

ASSESSING THE NEW ECONOMY IN THE REPUBLIC OF MOLDOVA: CONCEPTS, RESULTS

Maria HĂMURARU, Ph.D. in Economics, lecturer, State University of Moldova,
maria.gamurari@gmail.com

Sergiu DRAHNEA, engineer-programmer, State University of Moldova

Keywords: New Economy, New Economy assessment, information technologies of communication.

Abstract: This article highlights that building the New Economy in Republic of Moldova is a national priority. Assessing the effectiveness of the New Economy presents enormous difficulties caused by the fact that informational society meets the complex of volatile and dynamic forces, in most cases, intangible. In this context it was developed an application that meets six categories, each one incorporating a set of indicators reflecting the degree of involvement of the Republic of Moldova in the process of creating the New Economy. Defined conceptual considerations can serve as support in shaping the directions of the social economic and institutional transformations that ensure the connection of the macroeconomic policies with investment in ICT plans. In turn, economic performances act as a catalyst in expanding the evaluation concept.

1. INTRODUCTION

Socio-economic evolution of the modern world is characterized by complex, dynamic and overlapping values of two millennia. Appear more and more phenomena to be investigated: the big trends, transition to market economy of the former socialist countries and building the New Economy. These changes are largely due to development of information and communication technologies. The latter have considerably changed the nature of global relationships, sources of competitive advantage and opportunities for economic and social development. Technologies like the Internet, personal computers or mobile phones have changed the world in a global network of individuals, companies, schools and governments that are communicating and interacting with each other.

Currently, information and communication technologies are the basic strategic factor of developed countries, allowing multiplication of possible profits and economic benefits. Thus, it remains to less developed countries to follow their example, improving it and adapting it to national specificities. In this context, the emergence of phenomena and processes are highlighted in the economic subject to change content of current society, determining amplification of diversity and complexity of issues that characterize contemporary world.

These processes and phenomena can be summarized as follows:

- new technological revolution by Internet and e-mail provide activity environment of economic agents and are expanding business activity;
 - increase the production role as inexhaustible sources in economic activity;
 - Knowledge and information are primary sources of a state economy, and people working in this field will be the dominant group of labor;
 - the need for continuous training of members of society is due to the speed of technological innovation and competitiveness requirements which require continuous updating of knowledge and adoption of the new concept of training (life-long learning).
- Connection of developing countries to the established trends, manifested in the contemporary world, would enable them to benefit from the results of implementation of informational and communication technologies (ICT) and build a New Economy, different from the previous.

2. NEW ECONOMY

In economic literature, "New Economy" is seen as a complex phenomenon and interpreted differently by economists:

- a) The economy is developed under various names: post-industrial, posmodernist, informational, knowledge society etc.
- b) Most of the investigations (D. Risman, F. Mahlup, T. Umesao, D. Bell, M. Porat, M. Castells, I. Masuda, J. Martin, D. Medouz, J. W. Michaels, P. Drucker, A. Toffler, M. Mesarovic, E. Fish I. Nonaka, K. Kelly, J. Stiglitz) propose explanations and conclusions, intended to create New Economy, usually in less developed countries and researchers (M. Draganescu, R. Hincu, E. Simion, F. Filip L. Albu, D. Dascalu, C. Suciu, N. Niculescu, G. Black) - developing countries.
- c) In our opinion, increased creation of the New Economy requires to cover ex-socialist economies, which must develop socio-economic and institutional transformations directed at building a functioning market economy in terms of building the informational and knowledge society.

The concept of New Economy shows the transformation that we see today in all areas of economic activity. It refers also to the way businesses are managed and the connection with individual's life.

Thus, the New Economy is a higher level of human economic development, a new way of organizing and running the business, the information and knowledge are essential components of economic and social development.

3. THE NEW ECONOMY IN REPUBLIC OF MOLDOVA

Systemic research of reality of Republic of Moldova, outlines the following trends in the emergence of the New Economy:

1. in the national economy takes place the transition from agrarian economy to the informational one, which involves radical changes in all areas of economic activity. Thus, national economic welfare, economic progress depends on everyone to understand and use this common knowledge base, so this transition process affects each individual and therefore the competitiveness of the country as a whole.
2. with the transition to a market economy, Moldova is imposed to solve the task of establishing an informational and knowledge society. Computerisation is a prerequisite for the formation of the society exceeding trends outdated XIX-XX-century, during which environmental social, cognitive and economic aspects characteristic of the current stage were ignored. During the transition period is necessary and development of market relations based on processing and analyzing huge amounts of information.
3. creation and competitive economy in Moldova, as in other countries, is inextricably linked to the development of the following major forces: information, knowledge, new technology, which is a continuous correlation, interdependent.
4. building the New Economy has become a strategic goal for the national economy, which is stipulated in „National Strategy for Information Society” [8].

In this context, there is need to assess the stage of creating the New Economy in Moldova.

4. EVALUATION OF THE NEW ECONOMY

Assessing the effectiveness of the New Economy presents enormous difficulties caused by the information society that meets the complex forces dynamically, volatile and, in most cases, intangible.

Originally developed in 1999 was the first New Economy Index, which embraces the 17 indicators that measure the degree to which economies operate according to principles of the New Economy. Later, in 2002, when the New Economy was perceived more realistic as a result of the New Economy index already contained 21 economic indicators, obviously advancing New Economy in the states, regions and administrative divisions.

Thus, the Center for International Development at Harvard University initiated under the Computer Systems Policy Project (CSPP) in Global Electronic Commerce Readiness, and with IBM, a systematic approach, flexible, designed to assess the state of integration of less developed countries in the New Economy. This support is called "digital integration. Guidelines for developing countries" [2]. If "New Economy Index" refers to quantify changes in the U.S. economy, the guidance given is the first step in creating a strategic planning approach for communities of less developed ICT.

Simultaneously, the guide outlines how one can determine the level of integration in the New Economy, according to the matrix of four stages, which are distinguished by the set of values and actions of implementation ICT. This separation allows the government to guide the policies as more coherent and efficient. Guide that served as a springboard for developing the National Strategy for Information Society in Moldova.

In 2007 ICT Opportunity Index is the International Telecommunication Union, focused on a list of indicators and appropriate methodology. As a result the index is a tool for defining the difference compared to various savings compartment: Opportunities of ICT. Thus, indicators are classified into four categories under which identifies opportunities and threats related to obtaining the benefits of ICT. Finally, ICT Opportunity Index evaluates 183 savings, based on ten indicators that measure the performance of ICT networks, education, skills and intensity of ICT use. The resultant comparative analysis is grouped into 4 categories [4].

Depending on the average annual growth rate of the index of opportunity are defined as countries progress education (Sweden, USA, Japan, Finland), high (Slovenia, Romania), medium (Lebanon, Moldova), slow (Nicaragua, Indonesia).

Therefore, forms of manifestation of the New Economy differs from country to country. Thus, the average index (102.19) of ICT opportunities of Moldova in 2007 shows that our country is likely to create a New Economy, information society and knowledge.

5. EVALUATION OF THE NEW ECONOMY IN MOLDOVA

Summing up the information from: National Strategy for Information Society, Digital Integration: Guidelines for developing countries, the index "New Economy", "Measuring the Information Society 2007" that includes index information technologies and communication opportunities of the ITU, to developed an application that meets a set of indicators reflecting the degree of involvement of the Republic of Moldova in the process of creating the New Economy. Defined conceptual considerations can serve as support in shaping social and economic changes directions, institutional policies that ensure macroeconomic connection with investment in ICT plans. In turn, economic performance acts as a catalyst in expanding the concept of evaluation.

In our opinion, the concept of assessing the New Economy can be represented as:

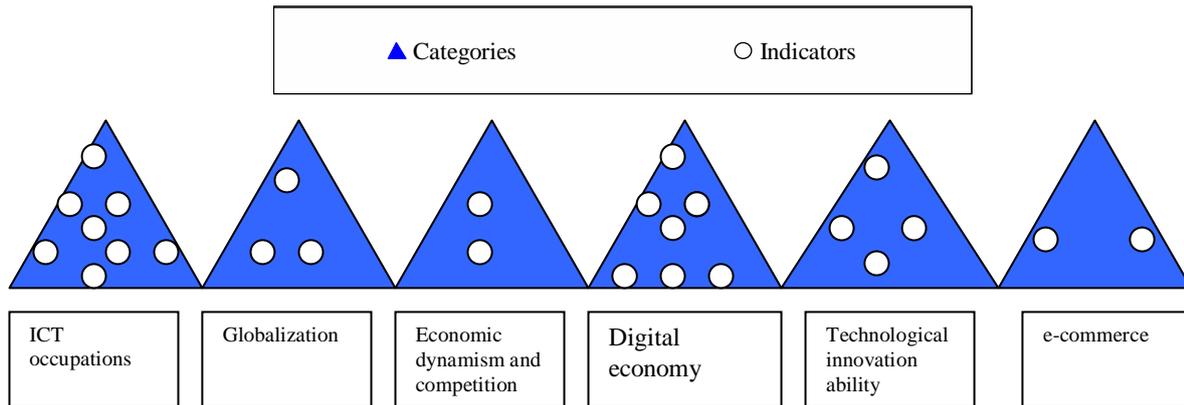


Figure 1. The concept of evaluation of the New Economy in Moldova
Source: [9]

6. ALGORITHM FOR DETERMINING THE VALUE OF THE NEW ECONOMY INDICATORS COEFFICIENTS

The values of the categories of assessment indicators of the New Economy are in the range $1..n$. years, with m - numbers. Indicators are organized as a matrix where each line represents the numerical values of this indicator for the time chosen:

$$P = \begin{pmatrix} p_1^1 & \dots & p_1^k & \dots & p_1^n \\ p_2^1 & \dots & p_2^k & \dots & p_2^n \\ \dots & \dots & \dots & \dots & \dots \\ p_i^1 & \dots & p_i^k & \dots & p_i^n \\ \dots & \dots & \dots & \dots & \dots \\ p_m^1 & \dots & p_m^k & \dots & p_m^n \end{pmatrix} \quad (1)$$

where:

i – index investigated indicator for which a figure is assigned a designation of specific indicator (eg, $i = 1$ corresponds to the indicator "Degree of literacy," $i = 2$ corresponds to the name of the indicator "Share of employment in the tertiary sector," etc.);

k – year of research. For example if you examine the period 2004-2010, when the values of k correspond to the interval $k = [1, 7]$, where $k = 1$ corresponds to 2004 $k = 2$ corresponds to 2005, etc.

p_i^k - is the numerical value of indicator i in year k .

Subsequently bring the value of each indicator for the corresponding year in the interval $[0, 1]$ according to relation:

$$\varphi(p_j^k) = \frac{p_j^k - \text{MIN}(\{p_i^k\})}{\text{MAX}(\{p_i^k\}) - \text{MIN}(\{p_i^k\})} \quad (2),$$

where:

$$\varphi(p_j^k) \in [0,1],$$

$$\{p_i^k\} = \{p_i^1, p_i^2, p_i^3, \dots, p_i^k, \dots, p_i^n\},$$

MIN – minimum function, $p_i^x = MIN(\{p_i^k\}), p_i^x < \forall p_i^j \in \{p_i^k\}$,

MAX – maximum function, $p_i^x = MAX(\{p_i^k\}), p_i^x > \forall p_i^j \in \{p_i^k\}$.

Below is an example of analyzing the relationship above. It is assumed that the set $\{p_i^k\}$ consists of the following values: $\{p_i^k\} = \{p_i^1, p_i^2, p_i^3, p_i^4\} = \{10, 20, 5, 10\}$. So the values obtained by applying function $\varphi(p_j^k)$ to date will be set following:

p_j^k	10	20	5	10
$\varphi(p_j^k)$	0,33	1	0	0,33

Thus, the initial set $\{p_i^k\} = \{10, 20, 5, 10\}$ is transformed into the crowd $\{a_i^k\} = \{0.33, 1, 0, 0.33\}$, elements are dimensionless quantities.

Similar to do so for each indicator category analyzed. Finally the initial matrix P is obtained transformed matrix A with indicators:

$$A = \begin{pmatrix} a_1^1 & \dots & a_1^k & \dots & a_1^n \\ a_2^1 & \dots & a_2^k & \dots & a_2^n \\ \dots & \dots & \dots & \dots & \dots \\ a_i^1 & \dots & a_i^k & \dots & a_i^n \\ \dots & \dots & \dots & \dots & \dots \\ a_m^1 & \dots & a_m^k & \dots & a_m^n \end{pmatrix} \quad (3)$$

To determine the value of k summary indicators for the year using the following relationship:

$$\psi_k(A, k) = MED(A, k) = \frac{1}{m} \cdot \sum_{i=1}^m a_i^k \quad (4),$$

where

ψ_k - the degree of evaluation of the New Economy for the year k,

MED – mediation function (in this case was chosen as a function of mediation arithmetic mean)

Algorithm was developed based on an application to assess the development of the New Economy, with the possibility to view graphs of the results by year and category indicators in part.

7. EVALUATION RESULTS BASED ON APPLICATION CATEGORIES

Category I. Occupations ICT.

Education is part of the key dimensions of sustainable development. Transition to the New Economy requires effort, first, a radical shift in the way of thinking, the knowledge, skills, behaviors, ethics, rights and responsibilities. Literacy rate is a sufficient population, similar to the EU (98-99%). While public spending on education, even if they are growing, however, remain insufficient aspirations of the New Economy. Thus, the state should increase spending for education, research and development, innovation aimed at improving education and securing a decent standard of living. Competitiveness and sustainable growth of a nation is largely the product competence managers managing

private and public companies. The early transition stage performance management in Moldova was quite low.

In figure 2 "ICT occupations" are analyzed indicators: literacy of the population, the share of highly educated people in employment (PO), public spending on education, the share of employment in the tertiary sector, the share of managers in public administration and facilities socio-economic and political arrangements, the share of specialists with higher qualifications in the OP, the share of medium skilled professionals with the PO and PO share administrative officials [3, 5].

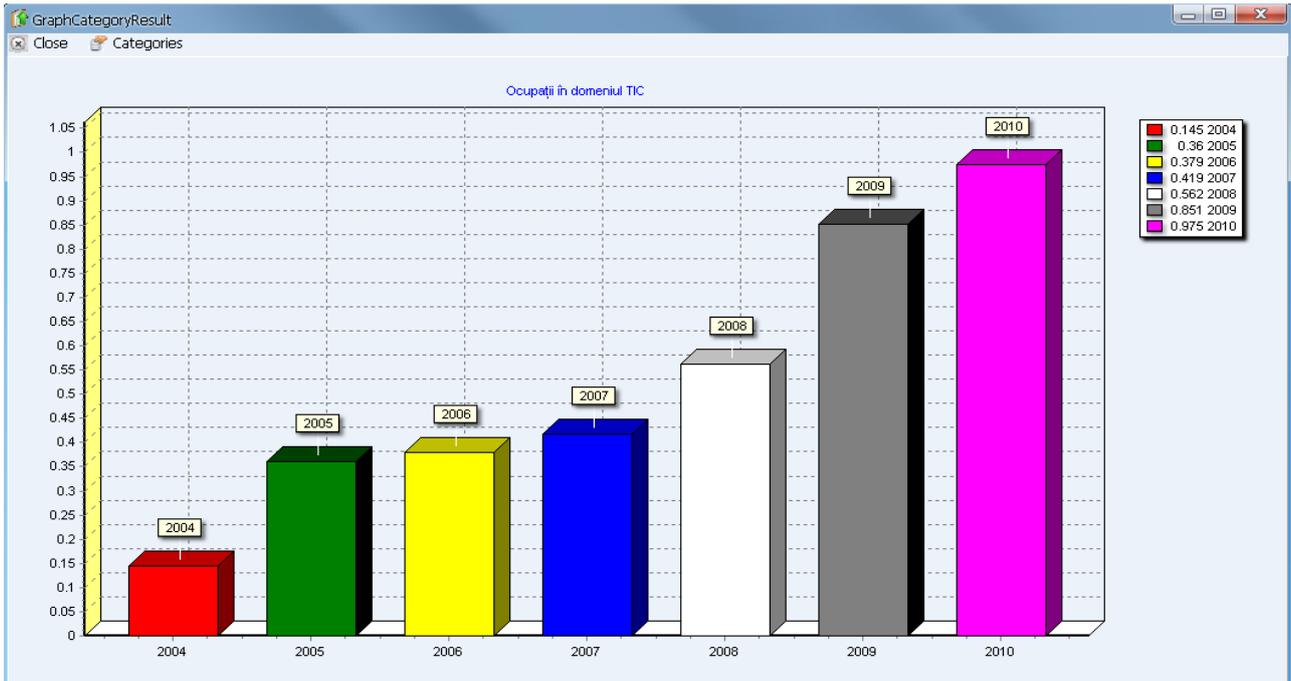


Figure 2. "ITC occupations"
Source: elaborated by authors

Analyzing the indicators in the period 2004-2010 is observed stable growth rate in 2005-2007 compared with 2008-2010, when they show a gradual shift of values due to improved management performance which is manifested by increasing the qualification of specialists, the number managerial positions in public administration and socio-economic units, political, and increase the share of employment in the tertiary sector.

Category II. Globalization.

Foreign trade should become a basis for sustainable economic growth and opened a small country. Diversification and improvement of foreign trade is only possible with the help of FDI, which, in turn, are bearing know-how, innovations and new management practices.

In figure 3 "Globalization" are analyzed indicators: exports of goods and services / GDP, the openness of the economy and the flow of foreign direct investment / GDP [5]. Indicators assess the situation there is a fluctuation in the values of indicators, which is generated by the implications of the global financial crisis, reducing exports and increasing imports calculate. Elevated for 2008-2010 is due to increase foreign direct investment flows.

To get the maximum benefits of globalization, it is necessary for a developed transport and logistics, customs procedures simple and stable, the compliance of the national metrology and quality certification standards and international norms.

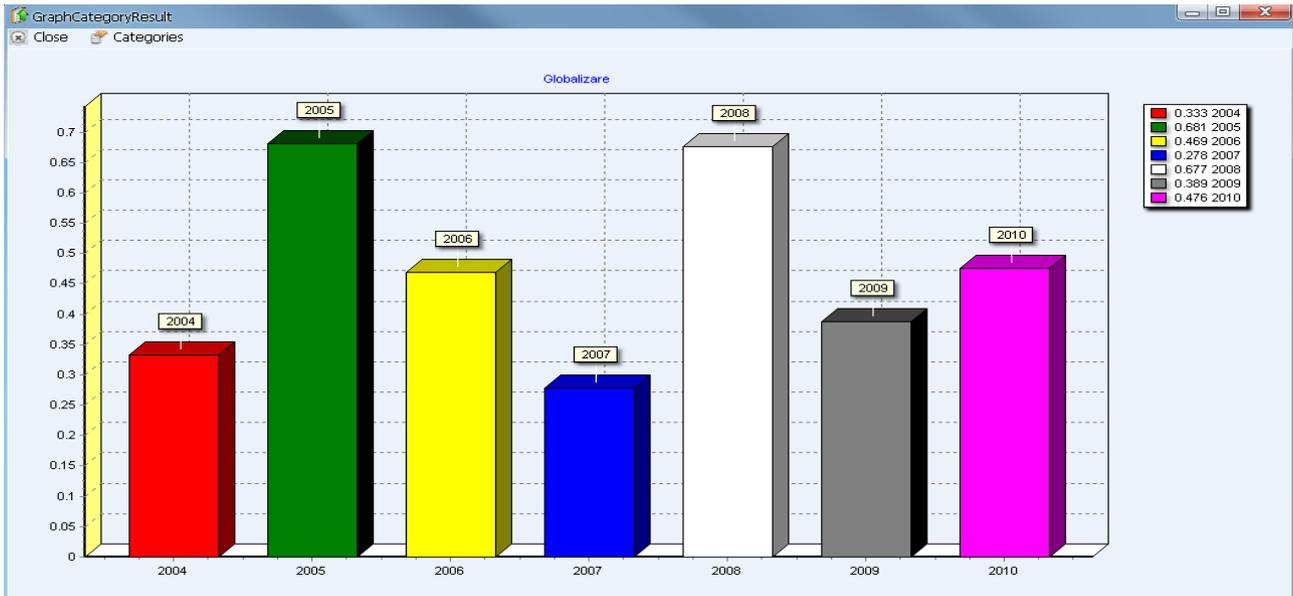


Figure 3. "Globalization"
Source: elaborated by authors.

Category III. Economic dynamism and competition.

Was taken into account: the share of telecommunications services in GDP and the share of investment in telecommunications and information services sector in total fixed capital investment [6, 7]. Telecommunications sector is one of the most dynamic national economy.

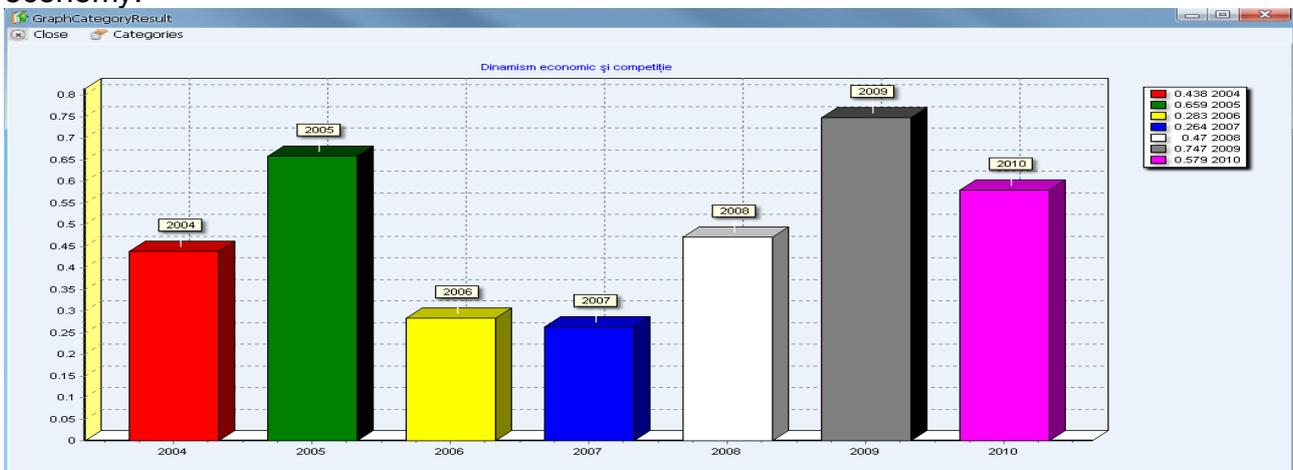


Figure 4. "Economic dynamism and competition"
Source: elaborated by authors

Assessing indicators given category is an increase in 2005, 2009, which is influenced by increasing the share of investment in information technologies services.

Category IV. Digital economy.

Indicators were analyzed: the penetration rate of fixed telephony / 100 instead, the penetration rate of mobile / 100 room rate narrowband penetration rate of broadband penetration, the penetration rate of access Internet / 100 instead of the number of PC / 100 instead of [6, 7].

Figure 5 "Digital economy" is noted that the values of indicators over the years 2004-2010, are steadily growing, with the exception of 2007, caused by slowing the rate of narrowband penetration rates based on increases in broadband penetration range.

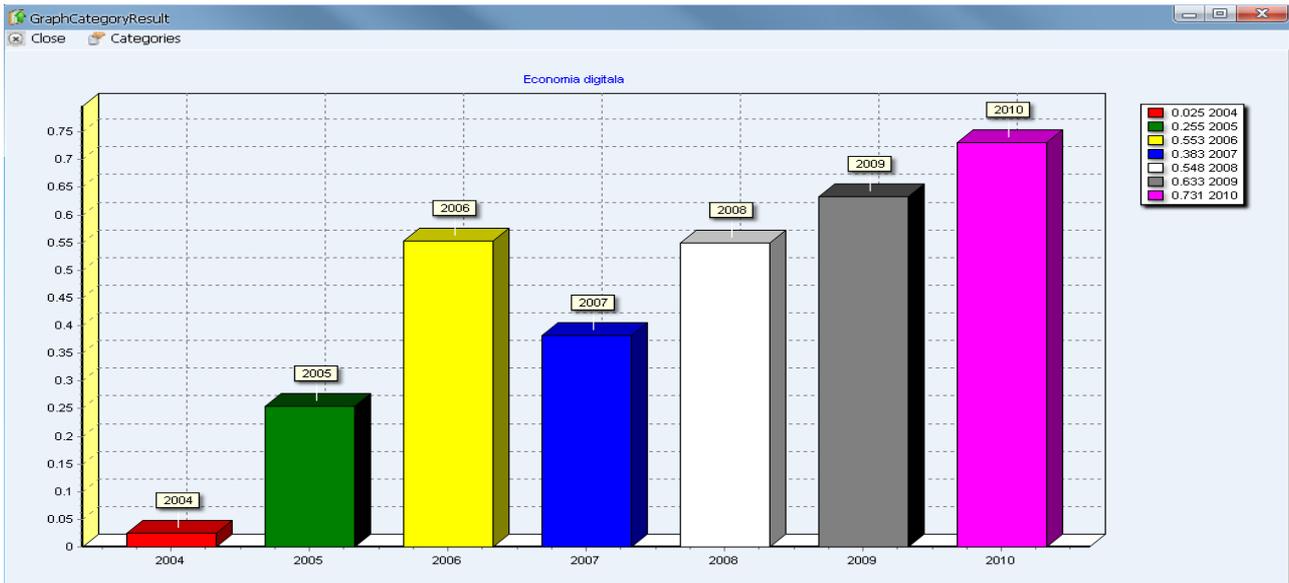


Figure 5. "Digital economy"
Source: elaborated by authors.

Category V. Technological innovation ability.

Includes the following indicators: R & D expenditure / GDP and the number of business units that have licenses for computer services in public places [1, 5].

Since 1990, Moldova has tendency to reduce the demand for development in research-development-innovation. Although indispensable for progress of any nation during the early transition in Moldova research, development and innovation have been killed. If developed countries they are primordial factors of progress and growth in our country they continued to be treated as non-productive sphere, keep to a slight increase over the years.

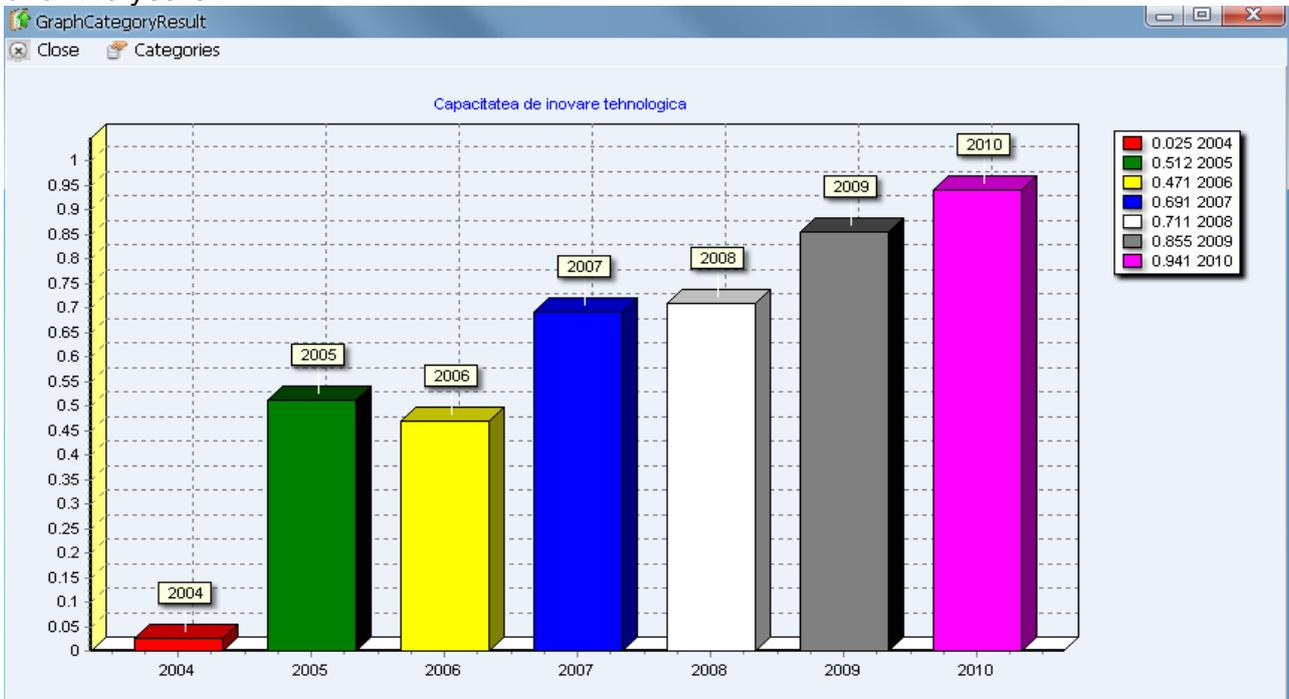


Figure 6. "Technological innovation ability"
Source: elaborated by authors

Analyzing the results chart shows a moderate upward trend. Increasing the ratio in 2005 compared to 2004 due to increasing number of economic units that have licenses for computer services in public places, about 1.6 times.

Category VI. Electronic commerce.

Electronic commerce is any form of transaction which the parties interact electronically.

Currently, some businesses online transactions accomplished in part, and another more significant category of businesses enables online transactions to make full [10].

Note that the number of those businesses that performs electronic transactions are increasing due to low cost way trade the involving.

E-commerce models are still in the process of development, especially for components for security systems integration transactions and financial transactions protocols. All searches are geared towards creating systems capable of ensuring the performance of shopping from any computer safe for both buyers and sellers. This reveals that the initiation of a New Economy is widespread.

Therefore, in general, Moldova is between levels II-III to create the New Economy. In some categories, the national economy registered some values even higher than the level III, for example in the "digital economy", while in others as "technological innovation" remain to be at a lower level.



Figure 7. "Evaluation of the New Economy 2004-2010"

Source: elaborated by authors.

Analyzing the evolution of the evaluation of the New Economy in the period 2004-2010 growth rate is observed at all times except 2007, because the lower coefficient values for most indicators (public expenditure on education, the share of employment in the tertiary sector, export of goods and services / GDP and others).

8. Conclusions and recommendations.

The research conducted generates the following conclusions and proposals:

- In order to exploit the opportunities the New Economy it is necessary that National Regulatory Agency for Electronic Communications and Information Technology to increase the number of indicators, extending the application time both nationally and at regional level, a result that can get a map of the New Economy Moldova, which would allow correct orientation of economic policy spectrum.
- The perception that the creation of the New Economy is not limited to quantitative changes (increased number of computers or the number of Internet users), but

presents a more complex process, primarily involves increasing the economic well-being, quality of life and out of shadow spiritual treasure of the society (in a poor country to create New Economy can be initiated but never completed).

- Education is an important component of the New Economy, which is responsible for socio-economic progress of a country. In Moldova, the education system in 15 years is in the process of reform continues. Her results, unfortunately, are not found in the quality of work that would meet the aspirations of the New Economy. In this context we suggest that higher education institutions, government and businesses to work together, clearly indicate the expectations and obligations of each. This triple connection would improve the quality of training efficiency and training of qualified specialists.

Creating the New Economy must be done in such a manner as its results to benefit all citizens and to attain sustainable development objective.

REFERENCES

1. Medium Term Expenditure Framework 2008-2010, Ministry of Finance of Moldova, Chisinau, 2007 accessible at <http://www.mf.gov.md/ro/middlecost/CCTM2008/>
2. Center for International Development, Harvard University // "Digital Integration: a guide for developing countries' access to <http://www.cid.harvard.edu/ciditg>
3. The workforce in employment and unemployment RM-2006, 2007, 2008, 2009.2010 // Note informative, NBS, accessible at <http://http://www.anofm.md/>
4. Measuring the Information Society 2007, ICT Opportunity Index and World Telecommunication/ICT Indicators, 1st edition 2007
5. Moldova in figures 2006, 2007, 2008, 2009, 2010, 2011, Statistical Compendium, Chisinau, from 2006 to 2011, accessible at www.statistica.md/.../Moldova_in_cifre/
6. NRAECIT RM report 2007, 2008, 2009, 2010 Chişinău, 2008, 2009, 2010, 2011, accessible at www.anrceti.md
7. NRAIT report 2004, 2005 2006, Chisinau, 2005, 2006, 2007.
8. National Strategy for Information Society "Electronic Moldova" // Annex 1 to Government Decree No. 255 of 09.03.2005, Official Gazette nr.46.din from 25.03.06
9. Thesis on "The specific involvement of Moldova in the process of the New Economy," M. Hămuraru, Chisinau 2008. Is a matrix of four levels suggested creation of the New Economy, including the six categories shown in the concept of monitoring the process. Each level is related to some state of affairs, which allowed us to establish the New Economy.
10. www.ournet.md