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Formation of the information society and innovative development of the country

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Abstract: This article examines the relationship between the formation of the information society and the innovative development of the economy. The article also provides the main features of the information and innovation economy and the key directions of the impact of ICT development on the economic growth of the country.

Keywords: information society, information technology, globalization, efficiency, infrastructure, integration, technological structure, intelligent technologies, knowledge economy, innovative development, national innovation systems, e-commerce.

The patterns of development of the economy of Uzbekistan and the directions of its growth determine the need to develop a new development strategy defined as the consistent creation of a material and organizational and economic base for building an information and industrial society, a multisectoral, socially oriented market economy that creates the opportunity to reach world standards of quality of life and habitat of the country's residents.

The key trend is the consistent increase in the role of information and knowledge in modern society. Such scientists as D.Bell [1], A. Toffler [2] believe that information and knowledge are becoming an increasingly important factor of production, the driving force of economic development and prosperity of society. Based on this particular feature of modern society, many researchers call it an "information" or "knowledge society" as P.Draker calls it [3], or, according to M. Porat, a society based on an "information economy" or "knowledge economy" [4], since in the information society economic success increasingly depends on the availability and effectiveness of a national, regional, local or corporate innovation system and an established system of continuing education.

In recent years, a fundamentally new direction in the development of the economy, which has been called the knowledge economy, has been actively discussed in the scientific community. The term "knowledge economy" (or "knowledge-based economy") was coined by the American economist F.Makhloop in 1962. In this sector F. Makhloop included the following activities, which were grouped into five groups: education; research and development; mass media (radio, television, telephone, etc.); information technology and information services [6].

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Thus, the knowledge economy is understood as such an economic model in which knowledge becomes the main factor in the development of a country, its most valuable and strategically important resource. The process of forming the knowledge economy has already begun to be practically implemented, despite the fact that many more theoretical provisions of the new direction remain unclear and require further study. Nevertheless, in the economic development strategy of a number of countries of the world community, the knowledge economy is beginning to occupy an increasingly important place. And today there is no doubt that it will determine the further development of the world economy in the XXI century, the distinctive features of which are the growth of globalization processes and the formation of a global information society. And these features, of course, leave their mark on all other processes of socio-economic development of society.

The knowledge economy is closely connected with the process of informatization of society, therefore, the highest and next stage and the structure of the innovation economy is the knowledge economy or information society, which gives reason to call it the innovation and information economy. At the same time, it is emphasized that the formation of the knowledge economy is facilitated by the continuous growth of the population's demand for new types of services provided through information and communication technologies (ICT).

The activation of innovation activity is directly related to the formation of a detailed system of motivation for innovation activity, with the creation of a modern organizational and economic mechanism for this activity. It is the organizational side of innovations that largely determines the pace of scientific and technological progress at enterprises, in the economy as a whole and, ultimately, the competitiveness of the firm and the country.

There is still no consensus in the economic literature on the question of what is the content of the relationship between innovation and the stages of long-term economic cycles. To a significant extent, this circumstance is due to the ambiguity of interpretations of the concept of "innovation" and its connection with such concepts as "scientific and technological progress", innovations, etc. The essence of scientific and technological progress as a factor of economic growth is most often associated in modern economic literature with the concept of "innovation" [7].

Innovative activity cannot be reduced only to the creation of new means of labor, technological processes, methods of organization and management. The most important component of innovation processes is the transformation of the listed elements into components of the production process, as a result of which a qualitative renewal of the existing production and its technical base is achieved. Therefore, in a broad sense, innovative activity also includes best practices and their dissemination, the use of innovations in other fields of activity.

The innovation process can be represented as a set of scientific, technological and organizational transformations that ensure the creation, implementation and use of innovations in the interests of increasing production efficiency. In order to activate innovation activity, stimulate the creation, use and dissemination of innovations, it is necessary to create a modern effective organizational and economic mechanism for this activity.

Methodological aspects of the formation of the modern organizational and economic mechanism of innovation activity, in our opinion, should be considered from the point of view of innovation

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systems. In methodological terms, the idea of an innovation system means the recognition of the need for a holistic approach to the innovation process, its formation and flow.

The main function of innovation systems is to produce new knowledge, various kinds of innovations, and to use innovations in practice. The same function should be performed by the organizational and economic mechanism of innovation activity, as well as the formation of innovative potential and its effective use. When considering innovative systems, using a systematic approach, one should proceed from the effectiveness of the functioning of these systems. To do this, any innovative system must have strategic goals and ways to implement them.

In the context of globalization and taking into account the consequences of the global financial and economic crisis, interest in studying and understanding the role of science in world economic development is significantly increasing. In economics, the concept of the life cycle of scientific and technological progress has become widely used, and in relation to basic technologies, the term "technological way" has come into use, which characterizes the level of basic technologies used in a particular historical period in certain large sectors of the economy.

The productions included in the same technological structure are united by the same technical level, requirements for the quality of raw materials, semi-finished products and final products, as well as for the qualification of the workforce. Its life cycle forms the content of the corresponding stage of scientific and technological progress, the forms and manifestations of which are determined by the system of industrial relations and characterize the level of development of society as a whole. To date, in the world technical and economic development (since the industrial revolution of the XVIII century), it is possible to distinguish the life cycles of five successive technological modes, including the information technological mode dominating in the structure of the modern economy.

Today, the reproductive system of a new, sixth technological order is being formed, the formation and growth of which will determine global economic development in the next two to three decades [14]. Microelectronics and software are the key factors of the dominant technological structure today. The technological aggregates forming its core include electronic components and devices, electronic computing equipment, radio and telecommunications equipment, laser equipment, computer maintenance services.

The formation and development of the knowledge economy is largely determined by the level of development and dissemination of new ICTs. Therefore, it should be expected that the creation of new generations of these technologies, the appearance of which can be predicted for the coming years, will not only give new impulses to the development of the knowledge economy, but will also cause major changes in many areas of society related to the acquisition, storage, presentation and dissemination of knowledge.

Certain conditions must be created for the successful implementation of innovations using ICT. ICTs play an important role in the emerging infrastructure of national innovation systems (NIS). At the same time, special attention should be paid to two factors:

- ICT, as an innovative tool, participates in all other projects and increases their innovative level;
- the innovative development of the ICT sector itself is achieved through internal industry innovations, which helps to develop other industries.

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Problems on the path of innovative development are mainly related to risks that appear where people are directly involved in the processes of making new unconventional decisions. The implementation of innovations in any industry requires high professional qualities, strategic thinking abilities, and vision of the future from its employees.

Another aspect of the formation of NIS using ICT is the creation of a unified system for collecting, storing, analyzing and registering socio-economic information. This system aims to create a single information space in all state and government bodies and self-government bodies in order to integrate into the global information society (for example, the republic has adopted an e-government development program).

Therefore, it is necessary to create special information systems that would be engaged in the implementation of information support for innovation activities - the collection of information on scientific and innovative works, their processing, analysis, generalization and forecasting.

The dynamics of scientific potential is evidenced by indicators of human capital development, the volume and structure of investments in R&D, the number of publications and patents, the development of information technologies and communications. ICT and information and communication infrastructure serve as the technological foundation of transformations that ensure the effective functioning of innovative economies. The field of information technology is the fastest growing and therefore the most promising part of the innovation system.

The ICT sector, from the point of view of economic activity, includes the production and implementation of information technologies (hardware, office equipment, data transmission equipment, software and related services) in conjunction with telecommunications (subscriber and network) equipment and telecommunications services.

The creation of new knowledge and technologies and their use in the interests of socio-economic development of the state determine the role and place of the country in the world community, and the level of competitiveness of the national economy. In developed countries, 80-95% of GDP growth is accounted for by new knowledge embodied in engineering and technology, i.e., an innovative economy is developing in these countries [15]. The main features of the information and innovation economy are:

-availability of modern information technologies and computerized systems;

-availability of a developed infrastructure that ensures the creation of national information resources;

-accelerated automation and computerization of all spheres and branches of production and management;

-creation and operational implementation of innovations for various functional purposes;

-availability of a flexible system of advanced training and retraining of qualified specialists.

In terms of competitiveness, there is a clear relationship between innovation, human capital and information technology. The ability to constantly introduce and master innovations is directly related to the educational level of the population, which, in turn, increasingly depends on the level of ICT development.

The ICT industry consists of several segments, among which telecommunications, the production of software, hardware and IT services are distinguished. The last three segments are usually combined into the IT market.

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ICT today is an integral infrastructure of the global global economy, not only ensuring the most efficient functioning of world markets, but also acting as a locomotive in the development of the world economy. It is no coincidence that the governments of the developed countries of the world have identified this direction as a strategic vector of economic development, the main source of accelerating economic growth at the present stage.

The ICT sector fully meets the requirements that apply to the most promising industries from the point of view of internal and external competitiveness:

- the industry should have a high export potential. This is determined, firstly, by the fact that it is necessary to diversify exports to increase the stability of the economy, and, secondly, the growth opportunities of any industry focused on the domestic market will be limited in the next decade by relatively low final demand;
- the industry should not be energy intensive;
- the industry should be labor-intensive and preferably “intellectual-intensive”, since only such industries will provide employment for the overweight and educated population;
- the industry, if possible, should not be capital-intensive [16].

There are several key areas of the impact of ICT development on economic growth:

- the impact of ICT on the efficiency of markets and intra-company management;
- improving the quality and increasing the availability of services of the budget sector of the economy, primarily education, healthcare;
- the impact of ICT on social institutions that ensure the effectiveness of public administration;
- impact on the efficiency of trade through the development of e-commerce [16].

Informatization of public administration allows not only to increase the efficiency of public authorities, but also to increase the degree of interaction between the state and the population. E-government systems help to increase the efficiency of government by:

- ensuring a high degree of control over the execution of decisions and instructions of the government by other state structures: at any time, you can check how it happens inside the controlled body;
- reducing the overhead costs of public administration;
- improving the quality of services provided by public services;
- reduction of bureaucratic barriers and better interaction with civil society.

E-commerce provides organizations of any scale, including small firms, with the opportunity to operate economically, expand their operations and reduce overhead costs [17]. At the same time, the electronic service allows you to qualitatively transform all business processes, namely:

- to increase the efficiency of promotion to the market (bringing information to customers and attracting attention to yourself);
- increase efficiency (continuous round-the-clock operational information service);
- lower prices (get rid of surpluses and reduce overhead costs);
- to improve the service (individual approach, clarity and simplicity) with the organization of virtual storefronts;
- expand the geographical service area.

The information factor modifies the market mechanism of the economy: the methods of competition are changing, local, regional, national and international markets of information and

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telecommunication goods and services are being formed, functioning on new principles. Telecommunications infrastructure is becoming a condition that determines the level of competitiveness of industrial products and services. The ICT sector has exceeded the total volumes of the oil and steel industry in the world. This is confirmed by the growth statistics: if the "old" economy is growing by 1-3% per year, then the trend of recent years in the global IT industry is the growth rate of 8-10% annually [18].

When analyzing the features of economic growth in modern conditions, it should be borne in mind that with the development of ICT, the possibilities of coordinating business processes are expanding, which is facilitated by the transition to integration, unification and standardization. Various types of businesses integrated via the Internet function in a new capacity within the framework of a new flexible market and network infrastructure that expands the boundaries and scales of business, reduces the degree of asymmetry of information, and promotes the active dissemination of innovations. The new flexible market and network infrastructure ensures higher mobility of innovations, better coordination of interests and actions of agents, and a more efficient structure of markets. All this ultimately leads to lower costs, increased productivity of the firm both at the firm level and at the level of individual segments and the economy as a whole.

The opportunities to increase the impact of the use of ICT are manifested mainly at the microeconomic level due to better planning of ICT implementation projects in business practice.

At the same time, the state plays two roles: it acts as one of the largest corporations, providing e-government services to other corporations and the population. At the same time, it determines institutional conditions, influencing pricing in the ICT industry and the quality of infrastructure, regulating issues of information security and intellectual property protection, providing opportunities for long-term development of the industry, forming certain standards, etc.

Considering the impact of ICT on international competitiveness at the microeconomic level, it is necessary to take into account the diversity of technologies themselves and, at the same time, the diversity of information needs of companies and government agencies.

From our point of view, the greatest effect of the influence of ICT on improving national competitiveness occurs in the following main areas:

-maintaining the quality of products and services at the world level;
- access to international financial markets;
-rapid adaptation to changes (in technology, consumer preferences, terms of trade);
-strong positions in the domestic market.

An important tool for the adaptation of corporations to changes in market conditions is research and development (R&D). In modern conditions, it is almost impossible to conduct R&D without the use of information and communication technologies. The following main advantages of using ICT in research and development can be identified:

-reducing the time of product development and market launch;
-reduction of labor costs due to automation of routine operations and additional analytical capabilities;
-reducing the cost of field tests through the use of computer modeling;
-improving the quality of finished products and reducing maintenance costs;
-technological presentation of documentation.

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According to M. Porter's theory of international competitiveness, a necessary condition for international competitiveness is competitiveness in the domestic market. First of all, we are talking about the ability of national companies to compete with other national producers and with transnational suppliers of goods and services in the domestic market. Secondly, by expanding the share of the national market, companies accumulate potential for foreign expansion. The use of ICT allows small enterprises to overcome niche and geographical limitations of their activities by reducing the costs of distributing market information [19].

An important factor in the international competitiveness of national corporations and the investment attractiveness of the country is the quality of public administration. The effectiveness of public spending also, albeit indirectly (for example, through the level of the tax burden and the amount of public debt), has an impact on international competitiveness.

The immediate benefits of using ICT in the activities of public administration can be divided into two groups. The first group includes the advantages associated with optimizing the activities of public administration bodies – increasing information transparency (from the point of view of internal needs), increasing the speed of decision-making, reducing management costs and losses associated with insufficient quality of management decisions. The designated tasks are similar to the needs of private corporations and solutions (including software and hardware) may be similar.

Thus, analyzing the impact of ICT on improving the competitiveness of the national economy, it can be concluded that countries with highly developed IT infrastructure and having good indicators for most factors contributing to the introduction of ICT, as a rule, demonstrate higher rates of economic growth. The main factors of the positive impact of ICT on international competitiveness are:

- improving the competitiveness of individual industries and the national economy as a whole;
- reduction of economic barriers for both large and medium-sized and small companies;
-increasing the productivity of production factors;
- improving the quality of products and services through the use of ICT in their production process;
-the high attractiveness of the ICT products and services industry for international investors and the significant export potential of this industry;
-improving the level of public administration and services provided by the state to business and the public.

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