, the sectoral division of research funding reaffirms that this is not a widespread practice of scientific research work as a whole.

Sectoral financing of scientific research works

Years	2012	2013	2014	2015	2016
Public sector.mln.manat	20	63,8	67,6	79,5	104,3
Entrepreneurship sector	5,7	19,5	18	19,5	12,8
Higher Education Institutions	1,8	5,6	6,5	10,8	4,9
Source: Azerbaijan Statistical Office					

Programmatic organization of scientific research work in Azerbaijan as a whole a significant step was taken in terms of strengthening the Science Development Fund under the President of the Republic of Azerbaijan in accordance with the Presidential Decree No. 526 of October 21, 2009 "On Establishment of Science Development Fund under the President of the Republic of Azerbaijan". The fund is fundamental, applied and search-innovative character based on the state ordera non-profit organization that promotes scientific development through targeted funding through scholarships and other scientific research on areas legal entity has been established. Thus, the most positive foreign experience has been soughtand the most important issue is to finance research in the form of grants. Although only about 5 years have elapsed since the establishment of the Foundation, the real work has been carried out in terms of programmatic organization of scientific research works. This activity, aimed at accelerating innovation development of the country's economy, also confirms the indicators of the following table.

The results of the main competitions of the Scientific Development Fund.

Years	2014		2015		2016	
	Quantity	Sum in mln manat	Quantity	Sum in mln manat	Quantity	Sum in mln manat

Type of project						
Fundamental-application	41	3,026	50	4,505	27	1,585
Particular	8	0,074	29	0,37	8	0,315
Pilot	2	3	3	1,725	4	5,6
Total	51	6,1	82	6,6	39	7,6

It is clear from the table that the Fund is not just a short-term real activity and can also accurately define the direction of increasing the efficiency of the work. For three years, pilot projects have more and more the amount of both projects and the amount of funding is serious rising. In general, the activities of the Foundation are programmatic organization of scientific research work and that the attitude of the scientific sphere to this issue has become more serious. These trends are also seen in the following table.

Years	Presented projects	Projects are handed to expertise	Successful projects
2014	218	169	51
2015	184	155	82
2016	174	122	52

CONCLUSION

To conclude, it is obvious that, nowadays, relationship between development of national innovation system and economy is tender topic. In this case, coutries try to construct strong national innovation system by using different strategies in order to maintain development stability and competiveness of economy.

According to various literature, the National Innovation System is the main source of government's innovation policy and it is clear that technological zones have a share in the economic development. Otherwise, the government benefits from the construction of the National Innovation System. There are different factors that influence to development of National Innovation System. One and main of them is research universities. Because, scientists claim that, the strong constructed and implemented innovation system is one of the main source of economic development.

There are special research universities in Japan and America that service to development of goverement’s innovation system. But in other-most countries educational institutions, technoparks, business inchubators etc perform as research universities and implement researchs to develop current situation in innovation system.

So, above mentioned tables it is clear how in most developed countries innovation plays significant role in economy and the part of research universities in emerging of these innovations. But in Azerbaiijan situations is different. Considering that, Azerbaijan gained its liberaty in last 26 years again, innovation is new sphere for our economy. Moreover, government began to pay attention on this field in last 10 years. And as there is mentioned , the result of innovation in economy and GDP will be seen in long period of time. So, a little role of innovation in economy and role of research universities in development process of national innovation system is quiet normal. But, administration take some steps in order to solve this problem. Such as, signed documents for example, “LOOK INTO THE FUTURE” CONCEPT OF DEVELOPMENT: AZERBAIJAN 2020, “Azerbaijan strategic road map-2025” and

Establishment of Science Development Fund under the President of the Republic of Azerbaijan. Hopefully want to say that, taken into consideration, we live in globalization and innovation era, our country also will gain its competiveness and stability in economy in this way.

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