International Journal of Trend in Scientific Research and Development (IJTSRD)
Special Issue on Modern Trends in Scientific Research and Development, Case of Asia
Available Online: www.ijtsrd.com e-ISSN: 2456 – 6470

The System of Innovation and its Impact on Economic Development

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ABSTRACT

The article discusses the factors that influence the development of innovational activity in the republic. In order to test the impact of innovation expenditures on the volume of innovations in the republic, we used linear regression analyzes and found strong interdependence. Also, we discuss the role of human capital and the level of development of financial system in stimulating continuous investments on innovational activity . Furthermore, after analyzing the data about implemented innovations in 2019 in the republic, we found that higher educational as well as research institutions participated in innovational activity very passively, which is of great concern.

KEYWORDS: *innovation, innovational economics, service, national innovation system, investment, economic mechanism, R&D, linear logarithmic regression analyzes, venture funds, angel investors*

INTRODUCTION

Today, Uzbekistan is gradually paying more attention to the creation of an innovative economy. The creation of the Ministry of Innovative Development of Uzbekistan and a fund for supporting innovative development and innovative ideas is the first step towards developing the economy through innovation. Adoption of strategies of action for further development of the Republic of Uzbekistan on the 2017- 2021 years, allowed to speak boldly about the economic reforms in strategic areas of the economy including the development of a national innovation system. The level of development of services, in particular educational services, strongly influences the well-being of the people. A quality educational service is a fundamental condition for creating a national innovation system. In a short period of time, a lot has already been done to create an innovation system, most importantly, specific tasks have been set for the near future on the implementation of innovation policy.

At the moment, as statistics show, the share of participation of universities and research institutes in the development of innovations remains low. Also, investment in innovation has declined in recent years due to the low efficiency of investment assets. This all speaks of the need to create a sustainable economic mechanism for the implementation of innovations, taking into account the interests of business and government, which should bring optimal benefits to society. Also, it is important to note, that in the implementation of innovation policies should take into account the interests of business and other internal and external factors that can change the direction of economic development. Creating favorable conditions for business and small business can create competitive markets and thereby improve the quality of the final product. But at the same time, it is important to develop and improve educational services in the republic. In developed countries, the university s are a hub of scientific research development. Many important radical innovations were created in the laboratories of universities.

The main part

President of the Republic of Uzbekistan Sh.M.Mirzioev in his message to the Oliy Majlis emphasizes that " ... Today, we turn to the path of innovative development, aimed at radical improvement in all spheres of public life and society. And this is natural. After all, who is winning in today's rapidly developing world? Only that state that relies on a new thought, new idea, innovation. Innovation means the future. If we begin to build our great future today, then we must do it primarily on the basis of innovative ideas, an innovative approach [1]. One of the greatest economists Zh.A. Shumpeter first proved h the innovation according to him "constructive destruction" and "industrial mutation", facilitates rapid growth [2]. American scientist Michael Porter in his book “Competitive Advantage of Countries” argues that innovation is a key factor in achieving competitive advantage at the micro and macro levels [3]. According to Cape, a broader definition of innovation is as follows: innovation can be a product or service, a new production process, a new organizational structure, or a new plan or program for employees of enterprises or organizations [4]. Professor I.T. Abdukarimov defines innovation as an investment, providing and replacing the generations of techniques and technologies, new equipment, technology, arising from the achievements of scientific and technical process [5]. According to Professor OA Abdurakhmanov, innovation in tourism is a tourism product and services that contain innovations for implementation and thereby contribute to the professional development of employees [6].

Literature Review

Scientific activity, which is the main source of innovation, is one of the types of services. The service sector accounts for almost half of the country's GDP. Famous scientists K. R. Makkonell, S. L. Bryu, F. Kotler, T. Levitt and others in their works investigated the definition of services. For example, F. Kotler defines service as " activities that can be offered to one person by another person or beneficial effect which prevents own than - or [7]. Among Uzbek scientists, I.S. Ochilov defines a service as “the conscious activity of a person, society, and the state that brings benefit [8]”.

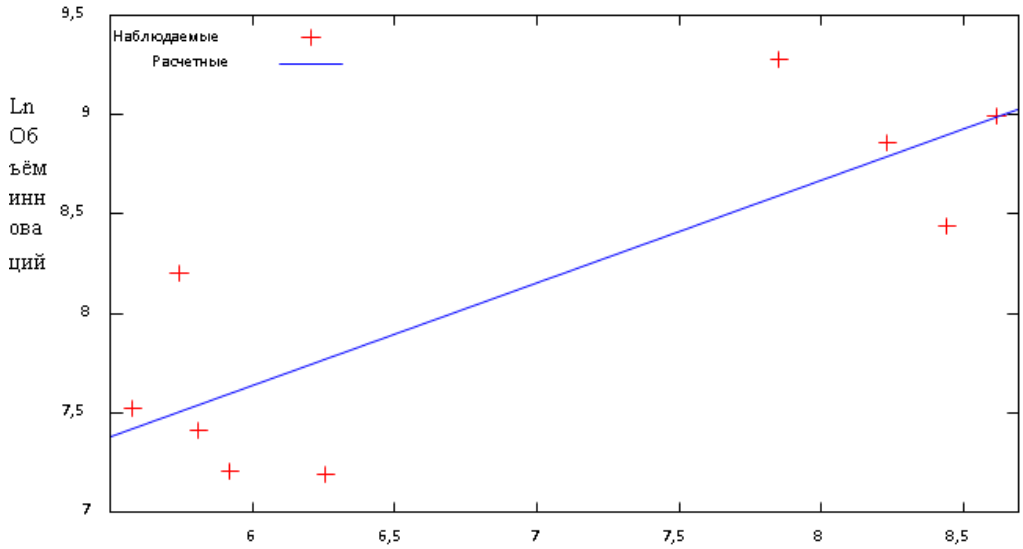
Methodology

We used the log-linear regression model for checking the volume relationship of innovation with the cost of innovation. The calculations were performed using the Gretl program.

Main content

Today, Uzbekistan pays great attention to the development of an innovative economy. The experience of developed countries shows, that the introduction of innovations and the creation of national innovation system gives its results in the long term. But, it is also important to note that innovations themselves do not live a long time or do not have time to be realized without government intervention[9]. Many states, especially developing countries, are faced with the problem of creating favorable conditions for the development and promotion of innovations. "Since bureaucrats are interested in a large salary and the power of their bureau, it is rational for them to increase the budget of their bureau rather than optimize the social product [10]". This statement means that a purely bureaucratic way of innovating is prone to failure due to lack of sufficient incentives. In addition, policymakers in charge of innovation policy are usually poorly informed about the market by which entrepreneurs and therefore tend to err in the implementation of innovation policy. Therefore, it is very important to analyze what exactly contributes to the growth of innovation.

In order to assess how effective the costs of innovation are, we decided to test the relationship between **costs** and the **volume of innovation** (innovative products, works and services) from 2008 to 2019. We tested the data on various models and settled on the linear logarithmic regression model, since the simple linear model had a heteroscedasticity problem (different observed variances). Below we obtained regression model using the program Gretl and graph the observed interrelationship between x and y (chart №1). According to the results of the calculations that the value of *p* is very close to zero and, therefore, it can be argued that the model explains well the relationship. The value of R squared tells us that the cost of innovation explains 68% of the change in the volume of innovation, which is quite significant. According to our model (1.1), if spending on innovation increases by 1%, then the volume of innovation will increase by 0.51%. Hence, it is clear that the efficiency of costs must be increased at least twice in order for the costs to pay off.



*ln vol_innov = 4.54 + 0.51 * ln exp_onR&D* (1.1)

Observed and estimated volume of innovations from expenditures on innovation (Graph No 1)

Source: Calculations were made by the author based on the data https://stat.uz/uz/432-analiticheskie-materialy-uz/2038-innovatsion-faoliyat

In 2019, the expenditures of developed countries on research and development reached: 2,79% in the USA, 3,29% in Japan, 2,93% in Germany, 2,22% in France, 3,28% in Sweden, Israel 4,25%, in South Korea 4,23% of GDP . Observations show, that in the developed countries on the State account for 30-50% of the cost of the national R & D including at stimulating the development of small innovative business expenses [13] .

It is believed that the foreign investment in the developing world is one of the main factors of economic strength. Foreign direct investment, represented by foreign enterprises, allows the development of competition and thereby constantly stimulates the improvement of the final product or services. The state plays an important role of the "first customer" here. It is state-owned enterprises that actively cooperate with foreign companies and played an important role" the guarantor of the investors in China [14]. In addition to the state, big companies are usually able to develop innovations independently and have sufficient financial resources for investment in large scientific projects.

Conclusions and suggestions

Today many measures are taken to develop the innovational activities, in particular, legislation is being revised and reformed, as well as precise directions for the development of innovation are approved. Unfortunately, due to the fact that investments in innovation are typically associated with high risks [15], it is also necessary to develop the financial system to provide constant flow of investments. It is important to take the following measures to improve innovation in the republic:

1. To stimulate the activities of universities in important technical areas. Improve the quality of educational services by attracting foreign specialists ;
2. create close cooperation between manufacturing enterprises and universities through a centralized

system of inquiries. Improve the exchange of information between business and universities;

3. establish a close relationship with international research centers. Encourage local professionals to collaborate with their foreign counterparts and;
4. cooperate with international financial institutions to improve the investment climate in the country. Encourage the development of non-traditional methods of financing in the republic.
5. continue studying the nature of the interaction between the interests of government and business in the implementation of innovation policy.

In conclusion, we can say, that economic development is highly dependent on innovation and innovation in business. In particular, the application of technological innovations in the service sector, for example, in the educational service, can improve the quality of education and thereby raise the quality of human capital. But in order to maintain a long-term growth in investment in human capital, as the experience of developed countries shows, we need such levers of financing that would very quickly adapt to the changes taking place in the scientific world. The role of the state as the initiator of the financial reform is colossal, especially when creating favorable conditions for cooperation between business and universities and research centers.

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