

## KNOWLEDGE SOCIETY DEVELOPMENT IN THE EU 28

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**Abstract:** *The 21st century represents the century of knowledge, where the information and knowledge have an essential role for the world states' economic-social development, as well as for modeling and affirmation of each individual. As the 'knowledge society' concept is associated to the 'technological innovation' concept, the knowledge society includes the social, cultural, economic, political and institutional transformation in the perspective of pluralistic development. The knowledge society does not represent a formula, it is an epistemic phenomenon, with a clear methodology in light to identify common problems and search common solutions worldwide. Knowledge society involves the development of the states' capacity to identify, create, process, disseminate and use information and knowledge in view of sustainable development, economic growth and improvement of competitiveness, in light to face successfully new challenges of this millennium. The paper aims to present an empirical comparative analysis of the key components of knowledge society in the 28 EU Member States. The research methods refer to documentary and bibliographical analysis, as well as comparative analysis.*

**Keywords:** *knowledge society, education, innovation, ICT, competitiveness*

### 1. CONTEXT

Knowledge represents a phenomenon, „the greatest miracle of our universe, a matter which will not be solved soon” (Popper, 1992:32-84), a process, as well as a product of the human activity, „its most representative product” (Popper, 1992:32-84).

Knowledge, as a core feature of the society of the 21st century generates changes in all the social subsystems, including that of public administration, developing new approaches, attitudes, specific tools and methods.

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We are living in an era of major social, economic, financial, political transformations, an era of speed and complexity, an era dominated by knowledge and competences, based on values, culture, history and traditions. The complex phenomenon of knowledge society represents an important research topic together with other actual topics such as climate change, sustainable development, and globalisation.

The scientific researches on the processes of knowledge society creation and modernisation could be defined as a promising direction of theoretical research in the field of social, administrative, economic, technical sciences as well as an important priority of the practical activities in various fields of the economic, political, social life and technological progress. The knowledge society is recognised and approached as a major topic at international, European and national level.

A knowledge society refers to the type of society required in view to compete and succeed within the dynamics of the economic and political change of the modern world. The knowledge society is characterised by the outstanding values of creativity and values expressing the generation, transmission and use of new technologies. The knowledge society aims the objectives to create, transmit and use new products in the field of economics, science and technology, arts, business, as well as the objectives to initiate, generate and implement creative ideas and innovations in all the areas of social, economic, political life. The modernisation of knowledge society is oriented towards creation of new quality of society and life style.

## **2. PILLARS OF KNOWLEDGE SOCIETY**

The pillars of knowledge society refer to education, research and development, innovation, information and communication technology, global competitiveness.

### **2.1. Education**

For the time being, the European Union is facing numerous and complex challenges. The effects of the economic and financial crisis are acknowledged in all EU Member States, and in this context, the education and training systems should adapt so that all the European citizens acquire knowledge, skills and competences in view to face the job challenges and requirements.

The quality of education and training represents an essential factor for an adaptable, competitive workforce and generation of smart economic growth. The education and training systems should provide quality for their programmes and the graduates should hold knowledge, competences, and skills in view to meet the labour market requirements.

„It is necessary a proactive management of the offer of competences in view to stimulate innovation and emergent dynamic sectors for the economic growth” (COM, 2012, 669 final). „The education and training systems should be modernised and should provide the necessary competences in view to respond better to the needs and requirements of the labour market” (COM, 2012, 669 final). In the context of reducing the public expenditure, in view to achieve better results, it is important to improve the efficiency of the education and training systems through structural reforms. The European Commission analysed this topic in depth in its new

initiative „Rethinking Education – Investing in skills for better socio-economic outcomes” (COM, 2012, 669 final).

The structural and organisational reforms in the educational system aim to make lifelong learning and mobility a reality, to improve the quality and efficiency of education and training, to promote equity, social cohesion and active citizenship and to enhance creativity and innovation, including entrepreneurship, at all levels of education and training.

According to the EU Report, „Education and Training Monitor”, „the role of education and training in fostering sustainable growth is decisive. Member States must pursue reforms to boost both the performance and efficiency of their education systems. Well targeted education and training policies will help Europe tackle the current crisis, while laying the foundations for a more dynamic, resilient, and united Europe” (European Union, 2012).

Quality in education is vital as education and culture support the economic growth, development and social progress, providing special meaning. A sustainable society is foremost a well-educated society.

The European budget for the period 2014-2020 is ambitious as the European Commission strives for allocating investments in the field of education, research and innovation. In this respect, the new programme Erasmus+ (European Union, 2014) aims to boost skills and employability, as well as to modernise education and training systems. It will have a budget of €14.7 billion. It is a 40% increase compared to current spending levels, reflecting the EU's commitment to investing in education. Erasmus+ will provide opportunities for over 4 million Europeans to study, train, gain work experience and volunteer abroad.

Erasmus+ supports transnational partnerships among education, training, and youth institutions and organisations to foster cooperation and bridge the worlds of education and work.

The comparative analysis in the European Union Member States reflects the status of education and training based on structural indicators: expenditure on education as percentage of GDP, index on higher education and training programmes, number of graduates of higher education institutions.

The actual context for the educational systems in the EU should be highlighted: on the one hand, the impact of the economic and financial crisis on labour market, on economy and overall society, and on the other hand, the demographic evolution, with relevant impact on the labour market, some states facing the decrease of the number of pupils and students, including also Romania.

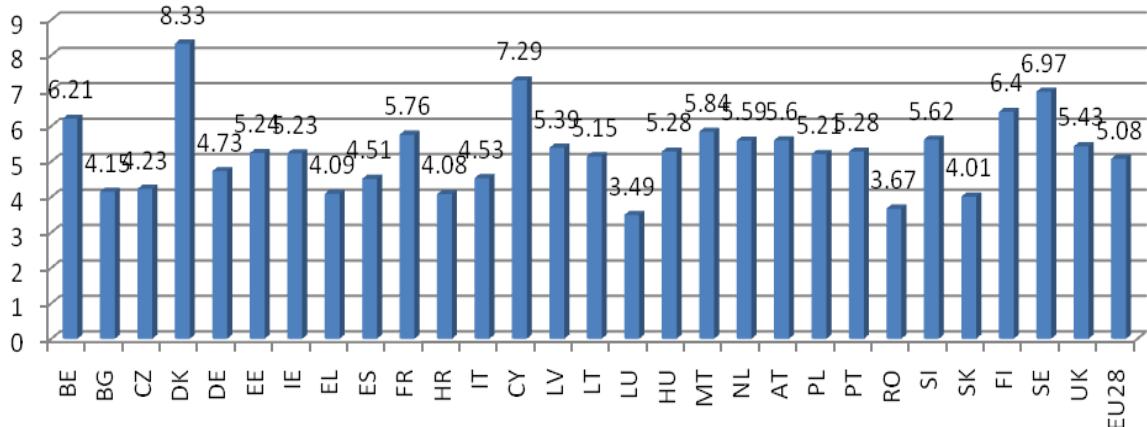
**Table 1 Evolution of expenditure on education as percentage of GDP in the EU Member States during 2002-2011**

Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average
Belgium	6.09	6.02	5.95	5.92	5.98	6.00	6.43	6.57	6.58	6.55	6.21
Bulgaria	3.94	4.09	4.40	4.25	4.04	3.88	4.44	4.58	4.10	3.82	4.15
Czech Republic	4.15	4.32	4.20	4.08	4.42	4.05	3.92	4.36	4.25	4.51	4.23
Denmark	8.44	8.33	8.43	8.30	7.97	7.81	7.68	8.74	8.81	8.75	8.33
Germany	4.72	4.74	4.62	4.57	4.43	4.49	4.57	5.06	5.08	4.98	4.73
Estonia	5.47	5.29	4.92	4.88	4.70	4.72	5.61	6.03	5.66	5.16	5.24

Ireland	4.27	4.35	4.66	4.72	4.73	4.92	5.67	6.43	6.41	6.15	5.23
Greece	3.57	3.56	3.83	4.09	4.11	4.16	4.2	4.2	4.6	4.6	4.09
Spain	4.25	4.28	4.25	4.23	4.26	4.34	4.62	5.02	4.98	4.82	4.51
France	5.90	5.92	5.80	5.67	5.61	5.62	5.62	5.90	5.86	5.68	5.76
Croatia	3.71	3.93	3.87	3.98	4.04	4.02	4.32	4.42	4.31	4.21	4.08
Italy	4.60	4.72	4.56	4.41	4.67	4.27	4.56	4.70	4.50	4.29	4.53
Cyprus	6.60	7.37	6.77	6.95	7.02	6.95	7.45	7.98	7.92	7.87	7.29
Latvia	6.60	5.58	5.12	5.14	5.13	5.07	5.71	5.59	4.96	4.96	5.39
Lithuania	5.81	5.14	5.17	4.88	4.82	4.64	4.88	5.64	5.36	5.17	5.15
Luxembourg	3.79	3.77	3.87	3.78	3.41	3.15	3.24	3.3	3.2	3.4	3.49
Hungary	5.39	5.91	5.44	5.46	5.44	5.29	5.10	5.12	4.90	4.71	5.28
Malta	4.22	4.48	4.66	6.58	6.45	6.18	5.72	5.32	6.74	8.04	5.84
Netherlands	5.22	5.47	5.50	5.53	5.50	5.32	5.50	5.95	5.98	5.93	5.59
Austria	5.68	5.53	5.48	5.44	5.40	5.33	5.47	5.98	5.91	5.80	5.60
Poland	5.41	5.35	5.41	5.47	5.25	4.91	5.08	5.09	5.17	4.94	5.21
Portugal	5.33	5.38	5.10	5.21	5.07	5.10	4.89	5.79	5.62	5.27	5.28
Romania	3.51	3.45	3.28	3.48	3.68	4.25	4.24	4.24	3.53	3.07	3.67
Slovenia	5.76	5.80	5.74	5.73	5.72	5.15	5.20	5.69	5.68	5.68	5.62
Slovakia	4.31	4.30	4.19	3.85	3.80	3.62	3.61	4.09	4.22	4.06	4.01
Finland	6.22	6.43	6.42	6.30	6.18	5.90	6.10	6.81	6.85	6.76	6.40
Sweden	7.36	7.21	7.09	6.89	6.75	6.61	6.76	7.26	6.98	6.82	6.97
United Kingdom	5.06	5.21	5.12	5.31	5.38	5.29	5.28	5.56	6.15	5.98	5.43
EU28	5.00	5.03	4.95	4.92	4.91	4.92	5.04	5.38	5.41	5.25	5.08
EU25	5.03	5.06	4.98	4.95	4.93	4.95	5.06	5.41	5.46	5.31	5.11
EU15	5.01	5.04	4.96	4.89	4.87	4.81	4.95	5.32	5.29	5.16	5.03

*Source: the authors, based on data from Eurostat*

**Figure 1 Average of expenditure on education as percentage of GDP in the EU Member States during 2002-2011**



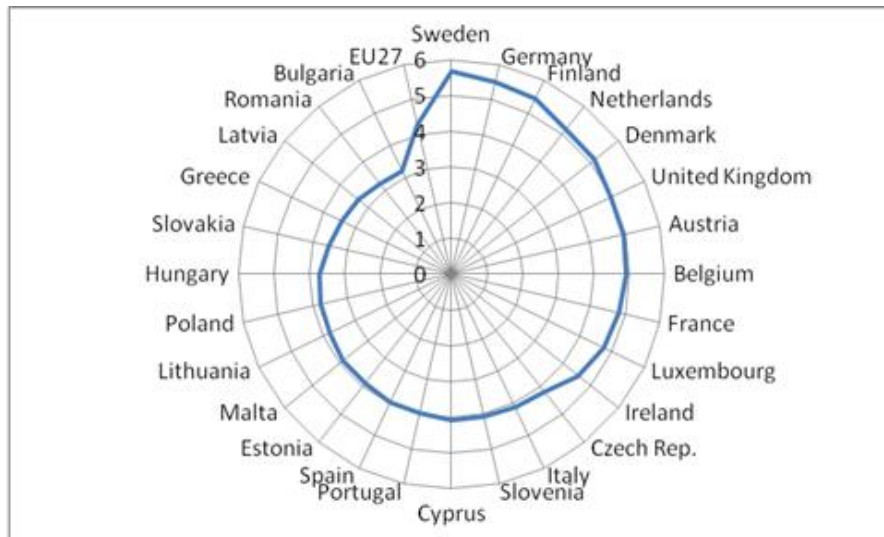
Source: the authors

During 2002-2011, the evolution of expenditure on education as percentage of GDP allocated to education was in general constant, the EU average being around the value of 5%, but this percentage does not reflect the differences between various EU Member States. While Germany, Spain, Italy, Bulgaria, Czech Republic, Romania, Greece, Slovakia allocated a value between 4% and 5%, Denmark, Sweden, Finland, Cyprus allocated almost double (7-8%). Since 2009, several European states were in recession and the effects of the economic and financial crisis have enhanced. Thus, in the context of the trend of decreasing public expenditure, most EU states increased investments in education, only Romania and Greece maintained the same level and Latvia and Malta decreased them. The motivation consists in the governments' wish to invest in the educational systems as they represent the pillar for economic growth and competitiveness as well as in the authorities' commitment on the development of competences and skills of pupils, students, trainees. In 2011 Romania ranked the last while the Nordic countries, Denmark, Sweden, and Finland held the supremacy.

The European Commission has a clear vision on governance of the European higher education institutions, based on „diversifying the financing resources, enhancing cooperation between universities and industry, making compatible the offer of qualifications with the requirements of the labour market” (Dobbins et al., 2011:665-683). „The classical governance model is replaced with a model focusing on managerialism, public accountability and quality in provision of public services” (Dobbins et al., 2011:665-683). At the same time, the increasing interest for research in higher education represents „partially a function of extending higher education during the last decades and for the time being its character and performance have implications for all the members of society” (Brenan and Teichler, 2008: 259-264).

The index for higher education and training programmes, evaluating the enrolment rate in high schools and faculties, quality of education, training programmes for teachers is presented in Figure 2.

**Figure 2 Index for higher education and training programmes in the EU Member States in 2010**

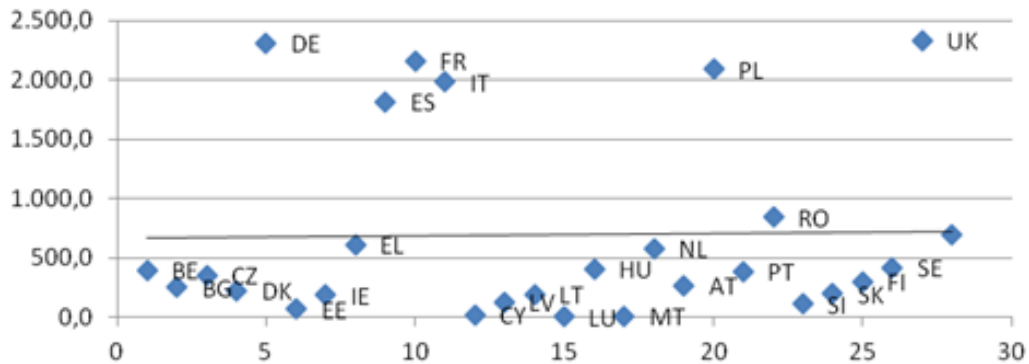


Source: the authors

Romania is ranked on 26th position with a value of 3.24%, while Sweden holds the supremacy with 5.67% and the EU average is 4.3%.

The average of the number of students (1000) in higher education institutions (ISCED 5-6, Bachelor, master, PhD studies) in all fields during 2002 – 2010 in the EU Member States is presented in Figure 3.

**Figure 3 Average of the number of students (1000) in higher education institutions (ISCED 5-6) in all fields during 2002 – 2010 in the EU Member States**



Source: the authors

During 2002-2010, UK, Germany, France, Poland, Italy, Spain registered an average of the number of students higher than the EU average and at the other extreme we find Malta, Cyprus, Estonia, Slovenia, Latvia, Lithuania, Slovakia.

According to the data from Eurostat, in 2010, the number of the graduates of faculties in the field of social sciences, business and law (as percentage) recorded the highest value - 36%

and among the countries exceeding this value we find Romania (60%), Latvia (54.4%) and Bulgaria (51.6%).

Within a context characterized by major social and economic changes, the role of education has been very dynamic. In some new EU Member States, the Governments have invested in education and training through the Structural Funds. The collaboration between universities and companies should embrace the form of jointly developed curricula, more pragmatical training for students, blended learning, and practice oriented courses. And the outcomes of a better educational system should reveal more qualified persons, education for everybody, low rate of school dropout, collaborative, flexible, peer-to-peer education and a better relationship with the practical world.

## **2.2. Research – development**

The conclusions of the European Council on March 2012 reiterated for the European Research Area „the creation of a single market for research, development and innovation”, which should be finalised before 2014. The European Research Area (ERA) comprises all research, development activities, programmes and policies in Europe involving a cross-national perspective.

Cooperation in the field of science and technology improves the quality of research at European level and strengthens Europe’s competitiveness. The improvement of the transfer of knowledge between universities, industry and public research organizations is essential as the results of researches contribute to economic growth, support innovations and development of new products and services.

One of EU objectives in the last decade was to encourage the level of investments in view to stimulate the EU competitiveness. At the European Council in Barcelona in 2002, the EU agreed a target of at least 3% of GDP for research. Most Member States specified own objectives in their national reform programmes.

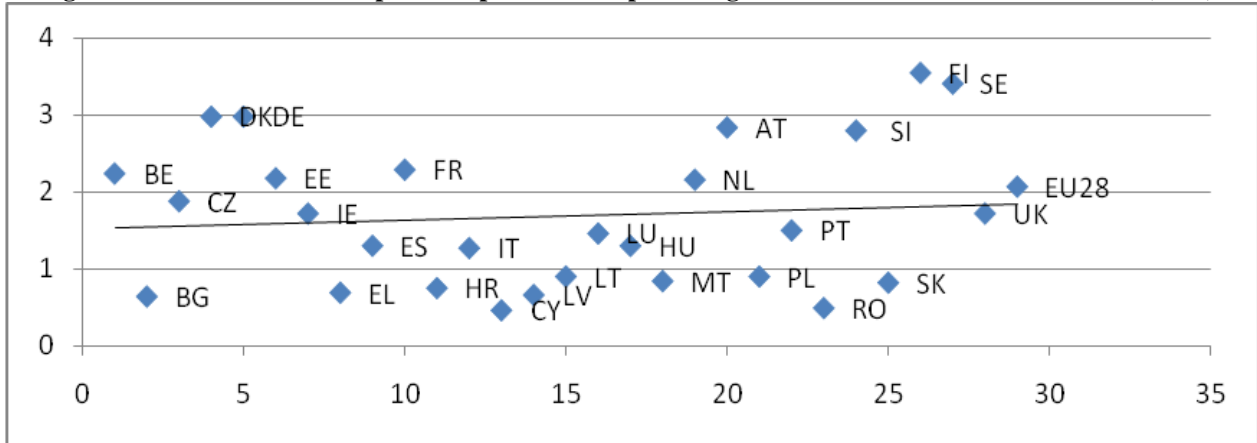
**Table 2 Research and development expenditure as percentage of GDP in the EU Member States**

Country	2012	TARGET 2015	Country	2012	TARGET 2015
Belgium	2.24	3	Lithuania	0.9	1.9
Bulgaria	0.64	1.5	Luxembourg	1.46	2.3
Czech Republic	1.88	:	Hungary	1.3	1.8
Denmark	2.98	3	Malta	0.84	0.67
Germany	2.98	3	Netherlands	2.16	2.5
Estonia	2.18	3	Austria	2.84	3.76
Ireland	1.72	:	Poland	0.9	1.7
Greece	0.69	0.67	Portugal	1.5	2.7
Spain	1.3	3	Romania	0.49	2
France	2.29	3	Slovenia	2.8	3
Croatia	0.75	1.4	Slovakia	0.82	1.2

Italy	1.27	1.53	Finland	3.55	4
Cyprus	0.46	0.5	Sweden	3.41	4
Latvia	0.66	1.5	United Kingdom	1.72	:
EU 28	2.07	3			

Source: based on data from Eurostat

Figure 4 Research and development expenditure as percentage of GDP in the EU Member States (2012)



Source: the authors

In 2012, in the EU, the expenditures targeted to research-development as percentage of GDP represented 2.07% of GDP, a value under the objective of 3% established by Lisbon Strategy in 2002. Taking into consideration the fact that this objective has not been attained, Europe 2020 Strategy continues to specify the same objective of 3% of GDP for research-development.

It is worth to remark the fact that the Nordic countries, Finland, Sweden exceeded this target, while Denmark, Germany, Austria, France, Slovenia were almost around this value. In this ranking, Romania is on the 27th position. Although research in Romania is underfinanced, there are areas of activity, which by excellence bring important contributions through innovative applications in the field of science and technology. An eloquent example is the Romanian Spatial Agency. Concerning the expenditure allocated for research-development, Romania aims to reach the level of 2% of GDP for the activity of research-development-innovation (of which 1% national public funds and 1% private funds) in 2015.

Analyzing the rank of the EU Member States, several categories could be emphasized:

- States which reached the national objectives: Finland (3.55%), Sweden (3.41%), Denmark (2.98%), Germany (2.98%);
- States which are going to reach the national objectives based on their progress during 2000-2012: Austria (2.84%), Slovenia (2.8%), and Italy (1.27%);
- States which should increase their growth rate: Belgium (2.24%), France (2.29%), Netherlands (2.16%), Portugal (1.5%), Estonia (2.18%), Spain (1.3%), Luxembourg (1.46%), Hungary (1.3%);
- States which should increase significantly their growth rate and should make efforts in view to exceed the EU average: Bulgaria (0.64%), Latvia (0.66%), Lithuania (0.9%), Croatia



(0.75%) Poland (0.9%), Romania (0.49%), Cyprus (0.46%), Malta (0.84%), Slovakia (0.82%), Greece (0.69%);

- States which have not specified national objective: United Kingdom (1.72%), Ireland (1.72%), Czech Republic (1.88%).

### 2. 3. Innovation

The innovation represents an essential driver for a sustainable economic development and an essential prerequisite for a competitive economy.

Innovation reflects a given state of knowledge, a particular institutional environment, a certain availability of skills, and a network of producers and users who can communicate their experience. The ability and willingness of the relevant actors to cooperate and to link and share ideas, knowledge and experience beyond traditional organizational borders, as well as to exchange vital resources such as staff, is essential in innovation environments. In the field literature, this process has been framed in terms of ‘open innovation’ (Chesbrough, 2003:113-135; Chesbrough, 2006:38-45; Von Hippel, 1976:212-239; Von Hippel, 2005:1-19; Von Hippel, 2007:1-23).

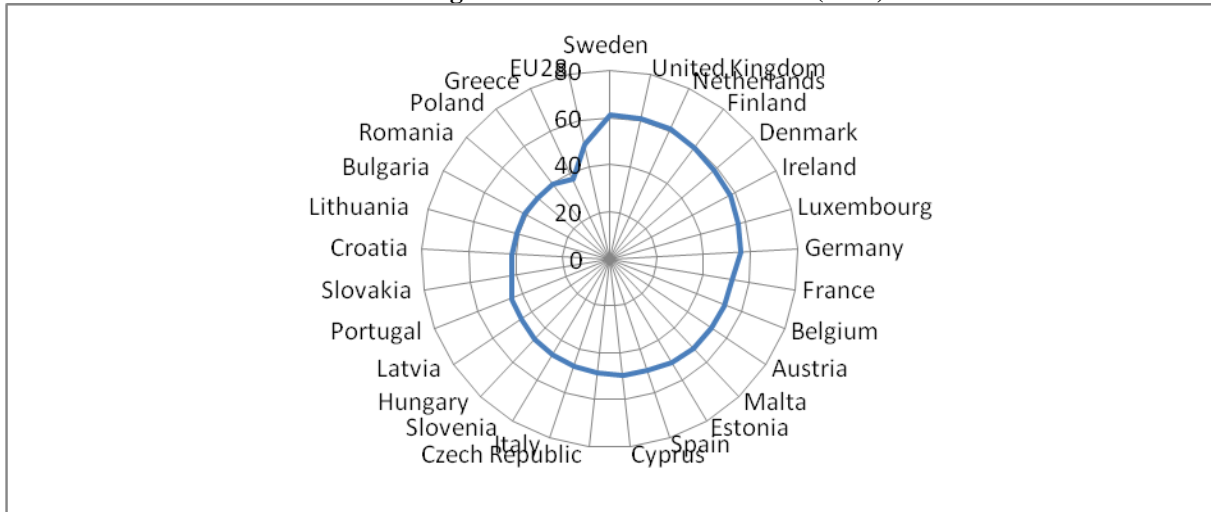
The Global Innovation Index (GII) focuses on measuring innovation at the country level, providing “interesting insights into the framework conditions needed for innovation to take place”, as well as about the actual innovation performance.

**Table 3 Global Innovation Index (2013)**

Country	GII	Country	GII	Country	GII
Sweden	61.36	Austria	51.87	Portugal	45.1
United Kingdom	61.25	Malta	51.7	Slovakia	42.25
Netherlands	61.14	Estonia	50.6	Croatia	41.95
Finland	59.51	Spain	49.41	Lithuania	41.39
Denmark	58.34	Cyprus	49.32	Bulgaria	41.33
Ireland	57.91	Czech Republic	48.36	Romania	40.33
Luxembourg	56.57	Italy	47.85	Poland	40.12
Germany	55.83	Slovenia	47.32	Greece	37.71
France	52.83	Hungary	46.93		
Belgium	52.49	Latvia	45.24	EU28	49.86

Source: Data from the Global Innovation Index 2013

**Figure 5 Global Innovation Index (2013)**



Source: the authors

Comparing the index of Romania (40.33) with the indices of other EU states and the EU average (49.86), we find out that Romania is on the 26th position, although it is a country with an extraordinary potential in this field, taking into account the number of patents, number of awards in various international contests or the researchers' expertise.

In Romania, the performance of innovation is under the EU average but it has a very high rate of improvement. Romania's strengths consist in outstanding inventions, relevant economic effects of inventions. The weaknesses refer to financing, support for the implementation of inventions. Unfortunately, Romania is rather in the stage of developing inventions than in the stage of their implementation.

In the knowledge society, the capacity of innovation and capacity to implement new innovations is very important for the public administration. „The public organizations should be able to incorporate information, knowledge, and resources within the innovation processes and to harmonise the needs of citizens, businesses, NGOs etc. (Bekkers et al., 2011: 3)”.

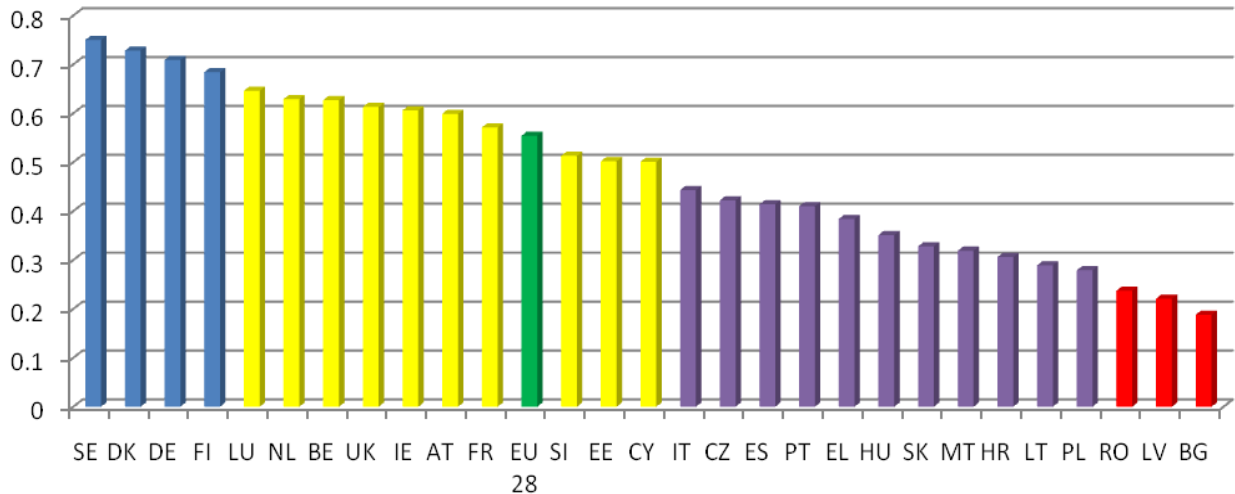
Innovation represents a prerequisite for administration's modernization. Innovation in public administration may be considered a learning process, a modality for new service development, new technology application, for changing the organizational structures as well as for implementing new managerial approaches in light to meet the citizens, businesses, society needs and requirements in facing the new challenges of knowledge society. Public sector innovation research shows that new insights stem from taking into account the ideas, insights and experiences of citizens as end-users (Davenport, 1993: 1-7; Oudshoorn and Pinch, 2003: 126-137; Alam, 2006:468-480; Von Hippel, 2007:1-23), of the middle management of public organizations (Behn, 1995:21-234; Borins, 2008; Fuglsang and Pedersen, 2011:44-60) and people who are engaged on a daily basis in rendering services to society, like police officers, teachers, doctors (Oudshoorn and Pinch, 2003: 126-137; Von Hippel, 2007: 1-23).

In light to take account of insights from various groups, the literature talks about the importance of seeing innovation as a process of co-creation (Von Hippel, 2007: 1-23; Oudshoorn and Pinch, 2003). Most innovations in public administration have an ICT component. ICT is interconnected in many practices in administration as information, communication represent vital

resources for public service provision, for implementing public policies and achieving projects and programmes. ICT innovative potential is determined by specific characteristics, for example „the ability to process big data and to communicate beyond the temporal, functional and geographic borders” (Bekkers and Homburg, 2005).

According to the Innovation Union Scoreboard 2014, which analyses eight innovation dimensions and 25 indicators for the performance of the EU innovation system, “the impact of economic crisis not as severe as expected” (European Commission, 2014).

**Figure 6 Innovation performances of the EU countries in 2013**



Source: European Commission, 2014

As revealed by Figure 6, Sweden holds an innovation system with the best performance in the EU, being followed by Denmark, Germany and Finland. The most innovative countries hold powerful innovation systems, performing high at all dimensions: research and innovation, business innovation activities, innovation outputs, economic effects, thus revealing a balanced national research and innovation system. Romania, Latvia and Bulgaria are among the modest innovators in the EU.

#### 2.4. Information and Communication Technology

Europe 2020 Strategy highlights ICT role in “overcoming the effects of the economic and social crisis and preparing the EU economy in view to face the new challenges” (Europe 2020 Strategy).

In the last decades, the relationship between technology and economy has been broadly debated, suggesting new methods and tools for evaluation. Annually we witness the continuous expansion of ICT sector at world and European level. ICT role as tool to generate income and employment, for providing access to information, e-learning, e-health, e-justice etc. is very well defined for the time being.

It is worth to note the fact that a country’s economy benefits of ICT in two ways:

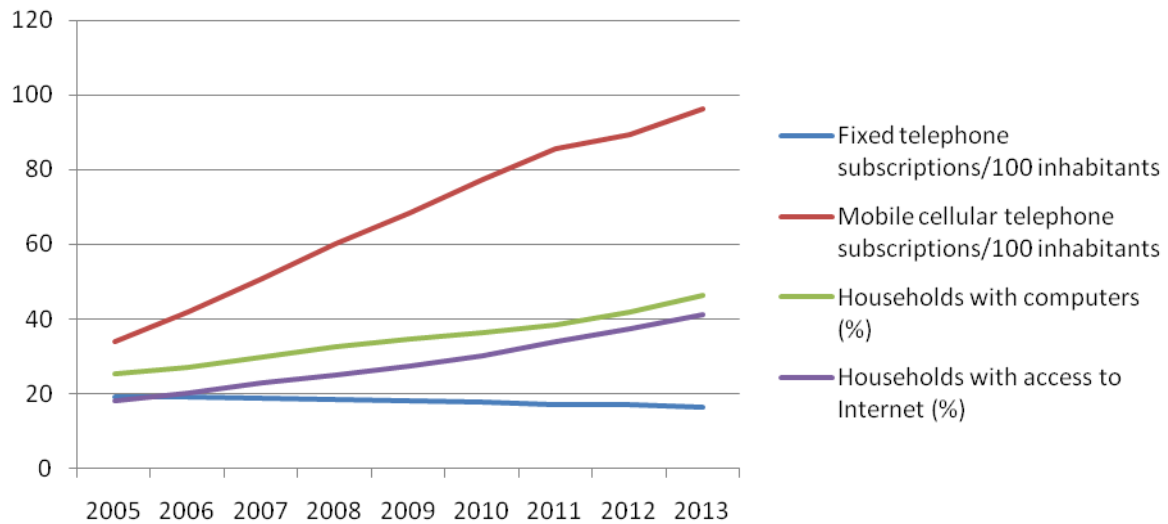
- as producer, the ICT sector generates economic growth, productivity and innovation;

- as user, ICT enhances the efficiency of production processes and it facilitates innovation. Thus, ICT represents a fundamental factor, with several effects on productivity, innovation, competitiveness, economic growth.

The high-speed communication networks, the new technologies and their application in the productive activities induce changes within the economic structures and contribute to increasing labour productivity. ICT use leads to the diversification of innovation activities through various channels. Overall, ICT has an essential contribution to the economic growth, leading to the improvement of welfare and living standard.

In accordance with ITU estimates, there were recorded 6.8 billion mobile-cellular subscriptions in 2013, representing the population of the planet. The availability of mobile-telephone services is close to 100 per cent of the population covered by a mobile signal and around 2.7 billion persons are using the Internet worldwide.

**Figure 7 Global ICT developments, 2005-2013**



Source: the authors, based on data from International Telecommunication Union, 2006-2014

Figure 7 reflects the increasing trend for mobile cellular subscriptions/100 inhabitants, which has reached 96% in 2013, as well as the increasing trends for households with computers and households with access to Internet.

At world level, we witness the diminishing trend for the subscriptions at fixed telephony and on the other hand the exponential increase of subscriptions at mobile cellular telephony.

The actual trend of shifting from mobile cellular telephony, as voice, sms towards the services of mobile Internet determines the increase of the transfer of data, speed, available spectrum as well as the investments in this field.

These are promising trends for e-Government in Europe. However, when users are more satisfied with online banking than online public services, it reveals that public administrations should design the e-Government services according to the users' needs, wishes

and expectations. The Digital Agenda for Europe aims to increase the use of e-Government services to 50% of EU citizens by 2015. Almost half of EU citizens (46%) search online for a job, use the public library, pay taxes or use other e-Government services.

## 2.5. Competitiveness

According to the European Commission (1999), the competitiveness represents “the ability to produce goods and services which meet the test of international markets, while at the same time maintaining high and sustainable levels of income” (European Commission, 1999). Porter (2007) sustains that “the most intuitive definition of competitiveness is a country’s share of world markets for its products” (Porter, 2007: 374-384).

The annual Global Competitiveness Reports of World Economic Forum accomplish an analysis concerning the factors highlighting the national competitiveness. The World Economic Forum has substantiated its competitiveness analysis on the Global Competitiveness Index (GCI), which measures the microeconomic and macroeconomic fundamental elements of national competitiveness.

GCI comprises 12 key elements: institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training, goods market efficiency, labour market efficiency, financial market development, technological readiness, market size, business sophistication, innovation. They are powerfully interrelated and tend to reinforce each other, and a weakness in one area often has a negative impact on other areas. For example, a strong innovation capacity will be very difficult to achieve without a healthy, well-educated and trained workforce, which is keen to assimilate new technologies, and without sufficient financing for R&D or an efficient goods market that makes possible to undertake new innovations to market.

**Table 4 Global Competitiveness Index (GCI) in the EU Member States during 2013-2014**

Country	Rank	Score	Country	Rank	Score
Finland	3	5.54	Poland	42	4.46
Germany	4	5.51	Czech Republic	46	4.43
Sweden	6	5.48	Lithuania	48	4.41
Netherlands	8	5.42	Italy	49	4.41
United Kingdom	10	5.37	Portugal	51	4.40
Denmark	15	5.18	Latvia	52	4.40
Austria	16	5.15	Bulgaria	57	4.31
Belgium	17	5.13	Cyprus	58	4.30
Luxembourg	22	5.09	Slovenia	62	4.25
France	23	5.05	Hungary	63	4.25
Ireland	28	4.92	Croatia	75	4.13
Estonia	32	4.65	Romania	76	4.13
Spain	35	4.57	Slovakia	78	4.10
Malta	41	4.50	Greece	91	3.93

Source: based on Global Competitiveness Report 2013–2014

According to the Global Competitiveness Index, the EU countries are ranked from the 3rd to the 91st position, from 148 states, while the score of EU28 is 4.70.

As revealed by Table 4, the top performers are Finland, Germany, Sweden, Netherlands, UK, Denmark, acknowledging that they are the most competitive economies in the EU. At the other extreme, the weak performers are Croatia, Romania, Slovakia and Greece. It is worth to mention that Estonia is the best competitive economy among the new 13 EU states.

### 3. Study on Italy and Romania rank concerning knowledge society development in the European Union

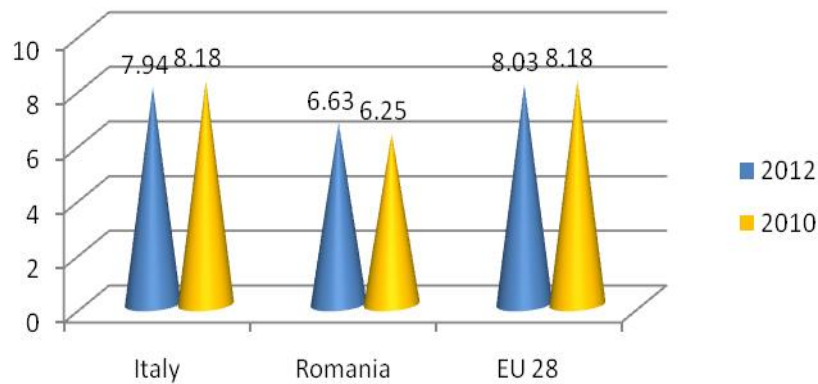
The study is based on the Knowledge Assessment Methodology, developed by the World Bank, representing an interactive benchmarking tool, created in view to provide support to various countries in identifying the challenges and opportunities in the knowledge economy (World Bank, 2012).

**Table 5 Index of knowledge in the European Union**

Country	2012	2010	Country	2012	2010	Country	2012	2010
Sweden	9.38	9.57	Luxembourg	8.01	8.37	Portugal	7.34	7.34
Finland	9.22	9.39	Spain	8.26	8.18	Cyprus	7.5	7.47
Denmark	9	9.49	France	8.36	8.64	Greece	7.74	7.58
Netherlands	9.22	9.39	Czech Rep.	8	7.9	Latvia	7.15	7.52
Germany	8.83	9.92	Hungary	7.93	7.88	Croatia	7.27	7.27
Ireland	8.73	8.98	Slovenia	7.91	8.17	Poland	7.2	7.38
UK	8.61	9.06	Italy	7.94	8.18	Romania	6.63	6.25
Belgium	8.68	8.77	Malta	7.48	7.18	Bulgaria	6.61	6.94
Austria	8.39	8.78	Lithuania	7.68	7.7	EU28	8.03	8.18
Estonia	8.26	8.31	Slovakia	7.46	7.37			

Source: based on data from the World Bank, Knowledge Assessment Framework

**Figure 8 Index of knowledge in Italy, Romania and the European Union**



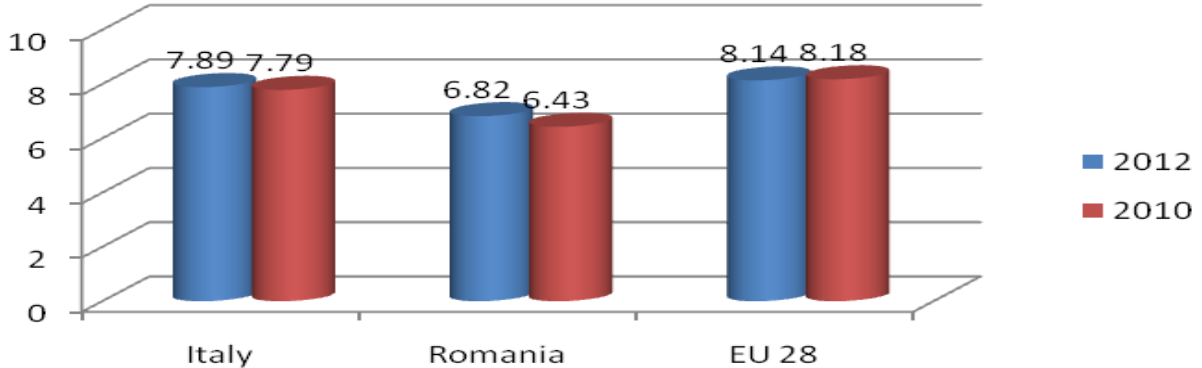
Source: the authors

**Table 6 Index of knowledge economy in the European Union**

Country	2012	2010	Country	2012	2010	Country	2012	2010
Sweden	9.43	9.51	Luxembourg	8.37	8.64	Portugal	7.61	7.61
Finland	9.33	9.37	Spain	8.35	8.28	Cyprus	7.56	7.5
Denmark	9.16	9.52	France	8.21	8.4	Greece	7.51	7.39
Netherlands	9.11	9.35	Czech Rep.	8.14	7.97	Latvia	7.41	7.65
Germany	8.9	8.96	Hungary	8.08	8	Poland	7.41	7.41
Ireland	8.86	9.05	Slovenia	8.01	8.15	Croatia	7.29	7.29
UK	8.76	9.1	Italy	7.89	7.79	Romania	6.82	6.43
Belgium	8.71	8.8	Malta	7.88	7.58	Bulgaria	6.8	6.99
Austria	8.61	8.91	Lithuania	7.8	7.77	EU 28	8.14	8.18
Estonia	8,4	8,42	Slovakia	7,64	7,47			

Source: on the basis of World Bank, Knowledge Assessment Framework

**Figure 9 Index of knowledge economy in Italy, Romania and the European Union**



Source: the authors

Unfortunately Romania ranks on the penultimate position, for both indices, suggesting the fact that efforts should be made in light to improve all the components of those indices. Italy is around the average of the EU at both indices, highlighting that Italy has made efforts in view to substantiate the knowledge society development.

## CONCLUSIONS

Public administration modernization does not only imply more efficient, quicker, lower cost service provision. It involves rethinking the processes and procedures associated to governance based on using ICT and knowledge management. At the same time, it refers to applying the national strategy and action plans in view of public administration modernization in the knowledge society. Using the new IT applications and action plans for administration modernization in the knowledge society boosts the change of public administration through valorization of opportunities and tools, leading to important benefits for society.

Education, science, culture represent priorities in the EU, as they are the greatest assets for Europe in future. The investment in Europe's human capital is definitely the investment in a brighter European future.

In the current context, all the EU Member States should achieve structural reforms and make investments in all components of knowledge society. At the same time, they should identify and strengthen the strengths that will trigger future sustainable economic growth.

Encouraging and sustaining, the economic growth requires decisive actions in view to trigger competitiveness. It is important the ability of the European economies to create new value-added products, processes, and business models based on innovation.

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