MINISTRY OF EDUCATION OF THE REPUBLIC OF AZERBAIJAN

AZERBAIJAN STATE UNIVERSITY OF ECONOMICS

INTERNATIONAL MAGISTRATE AND DOCTORATE CENTER

MASTER DISSERTATION

ON THE TOPIC

Problems and Perspectives of Knowledge Economy in Developing Countries

MAMMADOV NOVRUZ FARMAN

BAKU-2020

MINISTRY OF EDUCATION OF THE REPUBLIC OF AZERBAIJAN AZERBAİJAN STATE UNİVERSİTY OF ECONOMİCS İNTERNATİONAL MAGİSTRATE AND DOCTORATE CENTER

MASTER DISSERTATION

ON THE TOPIC

Problems and Perspectives of Knowledge Economy in Developing Countries

Code and name of the specialty: 06401-World Economy

Specialization: International Economic Relations

Group: 812

Master's Student Mammadov Novruz Farman ______signature Supervisor Associate prof. dos. Guliyeva Aida Aydin ______signature

Elm andı

Mən, Məmmədov Novruz Fərman oğlu and içirəm ki, "Problems and perspectives of knowledge economy in developing countries" mövzusunda magistr dissertasiyasının elmi əxlaq normalarına və istinad qaydalarına tam riayət etməklə və istifadə etdiyim bütün mənbələri ədəbiyyat siyahısında əks etdirməklə yazmışam.

İNKİŞAF ETMƏKDƏ OLAN ÖLKƏLƏRDƏ BİLİK İQTİSADİYYATININ PROBLEMLƏRİ VƏ PERSPEKTİVLƏRİ

XÜLASƏ

Tədqiqatın aktuallığı: Biliklərə əsaslanan iqtisadiyyat, sənaye iqtisadiyyatının və həmçinin də innovasiya iqtisadiyyatının ən yüksək mərhələsi hesab olunur. Bilik iqtisadiyyatı özünün innovasiya xarakteri ilə fərqləndirilir. "Biliklərə əsaslanan iqtisadiyyatı" istehsalatın elə bir üsulu hesab olunur ki, burada biliklərin yayılması, istehsalı və eləcə də istifadəsi, intellektual varlığın formalaşmasına təkan verir. Biliklərə əsalanan iqtisadiyyat biliyin bütün növlərinin sistemli istifadəsinə şərait yaradır.

Tədqiqatın məqsədi: İnkişaf Etməkdə Olan Ölkələrdə bilik iqtisadiyyatının mövcud vəziyyətinin və onun inkişaf sürətinin müqayisəli təhlilini tədqiq etməkdir.

Istifadə olunmuş tədqiqat metodları: Tədqiqatın həyata keçirilməsində induksiya, deduksiya, sintez, analiz və eləcə də müqayisəli təhlil və reqressiya-korrelyasiya metodlarından istifadə olunmuşdur.

Tədqiqatın informasiya bazası: 145 ölkənin bu sahə üzrə təcrübəsinin təhlilindən müəyyən olunmuşdur ki, bilik iqtisadiyyatının və insan kapitalının daha çox dəyər qazandığı inkişaf etməkdə olan ölkələr Albaniya, Bosniya və Hersoqovina, Makedoniya, Moldova və Türkiyə olmuşdur.

Tədqiqatın məhdudiyyətləri: daha praktiki məlumatların olmasını tələb edir.

Tədqiqatın elmi yeniliyi və praktiki nəticələri: Tədqiqat işinin elmi yeniliyini aşağıdakılardır.

İnkişaf etməkdə olan ölkələrdə bilik iqtisadiyyatının inkişaf perspektivləri müəyyən olunmuşdur;

İnkişaf etməkdə olan ölkələrdə bilik iqtisadiyyatının formalaşma xüsusiyyətləri müəyyən olunmuşdur.

> Azərbaycanda biliklərə əsaslanan iqtisadiyyatın yeni trendləri müəyyən olunmuşdur;

> Azərbaycanda bilik iqtisadiyyatın əsas məqsədləri və hədəfləri müəyyən olunmuşdur.

Həyata keçirilən tədqiqatın nəticə və elmi müddəalarından bilik iqtisadiyyatının hansı fəaliyyət növündə daha da effektiv olacağı müəyyən olunmuşdur.

Nəticələrin istifadə oluna biləcəyi sahələr: Tədqiqat işinin əsas müddəaları, eləcə də əldə olunmuş nəticələri inkişaf etməkdə olan ölkələrdə bilik iqtisadiyyatının inkişafı istiqamətində dövlət proqramı, layihə və təkliflərin hazırlanması prosesində, elmi-tədqiqat işlərinin həyata keçirilməsində, eləcə də ali məktəblərin uyğun ixtisas kurslarının tədrisində də istifadə oluna bilər.

Açar sözlər: bilik iqtisadiyyatı, informasiya və kommunikasiya texnologiyaları

PROBLEMS AND PERSPECTIVES OF KNOWLEDGE ECONOMY IN DEVELOPING COUNTRIES

ABSTRACT

The actuality of the subject: The knowledge-based economy is the highest stage of the industrial economy, as well as the innovation economy. The knowledge economy is characterized by its innovative nature. A "knowledge-based economy" is a method of production in which the dissemination, production, and use of knowledge stimulate the formation of an intellectual being. A knowledge-based economy allows for the systematic use of all types of knowledge.

Purpose and tasks of the research: paper is to conduct a comparative analysis of the level of development of the knowledge economy in developing countries. To achieve this goal, in the article, the existing experience of developing countries in this area was analyzed.

Used research methods: Induction, deduction, synthesis, analysis, as well as comparative analysis and regression-correlation methods were used in the research paper.

The information base of research: The basis of the research database is the literature of local and political theorists, articles, as well as scientific publications in the field of knowledge economy. Internet information resources were also used in writing the research work.

Restrictions of the research: Requires more practical information.

The novelty and practical results of investigation: The knowledge economy is the use of knowledge to form services and goods. Generally, it express to a high section of skilled workers in the economy of a region, country and the world, and the idea which requires specialized skills. Countries, which record a lower value of KEI estimated to the total value of the SEE countries, are: Albania, B&H, Macedonia, Moldova, and Turkey

Scientific practical significance of results: The main provisions of the research, as well as the results obtained can be used in the development of state programs, projects and proposals for the development of the knowledge economy in developing countries, research, as well as teaching relevant courses in universities.

Key words: knowledge economy, Information and communications technology,

ABBREVIATIONS

APEC	Asia- Pacific Economic Cooperation					
GDP	Gross Domestic Product					
GCI	Global Competitiveness Index					
HDI	Human Development index					
ICT	Information and Communications technology					
KE	Knowledge economy					
KEI	Knowledge Economy Index					
KAM	Knowledge Assessment Methodology					
MCMC	Malaysian Communication and Multimedia Commission					
MNP	Mobile Network Portability					
NRYTN	Ministry of Transport, Communications and High Technologies					
SEE	South East Europe					
UNDP	United Nations Development Program					
WEF	World Economic Forum					

TABLE OF CONTENTS

	INTRODUCTION						
CHAPTER	THEORETICAL ISSUES OF KNOWLEDGE						
Ι	ECONOMY						
1.1.	Theory and application in the knowledge economy						
1.2.	The determinants of knowledge-based economy	18					
1.3.	Knowledge economy: Development at a national level						
CHAPTER	HAPTER PROBLEMS OF KNOWLEDGE ECONOMY IN						
II	DEVELOPING COUNTRIES						
2.1.	The criteria's of creation knowledge of knowledge						
	economy in developing countries						
2.2.	Comparing developing countries in way of knowledge						
	economy						
2.3.	Perspectives of knowledge economy in developing	47					
	economy						
CHAPTER	DEVELOPING OF KNOWLEDGE ECONOMY IN	53					
III	AZERBAIJAN						
3.1.	New trends in knowledge economy in Azerbaijan	53					
3.2.	The main goals in knowledge economy in Azerbaijan	58					
3.3.	The perspectives the achievements to knowledge	66					
	economy in Azerbaijan						
	CONCLUSION	74					
	REFERENCE	78					
	APPENDİX	82					

INTRODUCTION

Relevance of the research topic: The innovative development of society requires the training of professionals capable of implementing industrial and educational innovations. The growing importance of important qualities of human capital in economic development, such as the level of education, the ability to work with information and innovative technologies, is confirmed by both statistics and specific research. In the last fourth quarter of the century, the development of technology has rapidly changed people's lifestyles and communication styles. According to experts recently invited to CNN, no invention has changed our lives as quickly as the emergence of the Internet era, which is included in the list of 25 best inventions. With the advent of the Internet, the world has witnessed how information is collected, stored and exchanged. In the 1980's, when there were no cell phones, people went to the post office to talk to their relatives living abroad. Older people also applied to post offices to send them presents and to receive pensions. They went to the shops with gramophone records to write music. People went to libraries to read any book, newspaper or magazine that suited their interests. In addition, people were waiting in line at payment points to pay their utility bills, but today all this work can be done online without leaving home. Internet technologies have been a complementary part of people's lives. Imagination of the current era without Internet technologies is impossible. There are currently 1 million Internet users in Azerbaijan. 12 out of every 100 people are Internet users, of which 69.9% are men and 30.1% are women. 36.4% of users live in the house (apartment), 23.0% in Internet clubs, 19.8% in the workplace, 14.9% in educational institutions, 2.1% in the library, 3, 8% are connected to the Internet in other places.

Scott Shamp, director of the New Media Institute in Georgia, USA, said: "For a long time, people thought that you had to go to a bookstore or a library to get information. However, today, with the help of new mobile and wireless technology, it is possible to easily access any information, in short, in our time, information has become a satellite of people.

At present, the issue of widespread use of innovative technologies, which are the product of knowledge in the management of socio-economic systems, is relevant. To do this, the problem of properly selecting and systematizing huge amounts of data is revealed. In addition, knowledge is a product, its measurement is carried out by two approaches. One of them is the cost of knowledge production, and the other is the market value of the knowledge sold. On the basis of innovative technologies, opportunities arise in the technical, economic, social and physical environment for the country, region and enterprises. In addition, there are socio-economic problems in the production, application, application and adoption of innovative technologies in the field of science.

Statement of the problem and learning level: The main problem in the study is a comparative analysis of the current state of the knowledge economy in developing countries and the factors hindering the development of the knowledge economy in Azerbaijan. The directions of the formation of the knowledge economy have been studied in detail by various theorists, including A.S.Blinder, P.F.Drucker, A.D.Bedford, F.Ch.Onn, P.B.Montes, J.V.Ramires, S.M.Daggash, S.C.Smith and others. However, the requirements of modern times show that there are still some gaps in this area.

Purposes and objectives of the research: The main purpose of research is to determine the Problems and perspectives of knowledge economy in developing countries. The following main objectives are set to achieve this goal:

> Theory and application in the knowledge economy were analyzed;

The determinants of knowledge-based economy were researched;

The criteria's of creation knowledge of knowledge economy in developing countries were analyzed;

New trends in knowledge economy in Azerbaijan were determined;

> Perspectives of knowledge economy in developing economy were researched.

Object and subject of the research: The subject of this research work is based on an analysis of the essence and development characteristics of the knowledge based

economy. The object of this research work is the analysis of the achievements in the field of knowledge economy in Azerbaijan.

Research Methods: The technique of synthesis and analysis, as well as induction and deduction, were used in writing the research work. Thus, as a method of analysis, the subject was taken up in full and then broken into chapters and analyzed separately. Then, through the synthesis method, these chapters are combined in the economic system. Economic facts about diploma work have been collected, systematized and investigated through the induction method. Then, through the deduction method, the theoretical findings, general principles, and, in other words, the necessary recommendations for practical activities are identified based on these facts.

Research Database: The basis of the research database is the literature of local and political theorists, articles, as well as scientific publications in the field of knowledge economy. Internet information resources were also used in writing the research work.

Research limitations: Requires more practical information.

Scientific novelty of the research: Scientific novelty of the research are below:

The criteria's of creation knowledge of knowledge economy in developing countries were determined;

Perspective directions of knowledge economy in developing economy were identified;

New trends in knowledge economy in Azerbaijan were determined;

The main goals in knowledge economy in Azerbaijan were identified;

The perspective directions of achievements to knowledge economy in Azerbaijan were determined.

Scientific and practical significance of the research: The knowledge based economy is the use of knowledge to create services and goods. In particular, it means to a high section of skilled workers in the economy of a region, country and the world, and the idea which require specialized skills.

CHAPTER I. THEORETICAL ISSUES OF KNOWLEDGE ECONOMY

1.1. Theory and application in the knowledge economy

The term of "knowledge economy" was applied to the scientific community by Austrian-American expert Fritz Machlup in one of the sectors of the economy. At present, along with this term, such terms as "Innovation Economy", "High-tech civilization", "Knowledge Society", "Information Society", "Information and Knowledge Society" are widely used. From a theoretical point of view, it can be said that the "knowledge economy" is a method of production that promotes the creation of intelligent beings who play a major role in the production, dissemination, use, and generation of knowledge. The knowledge economy creates the basis for the systematic use of all types and kinds of knowledge (Machlup F., 1970, p.11).

The knowledge economy is the high stage of the industrial economy and the innovation economy. The knowledge economy is an economy that is different from innovation. Economists often use the term innovation economy as a synonym for the knowledge economy.

Realization and examination of innovation projects are one of the main directions of the development of effective state institutions with a high quality of life. High-quality human capital is one of the basic factors in the development and formation of the knowledge based economy. Thus, in recent years, the share of highly educated people in the economically active population has been steadily increasing, and in the modern economy, the number of "knowledge workers" whose job is to obtain, improve and analyze information is growing. It is a fact that more than 60 percent of jobs created in recent years are purely information-driven, and more and more jobs and specialties are associated with new innovative technologies. Nowadays, every new day, every opening morning is remembered with the revolution of technological concepts and the emergence of discoveries.

The study of the economic activity of the world's economic subsystems shows that

in recent decades there has been an increased focus on knowledge and comprehensive human development. Especially in developed countries, this issue is being addressed more vigorously. The results are astonishing. Today, more than 20% of the GDP of a giant country like the United States is accounted for by-products such as information, technology, computers, and electronics, which are considered to be science-intensive products. USA, Japan, Germany and so on. The experience of such developed countries shows that the efficiency of capital expenditures on human development and the use of brain products is many times higher than the efficiency of capital expenditures on other traditional areas. The success of a country like Japan, one of the leaders in the world economy today, is, in fact, the result of a correct assessment of knowledge and human intelligence.

Knowledge is the most profitable and most productive resource. Japan, which was exposed to a thousand negative influences in World War II, had a nuclear weapon detonated on its soil and was ruled by outside forces until 1945-1953, tied its economic development to knowledge and the human factor. achieved world-famous development. This example further shows that if human resources were used efficiently on a global scale, many global problems would either not exist, or at least would not reach a level that would destroy the current human civilization.

On the positive side, it should be noted that world organizations have paid more attention to the knowledge factor. The World Bank's 1988/99 World Development Report focuses on this issue. The 21st issue of the World Bank's World Development Report focuses on the crucial role of knowledge in improving economic and social welfare, and the issue itself is entitled "Knowledge in the Service of Development." The authors of the report show that the development of the economy is determined not only by the accumulation of physical capital and professional skills but also by the accurate and timely acquisition, processing, transmission of information, the study of innovations and the acquisition of knowledge. Knowledge is crucial, and individuals (especially leaders) and society need to understand the mechanism by which knowledge

is accumulated, used, and hindered to improve the living standards of people, especially the poorest, worldwide.

Today, in the context of the information revolution, it is especially important to deeply understand the interrelationships between knowledge and development and to take them into account and use in real life. The emergence of new information technologies, falling prices for computer equipment violates the boundaries between space and time, and its duration is short. Even a small village has access to "big" information in a very short time and at a very low cost. The development of distance learning has made it possible for millions of people to get an education. All of this is good. It is good if knowledge and knowledgeable people are treated as a key factor in development in a particular country. Otherwise, the new opportunities created by the information revolution will not bring any benefits and may even negatively affect the country's economy. The problem is that trade, finance, information In a globalized world, competition is intensifying, and economic backwardness may increase in countries that do not care about science, knowledge, or the literacy of their populations, as they are unable to produce science-based products. This is more likely to happen in developing countries. The World Bank distinguishes between two aspects of knowledge in terms of its impact on economic development. The first is the so-called "lack of knowledge" and is in many ways the result of unequal distribution and acquisition of technical knowledge. The point is that, for example, there is information about the technology used in industry, agriculture, health, accounting, etc. not used in production for various reasons. The second part is called the "information problem" and arises as a result of untimely access to information about innovations.

Knowledge has a strong impact on the economy and people's living conditions. However, the main feature of this effect is that it can be seen by knowledgeable people. Therefore, to strengthen the impact of knowledge on the economy as an important and decisive factor, it is necessary to increase the literacy of society and government (Becker G. S., 2009, p.97).

Lack of knowledge has a strong impact on the economy of an individual, family, enterprise or the country as a whole, and its mechanism of action is very diverse. This mechanism begins with the "operations" carried out by subjects and structures for survival. If both parties are involved in the operation and they do not know each other, the economy will eventually weaken. Here are some simple but of great economic importance. A few years ago, the lack of real information about Vahidbank and other such banks, i.e. the lack of knowledge of the population in this area, had a strong negative impact on the economic situation of every citizen and state. As they took steps towards the economy, they gave the "excess" money they cut from their throats to fraudsters and could not get it back due to the irresponsibility of government agencies. As a result of this ignorance alone, the economy of the Republic of Azerbaijan suffered billions of dollars. Lack of accurate information on the quality, shelf life, and shelf life of groceries and medicines sold in stores causes the general population to be fed expired food, become ill, spend a lot of money on treatment, and thus weaken both the individual and the economy. Lack of knowledge about proper nutrition and a healthy lifestyle weakens the economy by the same mechanism.

Knowledge also sheds light on economic relations, revealing the strengths and weaknesses of the parties. Lack of information prevents markets from collapsing and creating new ones. The efficiency of a market economy requires extensive and comprehensive information directly about the quality of goods, the irresponsibility of the employee, the financial condition and creditworthiness of firms and enterprises. Without them, it would not be right to talk about science and economic development. Because in the absence of information and, consequently, ignorance, we can talk about the improvement of one or two indicators during the reporting period, but no information is available on the economic development of society, the country and the formation of the middle class.

Achieving development through comprehensive knowledge brings many benefits. This benefit can be achieved directly and indirectly. Accurate information about diseases can save the lives of millions of people and reduce health care costs. Awareness of environmental cleanliness and pollution of water, air, soil, and products can prevent habitats from becoming dangerous to humans. Microfinance programs and people's awareness of this can make children's futures brighter (Schultz T. W., 2014, p.77).

The state must understand the lack of knowledge and lack of information and take measures to solve the problem. However, this issue is very poorly addressed in developing countries. This further increases their backwardness from developed countries. In the end, they remain dependent countries and slow down the development of the world economy.

World experience shows that today's shortcomings in all areas of knowledge are very rare in developed countries, very often in backward and developing countries. That is why we understand the relationship between knowledge and the economy and use it in practice and especially in economic development. To do so, the International Bank recommends the following to develop countries.

First, they must pursue a policy aimed at reducing the gap between developed countries and their countries. Such policies should be based on increasing public investment in human literacy, increasing economic openness, and removing barriers to competition in the telecommunications sector.

Second, government agencies, international agencies, non-governmental organizations and private sectors in developing countries should cooperate for the benefit of information institutions. In this regard, the main focus is on the standardization of accounting, disclosure rules, credit rating system mechanisms. should be focused on the creation. Besides, it is necessary to establish effective legal and judicial systems that can ensure the fulfillment of contractual obligations.

Third, it seems necessary to take into consideration the impossibility of eliminating the lack of knowledge, but understanding the crucial role of knowledge in economic development can often lead to optimal results.

An example of the power of knowledge and its economic and social benefits is the

world movement known in the world economic development as the "Green Revolution". This global knowledge-based movement has been creating new knowledge in the field of agriculture and disseminating it worldwide for many decades. The Green Revolution movement, which has become a model for the use of knowledge for development, is also international in its approach, involving many states, nonprofits, multilateral companies, private firms, banks, farmers, and landless peasants. All of them worked together to create a product of knowledge and applied it in specific areas of agriculture to increase productivity.

The successful formation of the information society depends, first of all, on the formation and development of a new economy based on information and knowledge, modern technologies and innovations, including the information economy.

Information economy means an economy in which more than 50% of the gross domestic product (GDP) is provided in the field of production, processing, protection, and dissemination of information and knowledge, and more than half of the able-bodied population participates in this activity.

The term information economy was first introduced to the scientific community in the mid-1970s by the American scientist M. Porat. According to him, information technology reflects the main content of the new society - the main forms of production resources and social wealth are information and knowledge (Пидоймо Л.П., 2010, p.108).

The features of the information economy are mainly as follows (Базылев Н. И., Грибанова Н. Л., 2006, р.109):

 \checkmark Being a factor of production and the main resource of information and knowledge;

✓ Wide application of information technologies in production and non-production areas;

 \checkmark Loss of materiality of the created product (dematerialization);

 \checkmark Changes in the nature and structure of labor;

 \checkmark The global nature of the new economy, etc.

Technological innovations play a very important role in the formation of a new economy. Especially, the progress of ICT is a necessary condition for the formation and development of the information society and the corresponding economy, including the innovative information economy.

The development of ICT ensures the availability of information, new means of communication, the organization of production processes and increase the efficiency of many economic activities. Information and communication systems accelerate the globalization of the economy by connecting to international markets and global production networks.

ICT is becoming a driving force of economic growth. Its impact on economic development occurs in two directions. First, the production of ICT goods and services is one of the most innovative and dynamic sectors of the economy and makes a significant contribution to economic growth. Second, the application of ICT in the economic and other spheres promotes innovative development, increases labor productivity, reduces costs, creates new areas of economic activity and improves living conditions (Bedford. A. D., (2013).

R. Atkinson and A. McKay noted the following mechanisms of the impact of the use of ICT on socio-economic development (Atkinson R., McKay A., 2007, p.78):

 \checkmark increase in labor productivity at both macro and micro levels - along with the increase in labor productivity of individual employees, it is possible to use capital and natural resources more efficiently;

 \checkmark Indirect stimulation of growth leads to the expansion of markets and the increase of the quality of management;

 \checkmark raise in the numbers of some jobs and improvement of the economy;

 \checkmark improving the conditions for the distribution of products and services and reducing the cost of delivery of products to consumers;

 \checkmark improving the quality and mass stratification of goods and services;

 \checkmark expansion of innovations.

17

The historical stages of economic development are closely linked with the replacement of technological production methods. In modern conditions, a method of technological production based on information technology is being formed, where the main driving forces of development are information and knowledge.

Information and knowledge have always played an important role in the development of human society. However, the role of information and knowledge in the information society has increased so much that they have played a decisive role in the production process. Information and knowledge resources have the potential to replace traditional factors of production to some extent, reducing the demand for material resources. D. Bell, the author of the Post-Industrial Concept and a prominent American scientist, suggested that knowledge and its practical application should replace labor as an additional source of income. However, the reduction in the role of traditional factors of production does not mean a decrease in the production of material goods in modern society. While the main factor of production in agrarian society island, the role of land as a factor of production has decreased in industrial society compared to capital and entrepreneurship. In the information society, knowledge replaces capital. Capital invested in material resources is not lost but replaced by human capital. The role of the labor factor is significantly reduced.

1.2. The determinants of knowledge-based economy

A knowledge economy is a modern economy dominated by knowledge activities, including creativity, information processing, and interpretation. The knowledge economy increases the proportion of employment and output. Education, professional services, media, communication, research are the main elements of this economy.

The formation and production of information in the period of informatization of society is considered important for its full use. The term "information" is derived from the Latin word "information" and is understood as an understanding of any fact, event, situation. In a broad sense, information is defined as information about the material

world and processes. are. The study of information does not take into account the laws of change of its origin and its use in various fields of human activity. It distinguishes the content of things as products of production and use. It is very diverse and divided into types that serve human activity: scientific, technical, production, management, economic, social, legal, etc. Each of these types of information has its processing technologies, meaning, forms of presentation and reflection, accuracy, the efficiency of reflection of students, facts, situations, processes. The subject of future discussion will be management and economic information, its main features are (Rostow W.W., 2017, p.51):

- ✓ Authenticity and completeness;
- \checkmark Value and relevance;
- \checkmark Clarity;

The information is accurate only if it does not distort the situation. Inaccurate information can lead to misunderstandings and misguided decisions. Information is complete when it is sufficient to understand and make a decision. Incomplete information can stifle decision-making or lead to errors. The value of information depends on what issues are addressed through it. Up-to-date information must be available at all times. Valuable and relevant information can be useless if it is expressed in vague words. Information becomes clear when it is expressed in the language of the people to whom it is intended. The integration of large complex human-machine information systems is an important part of society's infrastructure. Unlike other types of resources, especially natural resources, the information does not decrease over time as a link between different types of intellectual and material activities of human collectives, but its volume is constantly increasing, thus creating conditions for the accumulation of experience.

The significant increase in the weight of knowledge in the world today is due to several objective realities. ETT has a special place in their family. Modern scientific and technological progress, observed with intensive scientific and technological revolutions, creates fundamental changes in production. Production techniques, technologies, forms of production organization are being improved in a very short period, the speed of processing is increasing, production is becoming more mechanized and automated, and the criminalization of consumption is increasing. In such conditions, the requirements for a person, a skilled worker, an engineer, who is an active element of the production, are increasing. More knowledge is required of people. They must be able to cope with flexible production with a large level of technical organization, to produce quality products and to implement them in all countries of the world.

The new economic role of knowledge in modern times is conditioned by the new economic role of vocational and general education. It is necessary to raise the qualification level of the workforce. Countries that understand the importance of this problem are increasing the amount of capital allocated to education. For example, education in the United States currently exceeds \$ 40.0 billion annually. For comparison, in 1940 this figure was \$ 3.2 billion, and in the 1950s - \$ 8.8 billion. As a result of such a high level of care for education, the quality of the workforce increases, labor becomes more productive, and its results are more productive.

According to a study by the famous American economist E. Denison, after the War II period, 15-32% of economic development in the United States and Central Asia was achieved by applying the results of scientific research in various fields of engineering and technology to production. Accelerating ETT also has a positive effect on people's knowledge. In recent years, economists in most countries around the world have emphasized the important role of knowledge in economic development. According to E. Denison, 2-15% of the economic growth achieved in the US and Central Asia was due to the improve in the level of education. The development and emergence of new knowledge have, in fact, become an integral part of the production process. New knowledge is reflected in practice in the new design of machines and mechanisms, the quality of the workforce, effective organizational decisions,

understanding of the design, the selection of profitable models of economic development. The increase in knowledge leads to savings in material and energy resources, the reduction of energy, material, stock and labor capacity of the product in full reality. One of the distinguishing features of knowledge resources from production resources is that, unlike machines and equipment, knowledge can spread more quickly from one country to another: the modern information revolution creates the conditions for this. Knowledge, such as machines and mechanisms, is also sold and purchased in the form of patents, licenses, advice, know-how.

Knowledge is created, disseminated and used. This cycle is constantly repeated and the process continues on a new basis. Rather, if any state wants to develop the economy and improve the living standards of the population, it must constantly intensify the knowledge cycle.

In terms of the world economy, the acceleration of the knowledge cycle can generally go in two directions. The first direction is related to the activities of international organizations and institutions in this area. International organizations have to solve problems in the field of creation, collection, dissemination, and use of associations, the solution of which does not seem very attractive to individuals (capital owners). Therefore, the institutions of international organizations, first of all, have become more organized in the field of eliminating technological backwardness, providing the world economy with international social products and acting as a mediator in the transfer of knowledge. There is a need to improve governance, for which information in the world creates a revolutionary environment.

The second direction is related to the role of government agencies. States must properly direct the sources of knowledge in the country they lead (knowledge created by the country's power and knowledge "imported" from abroad) and the relationship between them. Also, if the market demand for knowledge may fall, then the state must intervene. Because the state can always find opportunities to eliminate technical ignorance in the country. For example, the state can develop an education system that can educate the population throughout their lives. The state must also manage information on knowledge and strengthen control over its quality.

1.3. Knowledge economy: Development at a national level

Just as the role of the land factor in industrial society is maintained, so is the need for labor and material resources in the new economy. In this sense, information and knowledge play a crucial role in the information society, just as labor and capital are the main resources. Traditional factors of production remain the basis for the material development of new socio-economic processes in the information society.

The sectoral structure of an industry can characterize the economic power of the country, its potential, production efficiency, the level of scientific and technological progress. However, as a group, the following information can be obtained through the sectoral structure of the industry (Ставцева Т.Н. 2010, p.144).

1. The increase in the share of industry in GDP shows the irreversibility of the process of industrialization in the country, economic development, the creation of new jobs, the development of the middle class.

2. The level of industrial development of the country and the world, this level is characterized by the adequacy of the production of tools and other means of production in the structure of the industry and the share of products produced by these industries in the total industrial output. If industrialization takes place intensively in the country, this special weight increases. An example of this is the constant increase in the share of mechanical engineering in the production of tools and means of production in developed countries.

3. The economic freedom of the country. The operation of tools, production items, and relevant processing enterprises in the manufacturing sector allows the country to: first, provide all sectors of the economy with advanced equipment and enter the world market with such products; the second is to use its natural resources efficiently for the benefit of its people.

4. The state of the country's defense capability. The number and composition of industries producing military equipment in the industry show the country's ability to produce military equipment. Besides, the country's share of heavy industry, especially mechanical engineering, allows for the rapid conversion of peace products into military products during military conflicts.

5. About export potential. As the sectoral structure of the industry develops, it increases the country's ability to export various products to foreign markets. This explains why developed countries can produce more on the world market while developing countries can produce less.

6. On the gathering speed of scientific and technical progress. The improvement in the share of advanced industries in the industry indicates the acceleration of technical and scientific progress in the country and the intensive application of scientific and technical achievements in production.

7. About the type of economic development. The sectoral structure of an industry is progressive, which provides a solid basis for the intensive development of the economy. As the production of productive, accurate, low-energy, material, stock-intensive machinery in industry increases, conditions are created for more efficient use of material and energy resources, technological equipment, fixed assets, and production capacity, and lead to intensive production growth.

At a time when the economy is undergoing serious structural changes, a shortage of resources can always be felt in Azerbaijan. In modern times and the current socioeconomic conditions, it is very dangerous for economic development to exaggerate the country's oil potential, to evaluate it as a means of solving all its problems. The experience of other countries has shown that most countries that export oil or other natural resources in the form of raw materials do not achieve the expected results.

The point is that the foreign exchange inflows into the country as a result of oil exports can become a source of serious economic and social problems. This happens when a country converts its oil profits into real resources imported from abroad and then uses them for investment and consumption. It is clear that highly processed food and industrial products imported directly for consumption meet the current demand at best and do not lay the groundwork for future economic development. The investment seems to be more efficient, but in the end, it does not give the desired result. This is due to the fact that the products of enterprises that have been invested and put into operation are often unable to withstand the fierce competition in both domestic and foreign markets. The main reason is that the domestic market can be filled with a wide range of good quality and even cheap food and industrial goods from the sale of crude oil. Therefore, it is necessary to try to prevent the unpleasant events in several crude oilexporting countries in Azerbaijan as well as in Azerbaijan. The essence of this unfavorable situation is that the annual increase in oil revenues leads to a decline in production in the industrial and agricultural sectors of the country and, at best, to a state of stagnation. Such a situation, as a rule, creates a new source of social and economic tensions in the country. We believe that such cases will not happen in Azerbaijan. Science-oriented targeted programs should be developed in this area.

To do this, first of all, priority areas should be identified in the non-oil sectors of the economy and targeted programs should be developed for their development. The focus should be on the acquisition of machinery and technology that reflects the latest achievements of scientific and technological progress for the light and food industries as a major power center.

At one time, Marx's idea that "the driving force of economic development is not machines and mechanisms, but people" has fully proved itself today.

The aim of the new ETT and development strategy is to create favorable conditions for quality economic growth, humanization of labor for productive and full use of human resources, improving the quality of working life and reducing working hours. As ETT accelerates, as the technical level of production increases, and efficient environment, efficient production, and economic activity depend more organically on socio-psychological factors and conditions. With this in mind, the new strategy includes

many important aspects that have not been adequately addressed in most countries, such as restructuring personal and social needs, abandoning overproduction and meeting the cultural and intellectual needs of the population more deeply. ETT and the new strategy of socio-economic development envisage the implementation of socio-political measures. The main issue here is to change the priorities (priorities) in economic and economic policy in favor of improving the quality of life. New models of human resource use require the emergence of new mechanisms to motivate labor.

The establishment and operation of information systems in the management of the economy is closely linked with the development of information technology - the main component of AIS. The growing demand and information services in the conditions of market relations have led to the application of the widest range of technical means of modern information processing technology. Computing systems and networks are created on their basis, not only for assembly, storage, processing, but also for maximizing the involvement of terminal facilities in the workplace of the specialist.

Applications in the field of artificial intelligence to provide information on automated information management technologies of economic activity are of interest. One of the ways to achieve success in this area is the creation of expert systems - special computer systems, which play a basic role in the accumulation, enrichment, analysis and evaluation of the knowledge of highly qualified specialists.

The expert system records knowledge about a specific subject area. The knowledgebase is a set of models, rules, and factors that lead to analysis and results to find solutions to complex problems in the subject area.

Organizational and technological process management AIS is a multi-level system that combines the management of these technological processes AIS and enterprise management AIS. Economists estimate that 90% of modern economic development in developed countries is achieved in the field of new knowledge, technologies, opportunities. explains in stages (Rostow W.W., 2017, p.149). In the first stage (traditional society) - in a traditional society, production is completely consumed, so trade is carried

out by barter, and the use of technology is limited. According to Rostow's modernization theory, in the second stage (preconditions for takeoff), specialization creates surplus output for trade, with the strong central government supporting the private sector. In the third stage (takeoff), as a result of industrialization, the labor force moves from the agricultural sector to industry, and development is concentrated in several regions and areas of production. In the 4th stage, the economy diversifies, innovations create new investment opportunities and urbanization intensifies. In the 5th stage, mass consumption expands, economic activity increases, the service sector becomes the leader, and social welfare improves.

In the conditions of agrarian society, production was carried out mainly by human physical effort. Of course, in principle, certain knowledge, skills, and information were required as a means of production as land. However, information as an economic resource was inseparable from the other, more important for the agrarian society, from the reserve - the labor force, the worker. The lack of certain knowledge in a physically healthy person was not an obstacle when hired. The information needed for this activity was obtained in the process of directing, knowledge was passed down from generation to generation, and no doubt acted as an attribute of a healthy person (usually without any basis). When the dependence on the forces of nature was too high, individual knowledge did not, in fact, determine the welfare of society. These conditions do not allow us to consider information as an independent, important economic resource in the conditions of an agrarian society.

The development of industrial society was accompanied by a constant division of demand into a skilled labor force, that is, with certain knowledge. The importance of information in the preparation and implementation of the production process of goods has increased dramatically, but by the middle of the twentieth century, physical resources were significantly lagging primarily natural and human resources. The predominance of material resources over intangible resources is explained quite simply: for the whole of the nineteenth and twentieth centuries, mankind was pursuing the

maximum possible economic development. The growth of the Gross Domestic Product (GDP) has become the main macroeconomic goal of all countries included in the industrial society. GDP - development meant the expansion of the consumption of physical resources, the auxiliary, subordinate role of information comes from the drum. However, material resources can be used only once, and the industrial economy has met fairly quickly with the problem of their depletion, with the deterioration of the living environment and, consequently, with the rapid growth in this direction. Industrial production made it possible to meet the basic needs of all members of society, but at the same time revealed the limits of future socio-economic development at the expense of natural and other physical resources. Here, the role of information in social production from relief has been identified as an inexhaustible factor, and in some cases as a factor that eliminates the problem of limited material resources. Recognition of the fact that knowledge and information are independent, powerful factors of social development has become a conditional feature that divides human evolution into industrial and post-industrial centuries. Lack of knowledge in the information society is a key factor in recruitment and, accordingly, makes this type of production impossible.

CHAPTER II. PROBLEMS OF KNOWLEDGE ECONOMY IN DEVELOPING COUNTRIES

2.1. The criteria's of creation knowledge of knowledge economy in developing countries

The concept of "knowledge economy" or "knowledge-based economy" (translated from English as "knowledgebased economy"), widely introduced into scientific circulation in the late 90s of the 20th century, was introduced in 1962 by the Austrian-American scientist Fritz Machlup.

The characteristic features of this economy were the profound changes in the factors used in the material and technical organization and management of the economy. The knowledge economy is based on the comprehensive and wide application of technological knowledge (hi-tech) and production organization systems (know-how). The "intellectualization of the economy" is becoming more widespread and deeper. An important feature of this economy is that it replaces the law of "final productivity decline" with the "increasing law of income" of the industrial economy period. It is no coincidence that companies engaged in the development of intellectual, science-intensive products (IBM, APPLE, Microsoft, etc.) come to the fore today. One of the features of the operation of such companies is that the value of their tangible assets is small and their market value is many times higher. This was possible not due to the physical, material things of the final product (the result of their activity), but due to the efforts of the knowledge and skills of the workers who produced this product.

In a knowledge economy, more competitive economies invest more in education and science. World leaders for scientific research and development (IT), such as the United States, China, Japan, and Germany, in 2015 alone, 457.0; 368.7; They spent \$ 166.9 billion and \$ 108.8 billion, respectively. The ratio of domestic spending to GDP for research and development increased from 1.99% in 1995 for OECD countries to 2.38% in 2014 and from 1.60% for EU-28 countries in the period under review to 1, Increased by 95%. The sectoral structure of the information economy is also completely different from the economy of the industrial era. It is characterized by rapid development of the service sector. The fastest-growing, knowledge- and information-based sub-sectors of the service sector are mainly represented by segments such as education, research and development, telecommunications and business services. The World Bank estimates that as of January 1, 2016, about 70% of world GDP was produced in this sector, and 70-80% in the most developed countries such as the EU and the United States.

The development of the information economy is increasingly affecting the quantitative and qualitative structure of employment. In terms of quality, the share of skilled labor is constantly growing. Developed countries and most countries with economies in transition have a high proportion of workers with higher and secondary education. For example, in developed countries, the number of high school graduates is almost equal to the number of university entrants, and the share of employees with higher education in their total number is growing. In the first decade of the 21st century, the duration of adult education in countries such as Germany, Japan, the United States and Canada has reached 12-14 years. The importance of professions related to the collection, analysis, processing, storage and use of new knowledge and information is growing. These processes create conditions for unequal distribution of income and help to direct it to the benefit of higher education and highly skilled labor. In terms of quantity, there is a process of reducing employment in the first and second sectors of the economy and redistributing it in favor of the third sector of the economy. This sector, ie the service sector, accounts for 60-70% of all employment in developed countries. In conclusion, the extrapolation of modern trends in economic development to the long-term prospects for the development of the business market allows us to talk about the growing advantage of higher education and higher education, which is not standard thinking, but the ability to standardize, integrate, analyze and summarize information will be directed.

Developing countries can benefit from the "knowledge revolution" in the global world by investing in human capital, improving the efficiency of the institutional system, appropriate communication technologies, and creating an entrepreneurial environment based on innovative and healthy competition with proper planning. Examples include Finland, South Korea, New Zealand, Ireland, Malaysia, Singapore, and, in recent years, rapid growth in countries such as China and India. The World Bank's Knowledge for Development (K4D) program provides a comparative assessment of the competitiveness of related countries in the global knowledge economy with other countries. The program provides a "four-pillar framework" that countries can use as a basis for the transition to a knowledge economy.

The first step in building a knowledge economy in a country is to understand the strengths and weaknesses of existing and potential competitors. After this step, goals must be set, appropriate policies must be formed and invested. According to the "four-pillar framework", the fundamental foundations of the knowledge economy are built on 4 indicators. These are: economic and institutional regime, education and qualified human resources, information and communication infrastructure and innovation system.

The Knowledge Assessment Methodology (KAM), which is based on these four principles, allows you to compare the relative performance of countries in terms of knowledge economy in terms of 83 different structural and qualitative changes, changing over the years. In addition, a country report and cross-country comparison prepared on the basis of specific indicators selected by this methodology can be provided. The ease, transparency and accessibility of the knowledge assessment methodology have made it widely used by government officials, politicians, researchers, civil society representatives and the private sector. The Knowledge Economy Index (KEI) is the most widely used measure of a country's or region's overall knowledge of the knowledge economy. This index assesses the level of activity of each country on 12 indicators in accordance with the above-mentioned four-column

framework. For the development of the knowledge economy, the economic and institutional regime must be established in such a way as to lead to the effective use of existing and newly created knowledge and the stimulation of entrepreneurial activity. To do this, a society must be formed in this area, where both the reduction of tariff and non-tariff restrictions, as well as improving the overall quality of governance and the principle of the rule of law are universally accepted. The educational pillar of the knowledge economy reflects the process of providing the knowledge and skills needed to create, use and disseminate knowledge. The establishment of a strong information and communication infrastructure is important for the development of the knowledge economy in terms of information processing and dissemination. Because the knowledge economy and the application of innovations are based directly on information, its processing and dissemination, or more precisely, its application. In this regard, a strong information and communication infrastructure plays an important role in building a more active innovation system, identifying market needs and stimulating the creation and application of new technologies. The innovation system to be established includes the business world, research centers, universities, etc. connects. In this context, it should be noted that in order to form a knowledge-based economy, it is necessary to create an appropriate environment in the first place.

In parallel with the knowledge-based economy, which should be built on sound foundations, one of the areas that is now widely discussed in the economic sphere is the behavioral economy. Unlike the knowledge economy, the behavioral economy does not have strong theoretical and normative assumptions about how the system works and should work. Instead, existing theories are examined and analyzed in terms of human behavior. For this purpose, other sciences, especially psychology, sociology, neurology, cognitive sciences, etc. The results obtained are used to explain human behavior in the economic sphere. Thus, as in the knowledge economy, the creation of knowledge, the dynamics of scientific concepts in constructive approaches, and the application of behavioral claims by scientists in this field are supported, but all do not play an important role in the behavioral economy. The methodological focus of behavioral economics is on experiments. In this regard, a distinction is made between laboratory and field experiments. While laboratory practice was more dominant in the early stages, field experiments became increasingly important. In parallel, the use of neurological measurements has increased. A new field has emerged - the field of neuroeconomics, which focuses on the description of algorithms in the background of the observed selection and their biophysical application. It seems that with the inclusion of these factors in the process, the issue will expand until the foundations of new theories of human behavior are laid. It should be noted that the development of this new direction of the economy also requires a high level of education, advanced information and communication technologies, a modern innovation ecosystem and an incentive institutional mechanism that ensures their proper and unimpeded functioning. This suggests that the development of a behavioral economy in a country is directly related to the fact that it meets the conditions of a knowledge-based economy.

The modern world seems to be drowning in the burden of unprocessed data: "standard" databases are weak here, as it is impossible to formally structure these data streams, which are characterized by incompleteness, uniqueness and extraordinary dynamism. The rapid increase in data flow leads to significant changes in work methods. These processes require not only the automation of data processing and analysis, but also the intellectualization of information and organizational processes, the support of intelligent decision-making technologies that establish and implement effective methods. Recently, there is a need to create and apply artificial intelligence systems to find answers to highly complex and urgent problems that cannot be solved by natural intelligence. The creation of such information systems is one of the most important in public life. The formulation and solution of these problems has been made possible by the achievements of research-based intellectual management theory and practice in the fields of knowledge engineering, mathematical modeling and data processing. Existing socio-technical systems, consisting of various organizational-

technical, technological and human-machine systems, belong to the class of purposeful and purposeful systems. They exercise freedom of choice of behavior in accordance with the relevant situation and efficiency criteria. These target systems, which have the ability to obtain, retrieve and use information, are called intelligent systems (IS). An important feature of intelligence is the ability to extract, generate, and construct solutions that are not obvious in the system. This property reflects the system's ability to obtain a deductive result ("thinking"). In terms of information, this feature is sometimes interpreted as the ability to create and disseminate new intellectual information that is not explicitly presented in the system. Intellectual information is understood as information that has semantic and pragmatic features, ie this information has a certain meaning and is intended for certain purposeful activities. Thus, the most effective way to represent semantics and pragmatics in IS is to build certain information structures in the form of graphs, at the tops of which are the information cores, and the arcs correspond to the interactions between the tops. An important feature of intelligent systems is related to the problem of fuzzy, uncertain, incomplete decision-making process. There are several related directions in the theory of artificial intelligence. Sources devoted to the orthodox heuristics state that the decision-making process cannot be formulated in principle. From this point of view, the model of the decisionmaking process is presented as a set of rules and methods, which are confirmed by experience and form a deductive system. From another point of view, man makes decisions logically, and therefore the decision-making process can be written in the form of an algorithm, that is, as a series of formal operations. However, in most cases, the decision-maker cannot present his / her decision-making process in a formal (formal language). This is due to the fact that the principle of uncertainty is in the nature of the decision-making phenomenon. Intelligent systems are characterized by the following characteristics:

> IS should act as an open information system that expands the scope and content of the world model of environment and field of activity;

- IS identifies methods, ways and means of achieving the end result based on a defined goal;
- The IS has the ability to make judgments in the context of incomplete information, using both accurate and truthful outcome rules, and thus must create new information;
- The IS must have certain capabilities (mechanisms, methods, algorithms, programs, etc.) to estimate, generalize and conceptualize knowledge;
- > The IS must understand the problems and solve them within its authority;
- IS must recognize the states, patterns, processes, and states of the world around it;
- In the process of operation, the IS must not only use known information, but also create new information (data, knowledge), ie act as a producer and source of intellectual information resources.

In order to model human decision-making processes by existing decision-making support systems (QMS), it is necessary to give them the intellectual properties listed above. The QQDS obtained in this case can be called intellectual. Intelligence implies the existence of an external world model in its internal system. This model allows the independence of the system in the evaluation of the input query, the effective and pragmatic interpretation of the query, the correct modeling of the external world in terms of semantics.

2.2. Comparing developing countries in way of knowledge economy

The main task of economics is to achieve sustainable economic development with higher welfare and living standards. The scientific research of the last century was mainly devoted to the study of production-based economic growth. The new period is a period in which knowledge plays a key role, and the potential of qualified personnel is considered to be the greatest wealth. It is no coincidence that today the countries with the leading economic power pay special attention to the development of human capital,

in other words, the establishment and development of a knowledge-based economy, and spend a considerable amount of money. In order to achieve long-term economic growth, it is necessary to create and use knowledge, as well as to create the necessary economic and institutional conditions for this process to be more effective. The World Bank has developed the Knowledge Assessment Methodology (KAM) to measure the level of the knowledge economy. Country-based assessments are based on the existence of a favorable economic and institutional regime in the economies, a high level of education and qualified human resources, an effective innovation system and a modern information technology structure. According to the methodology, a multidisciplinary assessment of the knowledge economy criteria for different regions and countries was conducted in 2012 and the index values were calculated. The index values are 0 as the lowest and 10 as the highest. This calculation includes both the Knowledge Economy Index and the Knowledge Index, as well as the Economic Incentive Regime Index, the Education Index, and the Innovation Index, which form the pillars of a knowledgebased economy. and Information and Communications Technologies Index values are presented. It should be noted that the difference between the Knowledge Economy Index and the Knowledge Index is that the economic and institutional regime factor is also included in the calculation of the former. Thus, it is determined on the basis of the Knowledge Index, Education Index, Innovation Index and Information-Communication Technologies Index.

A comparison of different regions and groups of countries in terms of income levels in the knowledge economy confirms that the level of "knowledge-based" economies is directly related to economic development and income levels. In the ranking of economic regions, the first three places are occupied by North America, Europe and Central Asia, East Asia and the Pacific, respectively, and the last, 7th place is occupied by the African region. Latin America, the Middle East and North Africa and South Asia are ranked 4th-6th. High-income countries also rank first in the ranking of country groups by income group, and the knowledge economy rating is fully proportional to the level of income for country groups. The table below shows the countries in the top ten for each index in the 2012 ranking of countries with the knowledge economy. Unfortunately, such a calculation was not made for the following years. The new rating is expected to be announced in September 2018. Now let's look at the position of Azerbaijan in the ranking of the knowledge economy. In 2012, Azerbaijan ranked 79th out of 146 countries on the Knowledge Economy Index with

Тор	Knowledge	Knowledge	Economic	Education	Innovation	ICT Index
Ten	Economy	Index	Incentive	Index	Index	
	Index		Regime			
			Index			
1	Sweden	Sweden	Singapore	New	Switzerland	Bahrain
				Zealand		
2	Finland	Finland	Finland	Australia	Sweden	Sweden
3	Denmark	The	Denmark	Norway	Finland	Luxembour
		Netherlands				g
4	The	Taiwan,	Sweden	South	Denmark	The
	Netherlands	China		Korea		Netherlands
5	Norway	Denmark	Hong Kong	Greece	Singapore	United
						Kingdom
6	New Zealand	Norway	Switzerland	Sweden	The	Finland
					Netherlands	
7	Canada	Austria	Canada	Iceland	USA	Switzerland
8	Germany	New Zealand	Norway	Ireland	Israel	Germany
9	Australia	USA	Luxembourg	Taiwan	Taiwan	Taiwan
10	Switzerland	Germany	Austria	Spain	Canada	Hong Kong

Table 1. Rating of countries on knowledge economy. (For 2019)

Source: World Bank.

an index score of 4.56 out of a possible 10 points. The country's Knowledge Index is 4.96 and ranks 77th in the index.

It has already been unequivocally accepted that knowledge is the leading factor in economic development in modern times. According to the knowledge economy index in 2012, Azerbaijan is in the middle of the ranking of countries. For Azerbaijan, which
is rich in natural resources, the formation of a knowledge-based economy, in other words, the transformation of oil capital into human capital, has been accepted as one of the main priorities. This issue is also reflected in the approved Strategic Road Map. Therefore, it is expected that Azerbaijan will be in the forefront of the new ranking, which will be announced in September this year.

In the process of globalization, work is becoming increasingly complex (Daniels, Radebaugh & Sullivan, 2002). The work of employees must meet the requirements of efficiency and allow them to receive goods and services with characteristics different from competitors. To this end, modern enterprises are faced with the task of developing and improving their skills and competencies, as well as improving the level of experience and innovation management and the level of other employees. In the socalled developed knowledge societies and economies, highly competitive enterprises better train their workforce in accordance with vital competencies. The job is getting more complicated. New, expanded, integrated and multifunctional skills acquired through a formal system of education, training and practice at work are necessary to take advantage of the opportunities for creating and applying individual secrets and structures (coded, organizational). more knowledge.

Globalization is the first economic trend in the knowledge-based economy (Andriessen., 2004). Of course, we are talking about the paradigm of knowledge after the end of the period of industrialization, because in the new environment, a look at business, an understanding of the fundamentals of creating and increasing competitiveness has changed. In a modern economy, where uncertainty is the only absolute, knowledge is the main source of competitive advantage. When the market changes significantly, technologies develop rapidly and the number of competitors increases, successful companies must constantly create new knowledge, disseminate it within the organization and quickly introduce it in the form of innovative products / services.

The end of the 19th century - the beginning of the 20th century was marked by the

industrial revolution. Profit was considered primarily by increasing productivity in the production process. Now the welfare of the nation and the entire region is increasingly dependent on the level of knowledge in an effective and efficient manner. The knowledge economy offers virtually unlimited resources, because a person's ability to create knowledge is virtually unlimited. Knowledge organizations (Drucker., 1992) use their intellectual resources as the main source of competitive advantage. As a rule, they are financially small. Intangible assets of these organizations exceed the value of their tangible assets. They compete in terms of intellectual value, or by creating sufficiently different and unique combinations to meet significantly changing customer requirements (Teece. 2000). These training organizations are understood as a group of employees who are constantly improving their ability to create superior values compared to competitors. Their main feature is the ability to quickly adapt, constantly update and restructure their business. In the OECD study, capital is based on knowledge that is recognized as a new source of growth that creates future benefits, but unlike machinery, equipment, vehicles and structures, it does not have a physical or financial embodiment. That type of intangible investment is a main contribution to growth in developed economies (OECD. 2018, p. 3).

There is a comparative advantage when a company always offers goods / services to consumers that are different from competitors, and this difference has a certain value for consumers. The ability of a company to offer something different and more valuable to consumers on a regular basis can only be achieved when the business of the company is slightly different from competition. Competitive advantage is based on four skills (Wickham. 2001, p. 267): internal structure, company reputation, company path to innovation, and strategic resource of the company or not valuable assets for the company and its competitors. These four abilities are relevant to any business activity. They can be associated with three specific sources of competitive advantage, such as value, knowledge and relationships with key stakeholders.

A company can gain a competitive advantage by reducing costs in a knowledge

economy. In other words, the company must be able to increase the value of its products / services more effectively. "The knowledge economy opens up new directions and offers unprecedented opportunities for mass production and sales, as well as cost reduction and adaptation to consumer needs" (Bratianu & Dinca, 2010, p. 210). Cost advantage can be achieved through four main areas (Wickham., 2001, p. 267): lower resource costs, scale economy, experience curve, and technological innovation. Knowledge can be very important to gain a competitive advantage. As a result, companies can gain an advantage if they have knowledge that competitors do not know. It can be (Wickham., 2001, p. 269): product knowledge, market knowledge and technological knowledge. In a knowledge economy, competitive advantage can be gained through relationships with key stakeholders. It can be difficult to replicate the knowledge and management skills gained from stakeholder relationships. They usually stay in the company. Reliability and rare sources can be identified as two ways to achieve a competitive advantage based on relationships with stakeholders. It comes from (Donaldson, & O'Toole., 2002, p. 32):

- 1. Mutual learning through stakeholder relationships;
- 2. Accumulation of additional resources and opportunities that may sometimes lead to the creation of a new joint product, service or technology;
- 3. Operating costs are lower than competitors because the network parties create an atmosphere of trust where safeguards are not required at all.

The specific competitiveness of companies in a country is the basis of national competitiveness. This concept combines microeconomic and macroeconomic factors of competitiveness. International competitiveness is determined by many other factors: exchange rates, interest rates, budget deficits, labor quality, natural resources, management practices, positive trade balance, increased productivity, innovation, technology, research, education, comparative advantage, and so on.

The database of this study consists of the 2018-2019 Global Competitiveness Report and the World Bank's Knowledge Economy Index (KEI) for 2018. The World Economic Forum's (WEF) methodology for measuring national and global competitiveness systematizes the key factors for measuring the competitiveness of the national economy and rankings into 12 groups of factors. These pillars, called competitiveness, are: key factors (institutions, infrastructure, macroeconomic stability, health and primary education), efficiency factors (higher education, product market efficiency, labor market efficiency, financial market development, technological capability / strength, market size) and innovation factors (business / business process complexity, innovation). The Composite Global Competitiveness Index (GCI) is the result of measuring many factors and variables.

In the modern age of the knowledge economy, its determinants and variables affect the national competitiveness of countries. "Knowledge is recognized as a driving force for productivity and economic growth, and this increases the importance of information, technology and training for economic indicators" (Zitek, & Klimova. 2011, p. 821). Measuring the progress of individual countries in achieving the necessary conditions for building a knowledge economy has been made possible through the application of the World Bank Institute's methodology - the Knowledge Assessment Methodology (KAM) and the KAM Knowledge Knowledge Development.

The first pillar of the knowledge based economy is education. Improving the main education system is one of great importance for economically development and its competitiveness. The education system contributes to the development of skills of the active population and increase labor productivity and innovation through the rapid transfer of knowledge from educational and research institutions to various types of economic activity. In addition, higher levels of education have a positive effect on economic growth. The country's education system is monitored using the KAM methodology based on three variables / indicators: 1. adult literacy rate; 2. The total share of the population in secondary education; 3. Percentage of population in tertiary education (World Bank, 2004).

The second pillar of the knowledge economy is innovation. The most developed

regions, countries and the most competitive enterprises see innovation as an important factor in economic power and development. The problem of monitoring the level of innovation activity in the national economy is complex due to the nature of innovation (DOC., 2008). Therefore, it is important to monitor a number of innovative activities. These measures are relevant to the government of any country for use in the national economy, which is developing on the basis of innovation. An innovative system is the "engine" of economic development in modern economic conditions. Analysis in this area is aimed at identifying the main shortcomings of the innovation system and identifying priorities that should be paid more attention to economic policies. The KAM methodology is aimed at measuring innovation at the level of the national economy, including three important indicators: 1. the number of researchers in the research and development sector per million people; 2. The number of professional and scientific articles per million people; 3. The number of patents per million people.

The third pillar of the knowledge economy is information and communication technology. In modern conditions, the development of information and communication technologies is the most important factor in the intensity and dynamics of economic development. The development of this pillar of the knowledge economy is evaluated according to the KAM methodology based on three criteria: 1. The number of telephone lines per 1000 population; 2. The number of computers per 1000 population; 3. The number of Internet users per 10,000 population.

The fourth pillar of the knowledge economy is the institutional framework that the KAM methodology recognizes as a determinant of the knowledge economy index: 1. tariff and non-tariff barriers, 2. quality of regulation and 3. rule of law.

The Knowledge Index (KI) and the Knowledge Economy Index (KEI) are produced by KAM. The knowledge economy index, in contrast to the knowledge index, in addition to the columns "Education, Innovation and ICT - Information and Communication Technologies" also includes economic incentives and institutional regimes (Figure 1). Although KI is an indicator of the overall potential for knowledge development in all countries, KEI represents the overall level of development of a country or region in the field of knowledge economics (Zitek, & Klimova, 2011, p. 823). "KEI evaluates the relative effectiveness of the knowledge economy of each country, an economy that increasingly values ideas, services, information, technological innovation and relationships" (Watkins & Yandle, 2010, p. 107).



Picture 1: The fourth pillar of the knowledge economy

Source: The World Bank (WB), Knowledge Economy Index (KEI) 2018 Rankings

Based on KEI index, countries can easily determine all the opportunities and challenges offered to them in the way of creating the knowledge economy and society. These methods also assess the readiness of countries in a competitive game in the modern business conditions, where knowledge and its applications in the field of entrepreneurship, innovation, development and research are recognized as a main key factor of the global economic development and growth. KEI shows how the country's environment contributes to the effective application of knowledge for integrated socio-economic development. KEI index is one of an aggregate indexes that mentioned the overall level of gained development of any country or region.

The SEE's competitiveness analysis is based on GCI rates and KEI rates and

scores provided by the World Economic Forum and the World Bank. Table 2 shows the position of SEE countries in terms of rank and GCI score for 2018, as well as average score

Countries	GCI2018		
Countries	Score	Rank	
Albania	3.9	89	
B&H	3.9	88	
Bulgaria	4.3	62	
Croatia	4	76	
Greece	3.9	96	
Macedonia FYR	4	79	
Moldova	3.9	87	
Romania	4.1	78	
Serbia	3.9	95	
Turkey	4.5	43	
Average	4.05		

Table 2: Rank I score of GCI for SEE countries (2018)

Source: The Word Economic Forum (WEF): The Global Competitiveness Reports 2018 - 2019

According to table 2, Turkey has the highest GCI (4.5), followed by Bulgaria (4.3) and Romania (4.1). Other countries share common values. In Croatia and Macedonia, the GCI was 4, and the lowest GCI (3.9) was recorded in five countries (Albania, B&H, Greece, Moldova and Serbia). If we look at a number of SEE countries in the list of countries of the world, the differences will become more dramatic. The best place among SEE countries is 43rd out of 144 countries analyzed by the WEF in 2018. SEE, the country with the lowest GCI rating in the world, is 96th and Serbia is 95th.

In general, the countries with the lowest GCI for SEE are Albania, B&H, Croatia, Greece, Macedonia, Moldova, Romania and Serbia. Only Bulgaria and Turkey have higher GCIs than countries in the analyzed group.

Table 3 shows the position of the DEE countries according to the levels and scores of the SEE. In 2018, the World Bank analyzed and evaluated a total of 145 countries.

Countries	KEI 2018	
Countries	Score	Rank
Albania	4.53	82
B&H	5.12	70
Bulgaria	6.80	45
Croatia	7.29	39
Greece	7.51	36
Macedonia FYR	5.65	57
Moldova	4.92	77
Romania	6.82	44
Serbia	6.02	49
Turkey	5.16	69
Average	5.98	

Table 3: Rank and score of KEI for SEE countries (2018)

Source: The World Bank (WB), Knowledge Economy Index (KEI) 2018 Rankings

Greece has the highest KEI among SEE countries (7.51), followed by Croatia (7.29). The countries with the lowest KEI scores are Moldova (4.92) and Albania (4.53). Greece, the best SEE country in the world, ranks 36th out of 145 countries analyzed, while Albania, the weakest, ranks 46th, ranking 82nd.

The countries with the lowest KEI value in the SEE countries are Albania, B&H, Macedonia, Moldova and Turkey.

Taking into account the 145 countries analyzed by the World Bank, it can be concluded that all SEE countries, except Albania, are in the first half of the world list according to KEI.

 Table 4: Presents the results of descriptive statistics according to score of GCI and KEI in

 SEE countries in 2018.

Indicators	N	Minimum	Maximum	Mean	Std.	Variation
					deviation	coefficient
GCI	10	3.90	4.50	4.0400	0.20656	5.113
KEI	10	4.53	7.51	5.9820	1.06372	17.782

Source: The World Bank (WB), Knowledge Economy Index (KEI) 2018 Rankings

In foreign countries, the minimum GCI indicator is 3.90, the highest is 4.50, and

the average is 4.04. The minimum score of KEI is 4.53, the maximum is 7.51, and the average is 5.982. There is a higher standard deviation between KEI than GCI, which indicates greater variability and heterogeneity of the countries being analyzed from the point of view of competitiveness and heterogeneity from the point of view of the competitiveness of the economy. This is confirmed by the calculation of the coefficient of variation for KEI and GCI (Table 4).

2.3. Perspectives of knowledge economy in developing economy

Knowledge has a strong impact on the economy and people's living conditions. However, the main feature of this impact is that it can be seen by knowledgeable people. Therefore, in order to strengthen the impact of knowledge on the economy as an important and decisive factor, it is necessary to increase the literacy of society and the responsibility of government. Lack of knowledge has a strong impact on the economy of an individual, a family, an enterprise or the country as a whole, and its mechanism of action is very diverse. This mechanism begins with the "operations" carried out by subjects and structures for survival. If both parties are involved in the operation and they do not know each other, the economy will eventually weaken. Here are a few simple but of great economic importance. A few years ago, the lack of real information about Vahidbank and other such banks, ie the lack of knowledge of the population in this area, had a strong negative impact on the economic situation of every citizen and state. As they took steps towards the economy, they gave the "excess" money they had cut from their throats to fraudsters and could not get it back due to the irresponsibility of government agencies. This ignorance alone cost the economy of the Republic of Azerbaijan billions of dollars. Lack of accurate information on the quality, shelf life, and shelf life of foodstuffs and medicines sold in stores causes the general population to be fed outdated food, subsequently become ill, spend a lot of money on treatment, and thus weaken both the individual and the economy. Lack of knowledge about proper nutrition and healthy lifestyle weakens the economy by the same mechanism.

Knowledge also sheds light on economic relations, revealing the strengths and weaknesses of the parties. Lack or lack of information prevents markets from collapsing and creating new ones. The efficiency of a market economy requires a broad and comprehensive knowledge of the quality of goods, employee irresponsibility, the financial condition and creditworthiness of firms and enterprises. Without them, it is nonsense to talk about science and economic development. Because in the absence of information and, consequently, ignorance, we can talk about the improvement of one or two indicators during the reporting period, but no information is available on the economic development of society, the country and the formation of the middle class.

Achieving development through comprehensive knowledge brings many benefits. This benefit can be achieved directly and indirectly. Accurate information about diseases can save the lives of millions of people and reduce health care costs. Awareness of environmental cleanliness and pollution of water, air, soil and products can prevent habitats from becoming dangerous to humans. Microfinance programs and people's awareness of this can make children's futures brighter. The state must understand the lack of knowledge and lack of information and take measures to solve the problem. However, this issue is very poorly addressed in developing countries. This further increases their backwardness from developed countries. In the end, they remain dependent and weaken the world economy.

World Bank reports also show that the difference between rich and poor countries is not only in the lack of money, but also in the lack of knowledge. The creation of knowledge requires a lot of additional costs. and spend a lot of money to make this process irreversible.

In order to acquire (purchase and apply) the knowledge created by the richest countries in the world, it is necessary to solve one problem. This issue is the understanding of the leading role of knowledge and educated people in the economy by the state and its relevant bodies. There is a lot of experience in the rapid development of countries that recognize that knowledge is a decisive factor. The World Bank cites Ghana and the Republic of Korea as examples. Forty years ago, per capita GDP in these countries was about the same. However, in the early 1990s, the level of this indicator was six times higher in Korea. According to researchers, half of Korea's success is due to the accumulation and use of knowledge in the country.

The world movement, known as the "Green Revolution" in world economic development, can be seen as a shining example of the power of knowledge and its economic and social benefits. This world-based knowledge movement has been creating new knowledge in the field of agriculture for many decades and disseminating it worldwide. The Green Revolution movement, which has become a model for the use of knowledge for development, is also international in its nature, involving many states, nonprofits, multilateral companies, private firms, banks, farmers, and landless peasants. All of them worked together to create a product of knowledge and apply it in specific areas of agriculture to increase productivity. At first, the Green Revolution did not fight technical backwardness. It solved the information problem in developing countries. It sought to increase public knowledge about plant genetics. Seeds were found and tested in production, which allowed for higher yields. Later, in many developed countries, appropriate research institutes were established, science was developed and new knowledge was accumulated. Since the second half of the last century, agriculture has been developed. Great success has been achieved through the mass use of the knowledge gained in the past. According to published data, productivity has more than doubled in most developed countries. As a result, in the second half of the twentieth century, the growth rate of food exceeded the growth rate of the population. This result also proved once again that the famous theory of the eighteenth-century English economist Robert Malthus had no scientific basis.

Knowledge is created, disseminated and used. This cycle is constantly repeated and the process continues on a new basis. Rather, if any state wants to develop the economy and improve the living standards of the population, it must constantly intensify the knowledge cycle. In terms of the world economy, the acceleration of the

knowledge cycle can generally go in two directions. The first direction is related to the activities of international organizations and institutions in this area. International organizations need to solve problems in the creation, collection, dissemination and use of associations that are not so attractive for individual (capital owners). Therefore, the institutions of international organizations, first of all, should work to eliminate technological backwardness. They provide the world economy with international social products and act as a mediator in the transfer of knowledge. There is a need to improve governance, which creates a revolutionary information environment in the world. The second direction is related to the role of government. they need to direct the sources of knowledge (knowledge created by the country's own power and knowledge "imported" from abroad) and the relationship between them. In addition, if the market demand for knowledge may fall, then the state should not interfere in this matter. is necessary. Because the state can always find opportunities to eliminate technical ignorance in the country. For example, the state can develop an education system that can educate the population throughout their lives. The state must also manage information on knowledge and strengthen control over their quality.

The state must develop and implement a national strategy to combat the lack of knowledge. In general, each country should develop a policy aimed at the acquisition, dissemination and use of knowledge. The essence of these programs should be the optimal combination of local knowledge with world knowledge and purposeful development of the economy.

The significant increase in the weight of knowledge in the world today is due to a number of objective realities. ETT has a special place in their family. Modern scientific and technological progress, accompanied by intensive scientific and technological revolutions, creates fundamental changes in production. The techniques, technologies and forms of production organization are being improved in a very short period of time, the speed of processing is increasing, production is becoming more mechanized and automated, and the chemicalization of consumption is increasing. Under such conditions, the requirements for a person, a skilled worker, an engineer, who is an active element of production, are increasing. More knowledge is required of people. They must be able to cope with flexible production with a high level of technical organization, produce a quality product and implement it in all countries of the world. The new economic role of knowledge in modern times is conditioned by the new economic role of vocational and general education. It is necessary to raise the qualification level of the workforce. Countries that understand the importance of this problem are increasing the amount of capital allocated to education. For example, education in the United States currently exceeds \$ 40.0 billion annually. For comparison, in 1940 this figure was \$ 3.2 billion, and in 1950 - \$ 8.8 billion. As a result of such a high level of care for education, the quality of the workforce increases, labor becomes more productive, and its results are more productive.

According to a study by the famous American economist E. Depison, in the post-World War II period, 10-32% of economic development in the United States and the Caucasus was achieved by applying the results of scientific research in various fields of engineering and technology to production. Accelerating ETT also has a positive effect on people's knowledge. In recent years, economists in most countries around the world have emphasized the important role of knowledge in economic development. According to Denison, 2-15% of the economic growth in the United States and Central Asia was due to higher education. The emergence and development of new knowledge has, in fact, become an integral part of the production process. New knowledge is reflected in practice in the new design of machines and mechanisms, the quality of the workforce, effective organizational decisions, understanding of the situation, the selection of profitable models of economic development. The growth of knowledge leads to the saving of material and energy resources, the reduction of energy, materials, stocks and labor costs of the product in full reality. One of the distinguishing features of knowledge resources from production resources is that, unlike machines and equipment, knowledge can spread from one country to another in the world faster: the

modern information revolution creates the conditions for this. Knowledge, such as machines and mechanisms, is also sold and purchased in the form of patents, licenses, advice, know-how.

CHAPTER III. DEVELOPİNG OF KNOWLEDGE ECONOMY IN AZERBAIJAN

3.1. New trends in knowledge economy in Azerbaijan

In recent years, humanity has entered a new phase in its development - the innovation phase, based on the knowledge economy. And this is not accidental, for knowledge is manifested as a productive force. Therefore, the leading countries of the world focus on the problems of the development and formation of the modern economy - the knowledge economy. This is because the transition to a new economy will ensure sustainable economic development and the welfare of society. The transition to a knowledge economy is also important in Azerbaijan, which is experiencing a new era of development and serious discussions are being held at the institutional level.

The knowledge economy was first used by American scientist Fritz Mahlup in 1966. The term is currently used to identify the type of economy in which knowledge plays a crucial role. At present, great attention is paid to the problems of the formation of the postIndustrial society and knowledge economy. Today everyone recognizes that the knowledge economy is the highest stage of development of the post-industrial, information society, and its distinctive feature is the creation of favorable conditions for the development of human factors and its potential in production. Scientists who place humanity in the overall landscape of planetary development say that the knowledge-based economy is adequately responding to the urgent challenges facing the growing humanity with each passing day. Thus, well-known researchers state that human beings, their intellect should be central to the system of social organization and that human capital and education should be at the forefront of the formation of a knowledge economy. An important distinguishing feature of the knowledge economy is that the accumulated national wealth was previously associated with material costs, and in the knowledge economy, the accumulation of national wealth is more dependent on intangible assets.

This is a fact that the amount of investment in education in the world is increasing.

It is estimated that 90% of human knowledge has been acquired over the past 30-40 years. Besides, the authors of the most important discoveries and inventions of recent years are almost contemporary. This is a clear sign of the transition from an economy based on the use of natural resources to a knowledge-based economy. Experts believe that the knowledge economy is a new stage of social development and that knowledge is emerging as a force that can change the economic picture of the world. For example, the author of a popular electronic game called Tetris earned \$ 15,000 for the program. His company sold the copyright of the Tetris game to the well-known Nintendo for \$ 4 million. Nintendo's total revenue was more than \$ 1 billion.

The same can be said about instant messaging computer software. In 1995 high school students living in Israel created a simple and easy messenger to communicate with each other over the Internet. The IQS, which was later acquired by Mirabilis, gained worldwide attention and eventually attracted the attention of such a large company like AOL. Shortly afterward, a small amount of IDA was purchased by the US company for \$ 407 million. As you can see, the development of the human factor and education contributes to the formation of great values and changes in the economic landscape.

In a world where the problems of economic growth are discussed and addressed, the state of Azerbaijan also keeps this issue in focus and does not support the comprehensive development of human capital and education. Serious reforms are being implemented in the country to develop human capital. The formation and development of human capital, which has become the most important socio-cultural factor of the modern economy, is one of the main priorities of state programs implemented in Azerbaijan. It is well-known that human capital in the economy is measured by the amount of human investment. It is no coincidence that 16% of world economic growth was achieved through physical capital, 20% natural resources, and 64% by human capital. Therefore, the increase in expenditure on human capital will ultimately lead to the further development of that country.

The human factor is also at the center of public policy in Azerbaijan. The state translates oil revenues into human capital. The current social policy of the state promotes a steady rise in the standard of living of the population and its various groups. The main purpose of this policy is to form and develop human capital. Because in countries with high levels of human capital, socio-economic reforms are more successful, political awareness and culture are rising, civil society is formed, and people are involved in strengthening and developing a socially-oriented state. Improving the quality of education, as well as the implementation of various national and international projects in this area, directly contributes to the development of the scientific level and thinking of our society. Providing high-quality and high-quality education to young people and their steps towards educated and patriotic citizens is also an important element of state youth policy. In short, the emphasis on education is contributing to the strengthening of human capital.

In general, employment is important in the transition to knowledge-based economies. Because the economy of the countries is agriculture, processing, and manufacturing. Agriculture is the main strategic sector of the country's economy in terms of ensuring food security of the Azerbaijani population as a non-oil sector. Half of the country's population now lives in rural areas, and 35 percent of the labor force is engaged in agriculture. Therefore, the development of the agricultural sector is of strategic importance. In some countries, the agricultural sector is generating sustainable foreign exchange earnings. For example, agriculture is the most highly developed sector in Israel. Although its territory is unfavorable for agriculture, Israel is a major exporter of fresh produce and is one of the leading countries in the field of agricultural technology. However, the Jewish state, which produces higher education, was able to move on to the next stage, that is, production of agricultural products with higher scientific knowledge. Of course, Israel is among the countries that invest the most in research and scientific development, and this factor allows the Jewish state to stand in line with advanced countries.

The United Nations system offers a wide range of expert services that may be used for improving the use of ICT throughout the nation of Azerbaijan.

Organization	Functionality and Utility for Azerbaijan
World Intellectual Property Organization	Mechanism for monitoring emerging technologies for ICT and related fields where ICT is applied
	Training in analytical techniques for assessment of intellectual property developments including patents that are of interest to long-range planning
United Nations Department of Public Administration	Selection methodology for identification of the most effective ICT based administrative systems for use in government
	Work on integration of government services
	Capacity building for inter-ministerial coordination in the realm of national ICT planning
United Nations Development Programme	Design engineering of national cloud computing platform to provide universal access to applications
	Methodology for selection of technology and vendors
	Best practices for contract negotiation for procurement of large-scale computing projects
	Long-range forecasting of ICT trends in government

Table 5: Use of UN Experts for Informatisation of Azerbaijan

Source: The World Economic Forum. (2019). The Global Competitiveness Reports 2018-2019.

It is important to note that research and scientific development in Israel is mainly carried out at universities, government research institutes, medical centers, hundreds of civil and military enterprises. Government and government agencies provide more than half of the resources needed for research and development. Most of these funds are directed to economic development, mainly to the industrial and agricultural sectors. Sufficient funds are also spent on research in various areas of health and social welfare. The vast majority of scientific research is done in universities, and universities receive numerous patents every year. Experts stress that this is 54uet o the high level of practical links between universities and industries.

The Israel Science Foundation, a legally independent body, is also a major source of competitive research, and it finances thousands of individual researchers and special programs. The same can be said of South Korea and Malaysia. South Korea, in particular, has been successful over the past 50 years by moving into the knowledge economy. Today, tech giants Samsung and LG are known for their technology, and Hyundai and KIA are successful and competitive companies in the automotive market.

Of course, Azerbaijan is an oil country, and in recent years, black gold has played a major role in achieving economic development. However, the transformation of oil capital into human capital and the transition to a knowledge economy is one of the main provisions of President Ilham Aliyev's economic development policy. Successful implementation of this political course has led to comprehensive development in the country. Also, relevant state programs for the development of education, which play a key role in the formation of human capital, are now being successfully implemented. The steps taken to integrate the Azerbaijani higher education system into the European educational space and the implemented government programs serve to achieve qualitatively new trends in the education system and achieve high results. This will undoubtedly make a significant contribution to the development and improvement of our country's national human resources in terms of quantity and quality. However, it should strengthen its cooperation with higher education, research institutions, and production associations to accelerate the transition to the knowledge economy. Given that knowledge is mainly given to universities, it is important to note that the establishment and establishment of such cooperation mechanisms are vital for sustained economic growth.

In this regard, discussions are underway in Azerbaijan. Important issues at the UNEC Forum on "Transition to the knowledge-based economy: potential opportunities" within the framework of cooperation of the Ministry of Transport, Communications and High Technologies (NRYTN) "High Technology Park", International Economic School (ISE) of Azerbaijan State Economic University discussed. The purpose of the forum was to create an appropriate discussion environment in which institutional factors, education, innovation ecosystems, and ICTs play a key role in the effective functioning of the university-state-industry (USD)

triangle. The importance of the transition to a knowledge-based economy was highlighted during the discussions, with emphasis on the benefits of the university-state-industry association, and noted that improving the quality of education goes hand in hand with the real sector. Speakers spoke about the knowledge-based economy, the development of an innovative economy, the expansion of innovative and high-tech industries based on modern scientific and technological achievements, and so on. They underlined that their goal is to turn Azerbaijan from an energy-exporting country into a technology exporting country. Besides, the forum highlighted the relevance of university-state-industry cooperation and possible development prospects and noted that the purpose of the UDS platform is to bring together key stakeholders – the academic environment, the state, and the business world – in a collaborative, consistent way. Synergistic value. At the forum, concrete proposals on the establishment and development of the knowledge economy in Azerbaijan were made.

As it turns out, the formation of a knowledge economy in Azerbaijan is seen as a strategic task, with the involvement of all stakeholders in the community. The state of Azerbaijan, which defines the development of human capital as one of the main goals of the future economic strategy, also provides the foundation for future national development, focusing on this direction. There is no doubt that the rich scientific base of human capital in Azerbaijan will accelerate the transition to the knowledge economy and enable sustainable economic growth.

3.2. The main goals in knowledge economy in Azerbaijan

Azerbaijan has never played a crucial role in the global innovation system. It has a large scientific establishment modelled on the Academy of Science pattern of the Soviet Union, and in spite of more than 25 years of independence, that part of the system has not substantially changed.

Azerbaijan has launched some experiments in fostering startups, and in stimulating innovation. For example, in the area of ICT it has created an ICT Fund, an

ICT University, and an ICT Park that acts as a type of incubator for startups. These all have been important efforts, but as measured by the output of Intellectual Property, the results have been less than dramatic. In essence, these were efforts to engineer a situation in which a type of "Silicon Valley" experience would emerge.

It is assessed that in order to play on its strengths, Azerbaijan should use a government-centric approach, but with a different and more flexible coordination mechanism that was present in the past. Success should come from two paths: First, building a national ICT infrastructure that will lower to zero the barriers to entry for any person wishing to think about a new idea in ICT. Second, the government should continue to put in place new coordination mechanisms that are able to work across ministries to identify and solve problems that are unique to Azerbaijan. The government has the power to compel creation of these new ICT innovation-oriented mechanisms. It already has a strong record of success by using this technique in the roll-out of e-Government, and this pattern can be repeated across the entire range of technologies and applications of the knowledge economy.

Azerbaijan has several internal strengths that can be leveraged to accelerate the transition to a knowledge economy.

The nature of the Government of Azerbaijan is a high degree of centralisation around a powerful executive branch. This is a common and well-understood form of government. This represents a strength because once decisions are made at the top, there is little if any resistance throughout society in carrying out whatever policy is chosen. This has been shown numerous times in Azerbaijan and has its most visible expression today in the construction sector.

If there were a concerted effort on the part of the Executive to push forward several initiatives to create an information society, then Azerbaijan would make very fast progress.

Another strength of Azerbaijan is its track record of being able to organise and successfully carry out large infrastructure projects on a national scale. This is shown

clearly in the telecommunications sector, in provisioning of e-Government services, in the roads and other parts of the transportation network, and in the remarkably fast rebuilding of the skyline of Baku.

Any government and country that is capable of carrying out large infrastructure projects is perfectly placed to build a national supercomputer centre or national cloud service that can be rolled out through the entire economy. It is only a question of defining what the design will be.

The large infrastructure projects that have continued in Azerbaijan in spite of the temporary shock to the economy caused by the recent fall in the price of oil are a testimony to the availability of capital. Azerbaijan is not a nation seriously in debt. A large part of this concentration of capital comes from the way that oil and gas revenues are intercepted by the government, then used for beneficial infrastructure projects for Azerbaijan's citizens, who greatly appreciate it, if judged by the voting record concerning the current government, which is very strong. A very large amount of the capital that is accumulated by the Government of Azerbaijan is released into Azeri society in the form of government services and infrastructure. This has not gone unnoticed by Azerbaijan's population.

If a decision were made to make a massive upgrade to Azerbaijan's ICT infrastructure, we are sure it could be financed from readily available capital. There already are a great number of indicators to indicate progress in ICT innovation. For example, the ITU publishes a large amount of statistical information. In addition, UNDP publishes a bi-annual survey of e-Government which measures the effectiveness of governments as they roll out ICT for providing public services. The e-Government survey uses as its input information from the ITU, but also from other sources.

These statistics are based on self-reporting from nations, but generally are considered to be representative. In addition, these publications meet the UN criteria of being universal in nature, that is, every nation is represented, no matter how advanced, or poor in its use of ICT. In contrast, there are a number of reports from specialized organizations, such as the European Union, that contain detailed information regarding selected countries. This information has a much larger number of indicators that the information provided by the UN's, as it does not face the necessity of using measures that are applicable to every nation, regardless of its level of development.

For the purposes of this document, we will discuss indicators that are suited to Azerbaijan, taking into consideration its strategic challenges, national priorities for development, and level of ICT utilization. In addition, we can select indicators that fit the general theory of development that has been expressed in this document.

Table 6: Measurement of National Infrastructure	– Mainframe Computing
---	-----------------------

Classification	
Computing Capacity of Mainframe Systems	Total CPU Capacity
	Storage capacity
	Transactions per second peak and annual
	Number of registered end-user devices
	Number of registered users
	Penetration of artificial intelligence in large-scale applications

Source: UNESCO (2005). Towards knowledge societies: UNESCO world report. Retrieved September 27, 2008.

Classification	
National Cloud Application Service	Number of virtual machines hosted
	Number of registered companies using cloud-based e-Commerce functionality
	Transactions per second at peak capacity
	Number of transactions per year
	Amount of data stored by end users
	Percentage of use of Azerbaijan produced cloud services being used compared to externally sourced cloud services

Table 7: Measurement of National Infrastructure – National Cloud Services

Source: UNESCO (2005). Towards knowledge societies: UNESCO world report. Retrieved September 27, 2008.

Classification	
Mobility Development and Accessibility	Number of registered mobile devices
	Transactions per second at peak for all mobile devices
	Percentage of services accessed within
	Azerbaijan compared to outside
	Azerbaijan as measured by:
	(a) transactions per second at peak rate;
	(b) transactions total per year;
	(c) amount of data storage
	Percentage of applications developed
	first for mobile platforms before
	being developed for other platforms
	Number of applications that are accessed
	from mobile devices.
	Growth Rate CAGR of mobility applications

Table 8: Measurement of National Infrastructure – Mobility Development and Accessibility

Source: UNESCO (2005). Towards knowledge societies: UNESCO world report. Retrieved September 27, 2008.

At the same time, Azerbaijan has several weaknesses that might inhibit its transformation. Many of these weaknesses involve the hang-over in organisational structure from the Soviet Union, still an important influence in the organisation of Azerbaijan. Others are related to basic factor endowments.

The ministerial system in Azerbaijan is inherited from the Soviet Union and as such has been optimised for a non-capitalist type of society. It is assessed that there is much duplication between ministries. For example, there is little indication that they cooperate much with each other on national innovation projects, although there are a few programs to be found here and there. There is no national program for procurement of ICT, and no set of standards that everyone is forced to adopt. At the same time, the ministry structure is strong and resistant to change.

In order to improve the situation, Azerbaijan might work harder at inter-ministerial projects, and develop coordination mechanisms that eliminate duplicate spending.

It is assessed that the state of intellectual property creation and protection in Azerbaijan is not as strong as it could be. Compared to another small country such as Israel, Azerbaijan produces almost no intellectual property. This is a serious problem that inhibits Azerbaijan's attempts at innovation.

This problem further emphasises the importance of Azerbaijan integrating itself more deeply into the world's economy.

Azerbaijan is a small country with a population smaller than The Netherlands. The practical effect of this size is that many classical government techniques of industrial policy, such as using the market reservation system or import substitution will not work. If a company in Azerbaijan is going to engage in manufacturing, then it can never reach the economies of scale of similar companies located in other countries.

In addition, there is little possibility of squeezing concessions out of foreign corporations in exchange for getting access to Azerbaijan's market. This type of argument has been used by China and is effective, but China's market is thousands of times greater than that of Azerbaijan.

The only strategy for Azerbaijan and its economy is to integrate as quickly as possible into the world's economy.

In Azerbaijan, because of the heavy dependence on oil and gas production and exportation as the primary earner for the country, capital and income from these resources is concentrated in the Government of Azerbaijan. These funds are then distributed through the ministerial system and find their way into the economy in the form of salaries and investments in infrastructure. Much also is spent on education.

A number of studies have indicated that capital formation in the private sector in Azerbaijan is relatively poor. This is because most of the capital in the country is tied up within the government and its system of ministries. Although there are many strengths to the centralised nature of the Azerbaijan government, the persistent weakness of the private sector may do much to inhibit that innovation needed in order to make the ICT driven transition to a knowledge economy.

Based on a review of the educational offerings in Azerbaijan, combined with interviews, it is assessed that the educational establishment may not be optimally

optimised. For such a small population, there are many universities, many having overlapping missions between each other. It is not clear how the Academy of Sciences contributes to development of human resources. Some critics argue that it serves primarily as a talking shop, but has little else to show for its large budget.

It is assessed that the level of integration across Azerbaijan's educational establishment is low, and the proliferation in number of universities has led to a thinning out and over-distribution of ICT related talent. It is urgent that a national commission be put in place for the purpose of benchmarking Azerbaijan's educational establishment against world class standards.

There are a number of exciting developments that have opened up a number of opportunities for Azerbaijan, its state enterprises, individuals, and the private sector.

The waves of globalisation in the world's economy has led to the emergence of large industrial networks operating around the world, and able to perform as if they are a single company, when actually they represent an ICT intermediated virtual organisation form. It is not clear exactly where opportunities may be fore Azerbaijan, but wish a systematic program to screen and locate such opportunities, the promise is that the economy of Azerbaijan can be integrated into one or more of these networks.

The underlying message is that ICT has loosened up what in the past were strongly integrated and unitarily-owned enterprises. There is a place for Azerbaijan and many of its companies someone in this web of value-added chains. This phenomenon has generated a wave of opportunities never present in previous decades.

The emergency of the XaaS approach to providing ICT may present a substantial opportunity to Azerbaijan if it is able to develop a plan for creation of a national cloud infrastructure to be based on a supercomputing centre (very large mainframe service centre).

The economies of scale that will be available, as well as the substantial economic advantage that comes from having a standardised infrastructure for provisioning of applications make this an excellent place for Azerbaijan to express their natural proclivity towards innovation. By providing a coherent and standardised infrastructure, even perhaps free of charge, Azerbaijan will unleash a powerful wave of innovation. With only practical problems to solve through using ICT, and without burdensome government licensing or control, investors, innovators, and others will rush to create income-generating software.

It is assessed that the building of this type of infrastructure will be a much more productive use of capital than investment in individual projects, many of which will fail to produce the expected results.

AI presents a unique opportunity because Azerbaijan is of a size small enough to deploy a coherent and integrated national computing infrastructure. Azerbaijan also has a strong tradition of bureaucratic centralisation. As a result, it likely would be possible easily to codify the decision mechanisms into AI algorithms.

A corollary to the opportunity presented by AI is the realisation that Azerbaijan faces little opportunity in manufacturing or even assembling ICT.

Massive Open Online Courses represent a significant opportunity for the country because using them presents a relatively low-cost and rapid way to upgrade many aspects of Azerbaijan's educational system. Even though the bulk of these materials are presented in English, which is the international language of science and diplomacy, their open source nature presents opportunities for translation.

There is a possibility for Azerbaijan to form a national commission and completely re-engineer the curricula that it is providing in its educational establishment. Adoption of international certification standards for degrees will be a major start. But the adaptation of these materials to the Azeri language will even further stimulate learning.

One of the big advantages of the MOOC approach to education is that the courses usually involve the creation of a self-organising social network to allow the students (from around the world) to form groups, work together on projects, and communicate with one another. Many times, we see the emergence of long-lasting friendships between students who have worked together in the "virtual" classroom. This type of collaboration is an important skill for the next generation of Azeris to learn. That is the type of skill that is going to be most useful in the future.

3.3. The perspectives the achievements to knowledge economy in Azerbaijan

Education is one of the most important components of human development and is also included in the HDI as one of the three main components. The right to education is confirmed in the Universal Bulletin of Human Rights, the European Convention for the Protection of the International Covenant on Social Economic and Cultural Rights, Fundamental Freedoms and Human Rights. Education enhances a person's ability to acquire knowledge, skills, and competencies, builds human capital, changes the quality of life, and plays a key role in economic growth. Modern educational institutions provide the transfer of cultural heritage from one generation to the next and provide people with professional knowledge and skills that will determine their economic and social status. At the same time, moral ideals, stereotypes of behavior and ideas about the world are formed in children and adolescents.

From human development, the educational process significantly extends human capabilities. The level of education depends on various aspects of people's lives, such as their health, political activities, classical music perceptions, social connections, discipline, and so on. influences. Education facilitates the use of new knowledge and technology in household management, child-rearing, nutrition, health, and quality education. The higher the mother's education, the lower the infant and child mortality rates, as the quality of care, education and nutrition for children, regardless of income levels, improves. Educated people can cope with more complex and, consequently, higher-paid jobs. They make more efficient use of physical and natural capital and, ultimately, increase productivity and economic capital.

Another function that educational institutions - primarily universities and institutions - has to do is to create new knowledge and apply it in all areas of social and economic life. The rapid growth of scientific and technical discoveries and the

widespread use of technology and health services are indicative of a radical shift in the role of scientific knowledge. The search for new knowledge and new application methods ("inventions and innovations") has become an important area of activity in modern societies. The number of people working in this area is small, with significant investments being made. Highly educated people are more inclined to apply innovations, share their findings with colleagues, and share their experiences with young people. Thus, thanks to education, not only scientific knowledge and social rules are collected and passed on to the younger generations, but also the intellectual potential of the whole society and state is formed.

The most important aspects of human development, such as competence, development of democratic governance institutions, interpersonal cooperation, justice (against each person), sustainability (providing the needs of the present generation without sacrificing the welfare of future generations) and human security, are directly related to education. Sustainable development of the whole social system, in turn, depends on the realization of these aspects.

In general, issues concerning the impact of education on long-term development should be constantly monitored during the formulation, management, and adaptation of education policy. Such issues, that is, the impact of different types and levels of education on important socio-economic areas, cover the following areas:

The net value of education for personality and economy (expected costs minus costs);

➢ Income ratio of investments in primary, secondary, higher and informal education (human capital);

The impact of education on labor productivity, particularly on women's employment;

 \succ The relation of education to economic growth, including education-related aspects of economic development that are not directly related to physical capital or labor factors;

Education and political behaviors (such as education not only in intellectual competence but also in personality formation) are fertile ground for the development of civic culture, public initiative, intercultural tolerance, political knowledge and attitudes, human rights and freedoms, and other contemporary socio-political values. does it create?);

Education and social development: Private and social education dividends are generational and intergenerational non-economic benefits. Such benefits are measured by indicators such as expected life expectancy, family planning, nutrition status, fertility rate, maternal and child health, and environmental attitudes (environmental literacy);

Education and Equality (Girls, Ethnic Minorities, Rural Poor, Disabled and Other Sensitive Groups

When we talk about the role of education in human development, the discussion focuses on one of two dimensions: either the impact of education on human capacity building or the role of science in the forming of human finance. In the concept of human development, the concept of "human potential" is broader than the category of "human capital" by its scope. From human capital, the purpose of investment in education is to increase labor productivity. According to the proponents of human development, the main goal of economic development is human. Let's look at these two perspectives in more detail.

The development of new scientific and technical areas, the widespread use of information technology, innovation in traditional technology, new business relationships, rapidly changing demands in the field of public and corporate employees, and the scale of new political processes make developing countries to rethink the basics of human development. At the same time, the challenge of inclusiveness, that is, those who have been left out of development processes, should not be overlooked, because the pathways to a just and equitable world are based on twin concepts of inclusion and participation.

66

To address the challenges posed by the global diffusion of information and capital, the emerging countries face a fundamental question: what is the most effective, sustainable, and effective strategy for improving human capacity to survive and strengthen in such an environment? The answer (or the lack of response) of this question has a decisive influence on the national development strategies of each state, and thus on the priorities of the education system.

But what is the "human potential"? This understanding includes the ability of a person to perform the necessary actions to survive, live a dignified life and succeed. Human potential has implications for both personal and public life. Skilled individuals (ie people with relevant human potential) can access and utilize the opportunities available in their environment to provide them and their families the opportunities they need to realize their inner potential. Skilled societies are societies that can maximize such participation opportunities for their citizens and ensure equal access to these opportunities.

Here it is probably necessary to clarify what the opportunities for participation are. "Opportunities for Participation" refers to potentially productive relationships that enable individuals to contribute to the development of their country, their communities and their families. The possibilities for participation increase, change or expand according to different stages of a person's life. These include going to kindergarten and school, receiving vocational and higher education, earning lucrative employment, participating in public and political processes, membership in professional associations and political parties, acting as voters or candidates in municipal and parliamentary elections, and environmental protection. to do business, family, and business, to participate in religious and cultural events that are important to the life of an ethnic group to which they belong. The level and composition of the existing and used participation opportunities in different countries and regions are also different, but the human development approach is important for many.

Education plays a crucial role in both the overall level of human development and

the level of participation opportunities that are one of its key indicators. By acquiring literacy, that is, reading, writing, and first account operations, the child becomes more and more capable of benefiting the community through many life-long opportunities in science, humanities, and physical education. The issues that are important today for public administration (gender equality, regional development, youth advancement, environmental sustainability, economic diversification, application of information technology, rule of law, etc.) have a direct impact on the development of human potential, and all of them depend on quality education.

Human potential should not be confused with the human capital that is seemingly close to it. Human capital refers to the skills, visions, and productivity of the workforce. Human potential consists of the skills, knowledge, and behaviors needed to optimize the multifaceted role of individuals (community member, parent, student, employee, consumer, citizen, etc.).

The theory of human capital is one of the theoretical foundations of the concept of human development. According to this theory, education (as well as health) is an investment object that, on the one hand, improves productivity for goods and services, and on the other, improves employee income. The human development approach, which is based on economic development ultimately for the benefit of the individual, recognizes the central role of human capital in increasing labor productivity, but the most important goal is to create a social and economic environment that ensures that every person has the opportunity to develop and use it. The development of human potential can lead to an increase in income and productivity of the economy, but these results are meaningful when it has a positive impact on the material and spiritual wellbeing of the entire population and progress in various areas of human life.

As it is known, economic growth creates conditions for the development of human potential, in particular, for improving the education level of the country's population. At the same time, education in itself is an essential prerequisite for economic growth and the formation of national wealth. Economists have long considered that the major part of the economic resources of any country is physical capital, material wealth. A study by the World Bank in 192 countries in 1995 found that physical capital is only 16% of total wealth, and human capital, which includes education and 64% of total wealth, is more important. In highincome economies such as Germany, Japan, and Switzerland, up to 80% of the total capital is human capital.

Besides, traditional neoclassical economic theory has argued that economic growth is the result of physical capital accumulation, increased labor force, as well as technological progress that increases capital and labor productivity, without presenting it as an exogenous factor. New economic models show that productivity growth is linked to internal factors - human activities, that is, the impact of human capital. Economic growth models that focus on human capital show that education is more efficient in the production process, educated people use capital more efficiently, and higher education levels and increased scientific and technical knowledge increase labor and other productivity factors.

However, higher education levels do not automatically guarantee a high rate of economic growth. The economic performance of one country may be lower than the level of economic development of the neighboring country, where the education level is lower. Poor economic development in countries with higher education can be explained in several ways:

> Inefficient use of available human capital in the country (eg employment of highly educated and highly skilled workers in areas where such knowledge and qualifications are not needed);

➢ Disproportionate investment in education and human capital (eg training of specialists based on old programs and materials without considering the labor market demand and prospects; modernization of laboratories and health services without adequate training);

> Poor quality of education (eg knowledge and skills acquired in the educational

process do not meet market requirements);

Failure to choose the right strategy for the country's development.

The development of human capital is focused not on the creation of physical capital, but on the formation of a knowledge economy. In the knowledge economy, a crucial role in the production of goods and services belongs to the intellectual resources and capabilities that are built on them.

Of course, in the past, any type of economic activity was based on knowledge, but now there are fundamental changes in the production process. Innovation and information resources, which are an integral part of it, are already in the creation of public wealth. Knowledge has increasingly become a guarantee of sustainable development in countries, and the acquisition and application of knowledge have become a key factor in the country's competitiveness.

Although there are currently various explanations for the term knowledge economy, the following are the general points:

Knowledge Resource - Knowledge is one of the key factors of economic growth along with capital and labor;

➤ The concept of knowledge production - the creation of new knowledge ("knowledge production") defines the "image" of the modern economy;

 \succ The concept of a clear expression of knowledge is an essential component of economic relations, as opposed to intuitively developed and unobtrusive abstract knowledge;

➤ The Concept of Organizational Interaction of Knowledge Economy with Information Society - Knowledge is based on the development, application, and change of information and communication technologies.

The knowledge economy is a combination of three markets - knowledge, services and labor markets. These markets are so interconnected that they cannot be described and analyzed separately. Knowledge-based economies complement the non-traditional social structure. While there is still a mediator between the knowledge producer and the consumer, in the modern new system the user of knowledge is involved in its creation.

Education is an important factor in the knowledge-based economy. Highly educated and competent people play a significant role in the creation, dissemination and effective application of knowledge. The knowledge economy requires a multidisciplinary education system and its quality functioning, covering as much of the population as possible. The knowledge-based economy is based on the widespread use of information resources, which are characterized by some characteristics compared to traditional resources. Without proper consideration of such an economy, the competitiveness and effectiveness of companies, countries, regions, cities and other management facilities may be lost. The education system, implemented in many European countries and aimed at improving the quality and competitiveness of graduates in the labor market, puts the reform process at the forefront of the acquired personal knowledge and skills.

The basic requirements of the knowledge economy for education are:

> The individualization of education delivery models (adaptation to learners' abilities, wants and needs);

Promote the students' responsibility and initiative;

➤ Learn not only from the instructor who teaches but also from others who attend the lesson;

Developing universal skills that can be applied in various areas of professional activity (leadership, communication and presentation skills, negotiation, critical thinking, etc.);

► Holistic (multidisciplinary, multidisciplinary) educational approaches built on real-life interactions.

The compliance of the educational programs with these requirements also increases the effectiveness of other reforms and initiatives aimed at improving their quality.

CONCLUSION

In recent years, humanity has entered a new phase in its development, based on the knowledge economy - the stage of innovation. This is not accidental, because knowledge manifests itself in the form of a direct productive force. Therefore, the leading countries of the world focus on the problems of the formation and development of a modern type of economy - the knowledge economy. Because the transition to a new economy will ensure sustainable economic development and the well-being of society. The issue of transition to the knowledge economy is of great importance in Azerbaijan, which is experiencing a new period of development, and serious discussions are being held at the institutional level.

It is a fact that the amount of investment in education is growing around the world. It is estimated that 90 percent of mankind's knowledge has been acquired over the past 30 to 40 years. In addition, the authors of important discoveries and inventions of recent years are almost our contemporaries. This is a clear sign of the transition from a resource-based economy to a knowledge-based economy. Experts believe that the knowledge economy is a new stage of social development, and knowledge is emerging as a force that is changing the economic landscape of the world. For example, the author of a popular electronic game called "Tetris" earned \$ 15,000 for his program. The company he worked for sold the copyright to Tetris to Nintendo for \$ 4 million. Nintendo's total revenue from the game's distribution exceeded \$ 1 billion.

The same can be said about the ISQ instant messaging computer program. In 1995, high school students in Israel created a simple and convenient messenger to communicate with each other via the Internet. ISQ, which was later acquired by Mirabilis, quickly spread around the world, eventually attracting the attention of a giant company such as AOL. The recently created small-scale ISQ was acquired by a US company for \$ 407 million. As can be seen, the human factor and the development of education contribute to the emergence of great values and a change in the economic landscape.
In a world where the problems of economic growth are being discussed and addressed, the Azerbaijani state is also focusing on this issue, supporting the comprehensive development of human capital and education. Serious reforms are being carried out in our country in connection with the development of human capital. The formation and development of human capital, which has become the most important socio-cultural factor of the modern economy, is one of the main priorities of state programs implemented in Azerbaijan. It is known that human capital in the economy is measured by the amount of investment directed to man. It is no coincidence that 16 percent of world economic growth has been achieved through physical capital, 20 percent through natural resources, and 64 percent through human capital. Therefore, the increase in expenditures on human capital, as a result, leads to further development of the country in the future.

The human factor is also at the center of state policy in Azerbaijan. The state converts oil revenues into human capital. Today's social policy of the state serves to constantly improve the living standards of the population and its various groups. The main purpose of this policy is to form and develop human capital. Because in countries with a high level of human capital, socio-economic reforms are more successful, political consciousness and culture are rising, civil society is being formed, and people are closely involved in the process of strengthening and developing a socially oriented state. Improving the quality of education, as well as the implementation of various projects of national and international importance in this direction directly contributes to the development of the scientific level and thinking of our society. Providing young people with high-quality and quality education, steps aimed at educating them as knowledgeable and patriotic citizens is also one of the important elements of the state youth policy. In short, the focus on the development of education contributes to the further strengthening of human capital.

In general, the employment rate is important in the transition to a knowledgebased economy. Because the economy of the countries consists of agriculture, processing and services. As a non-oil sector, agriculture is the main strategic sector of the country's economy in terms of ensuring food security of the Azerbaijani population. At present, half of the country's population lives in rural areas and 35% of the labor force is engaged in agriculture. Therefore, the development of agriculture is of strategic importance. In some countries, agriculture serves to generate sustainable foreign exchange earnings. For example, agriculture is the most developed sector in Israel. Despite the fact that its territory is unsuitable for agriculture, Israel is a major exporter of fresh products and one of the leading countries in the field of agricultural technology. However, the Jewish state, which produced high knowledge, was able to move to the next stage, that is, from the production of agricultural products to the production of high science, knowledge-intensive products. Of course, Israel is one of the largest investors in research and development, and this factor allows the Jewish state to stand on a par with the leading countries.

It is important to note that research and scientific development in Israel is mainly carried out in universities, state research institutes, medical centers, and hundreds of civilian and military institutions. Governments and public institutions provide more than half of the funds needed for research and scientific development. Most of these funds are allocated for economic development, especially in the industrial and agricultural sectors. Sufficient funds are also spent on research in various areas of health and social welfare. The vast majority of scientific research is conducted in universities, and universities receive numerous patents each year. Experts emphasize that this is due to the high level of practical cooperation between universities and industry.

The Israel Science Foundation, a legally independent body, is also a major source of funding for competitive research, and it funds thousands of individual researchers and special programs. The same can be said about South Korea and Malaysia. In particular, South Korea has succeeded in transitioning to a knowledge economy over the past 50 years. Today, modern technology giants Samsung and LG are known as technologies, while Hyundai and KIA are known as successful and competitive companies in the automotive market.

Of course, Azerbaijan is an oil country, and the role of "black gold" in achieving economic development in recent years is great. However, the transformation of oil capital into human capital and ensuring the transition to a knowledge based economy is one of the basic provisions of the economic development policy of President Ilham Aliyev. As a result of the successful application of this political course, comprehensive development has taken place in the country. In addition, the relevant state programs approved by the President for the development of education, which play a key role in the formation of human capital, are currently being successfully implemented. The steps taken to integrate the higher education system of Azerbaijan into the European educational space, the state programs implemented serve to achieve qualitatively new development trends in the education system and achieve high results. Undoubtedly, this makes an important contribution to the training and improvement of the national human resources potential of our country in terms of quantity and quality. However, in order to accelerate the transition to a knowledge economy, it is necessary to strengthen cooperation with higher education, research institutions and industry associations. Given that knowledge is mainly provided in universities, we can say that the establishment and formation of such cooperation mechanisms is vital for sustainable economic growth.

REFERENCES

1. Alberic Kacou UNDP (2018). Resident Representative UNDP, Nigeria Human Development Report Nigeria. 2018 – 2019 Achieving growth with equity.

2. Alacit Global, (2004) "Intellektual Property Law in India: Promises and challenges" organized by International Educational Centre (Deemed University) Symbiosis Society's Law College, November 20th

3. Andriessen D. (2004). Making A Sense of Intellectual Capital – Designing Methods for A Valuation of Intangibles. Burlington: Elsevier Butterworth-Heinemann.

4. Arrow, K. The Economical Implications of Learning by Doing, The Review of Economic Studies, Vol. 29, No. 3 (Jun., 1962), pp. 155-173.

5. Bedford A. D. (2013). Enhancing the Measurement and Definition of Knowledge Economy: Integrated Triple Bottom Line of Factors to the Knowledge Economy Index Methodologies and Models. Journal of Modern Accounting and Auditing, 9(2), 278-286.

6. Blinder A. S. (2000). The Internet and the new economy

 Dinca V & Bratianu, C., (2010). Knowledge based Economy Dimensions, Review of International Comparative Management, 11(2), 210 – 220.

8. Brinkley I. (2006). Definition of the Knowledge Economy, London: The Work Foundation

9. Dahlman C., Chen D. (2005). The Knowledge based Economy, World Bank Operations and the KAM Methodology. World Bank Institute Working Paper No. 37256.

10. Radebaugh L., Daniels, J. & Sullivan D. (2002). Business and Globalization. New Jersey: Prentice Hall.

11. Drucker P.F. (Ed.). (1998). From capitalism to knowledge based society. The Knowledge Economy, Woburn MA: Butterworth

12. Economic Research Services Department. (2000). Special economic issue. Kuala Lumpur, Malaysia: Bumiputra-Commerce Bank.

13. Economic Commissionfor Africa, (2002).National ICT Policy and Plan Development Committee THE GHANA 'ICT FOR ACCELERATED DEVELOPMENT' (ICT4AD) PROCESS Economic Growth," by Paul Romer. Forthcoming edition, Concise Encyclopedia of Economics.

14. Fong Chan Onn, (2006) - Developing Human Capital - The Way Forward: Managing Human Capital In The Globalised Era

15. Houghton J. & Sheehan. P. (2000), A Primer on the Knowledge Economy. Retrieved September 25, 2008

 Mustapha R., & Abdullah, A. (2000). School-to-work and vocational training in Malaysia. International Journal of Vocational Education and Training, 8, 67–87

17. Montes P. B. S. (2000). Information technology and the new economy. In Collection of Digital Economy 2000. U.S. Department of Commerce,

18. Olivier Serrat, (2008).Knowledge solution journal

19. Pohjola M. (Ed.), (2000). Information Technology, Productivity, and Economic Growth. Oxford University Press, Oxford.

20. Ramirez J.V. (2001), "Age and schooling vintage effects on wage profiles in Switzerland", University of Geneva, Department of Economics, mimeo.

21. Ravi S. Sharma, Anthony Promise Kwame And Bekoe Stephen, (2008) – REPLICATING THE KNOWLEDGE SOCIETY IN GHANA: A QUALITATIVE POLICY REVIEW.

22. Sanusi Mohammed Daggash, (2008). "Human Capital Development: The Key to Knowledge Based Economy"

23. Sab, Randa, and Stephen C. Smith, (2001) "Human Capital convergence: International Evidence," IMF Working Paper 01/32 (Washington: International Monetary Fund).

24. Sattar Bawany (2008). Meeting managerial challenges in the knowledge-driven economy

25. Schultz T. W. (1963). The economic value of education. New York: Columbia

77

University Press.

26. Schultz T.W. (1975) "The Value of the Ability to Deal with Disequilibria." J. Econ. Lit. 13, no. 3 : 827–46.

27. S. Jai Shankar (2008). Head of Corporate Communications - Malaysia External Trade Development Corporation (MATRADE) Email: jai@matrade.gov.my, www.matrade.gov.my.

28. Spence M. (2008). The Growth Report: Strategies for Sustained Growth and Inclusive Development. Commission on growth and development. Retrieved September 24, 2008

29. The Word Economic Forum. (2013). The Global Competitiveness Reports 2018 – 2019.

30. The World Bank. (2018). Knowledge Economy Index (KEI) 2018 Rankings.

31. UNESCO (2005). Towards knowledge societies: UNESCO world report. Retrieved September 27, 2008.

INTERNET RESOURCES

32. https://www.researchgate.net/publication/24046341_The_Knowledgebased_Economy_Trends_and_Implications_for_Pakistan

33. https://scholar.harvard.edu/files/kaisa/files/powell_snellman.pdf

34. http://www.soeagra.com/ijert/vol2/10.pdf

35. https://www.researchgate.net/publication/266970375_The_Knowledge-

Based_Economy_Trends_and_Implications_for_Bangladesh

36. http://www.scientificpapers.org/wp-

content/files/1323_Madalina_TOCAN_Knowledge_based_economy_assessmen.pdf

37. https://www.adb.org/sites/default/files/publication/29699/knowledge-based-economies.pdf

38. https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/26326414-FR-ERWP-88.PDF

APPENDIX

List of Pictures

Picture 1: The fourth	villars of the knowledge economy44

List of Tables

Table 1: Rank i score of GCI for SEE countries (2018)	45
Table 2: Rank and score of KEI for SEE countries (2018)	46
Table 3: Presents the results of descriptive statistics according to score of GCI an	ıd
KEI in SEE countries in 2018	47
Table 4: Score of pillars within KEI for SEE countries in 2012	48
Table 5: Use of UN Experts for Informatisation of Azerbaijan	56
Table 6: Measurement of National Infrastructure – Mainframe Computing	61
Table 7: Measurement of National Infrastructure – National Cloud Services	61
Table 8: Measurement of National Infrastructure – Mobility Development and	
Accessibility	62