THE ROLE OF THE ICT SECTOR IN ACHIEVING SUSTAINABLE DEVELOPMENT

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Abstract:

Sustainable development requires the merge of objectives for economic growth, quality of life and environmental protection. If in the 70's the need to shift towards sustainable development has been made on the basis of environmental concerns, with the Brundtland Report the concept gains economic and social dimensions.

Challenges such as technology, globalization, competition, efficiency, competitiveness, determine the businesses need to adapt to the new economy. Support information to doing business in these conditions is given by IT. The transition to the information society is considered a step to achieve sustainable development. Information, which became resource both in the business and in everyday environment, is the challenge that economic and social pillars of sustainable development must potency.

Based on the review of interest for the concept "information society" in Europe, this article discusses the impact of the ICT sector on economic and social pillars of sustainable development. Information and Communication Technology, identified as the fifth wave of technological innovation, is the support of information society. It is playing a supporting role for the activities of all areas with a significant impact on the economy and quality of life.

Quantification of any process can be achieved through indicators, created to reflect the progression or regression of the proposed targets. Indicators are tools for measuring any process, so their importance is essential for making decision.

Using the scheme of interactions between the pillars of sustainable development proposed by the Organisation for Economic Cooperation and Development, I have emphasized the role of the ICT sector on the social and economic pillar. Based on the relations established, I analyzed the results of the information society indicators at european level.

Although in Europe plans and strategies on the transition to a knowledge economy were developed in the last 15 years, there are indicators of disappointing results. Both in the economic indicators, as well as in the social indicators regarding the impact of ICT on sustainable development, efforts are needed in order to achieve goals by the end of 2015.Although equity is a goal of sustainable development, there are discrepancies in terms of standard of living and schooling level. An objective of smart growth is Internet access in the european households. There are 20% of europeans people who have never accessed the Internet, while another 250 million use it daily. In an information society, electronic commerce, both business to consumer and business to bussines, is the reflection of the impact of information technology on the economy. 41% of europeans citizens aged 16-74 years old ordered on the internet in 2014. The target for 2015 is 50%.

Achieving a highest level of the indicator regarding digital literacy is required. 90% of europeans jobs offered by 2020 will required to have basic skills in IT.

The european average online sales turnover was 15% for 2014. The highest result was in Ireland, 52%, the lowest in Bulgaria, 3%. In Romania, turnover from sales online was 6%. Another indicator is the poor results concerning the contribution of ICT in European GDP, which develops the idea of the need for increased investment in this sector.

Keywords: information and communication technology, information society, sustainable development, human development

JEL clasification: : O10, O15, J24

1. Introduction

From 1770 until now five waves of technological innovation have been identified (*Rojey Alexander., Viitorul încotro? Schimbare pentru supravieţuire, Editura Didactică şi Pedagogică, 2011, p. 74)*:

1770-1840: textile industry, hydraulic, navigation;

1850-1890: the steam engine, railway, coal, 1890-1940: electricity;

1940-1990: oil, automobile, aviation;

1990-present: information and communication technology.

The information society requires the existence of "information" as the main resource in economic and daily activities. In an information society, information should be a high level of use. Information is the main resource in economic and daily activities. The transition to the information society is considered a step to achieve sustainable development worldwide. Information society has an impact on the three pillars of sustainable development: social, impact on health care, solidarity and social protection, labor market, education and training, which are some of the objectives of sustainable development; ambient impact on resource use and environmental protection; economic development of the new knowledge-based economy - the objective of the Lisbon Agenda.

2. Interest for the concept "information society" in Europe

The information society is the society based on the Internet that produced and produces new consequences for society by facilitating the process of globalization (*Drăgănescu Mihai, Din istoria telecomunicaţiilor în România, comunicare, Academia Romană, 15 aprilie 2003, publicată în vol. Coord. Mihai Draganescu, Telecomunicaţiile în Romania. Pagini de istorie, Editura Academiei Române, Bucureşti, 2003, p.7-33*). The support of Information Society is Information and Communications Technology that enable processing and conveying information in a revolutionary manner in order to produce profound changes in society and the economy. Information Society should be seen as a support for the activities of all areas with a significant impact on the economy and quality of life.

1994 is the moment when European Council decided to set up the Council for Information Society, a specialized body. On July 19, 1994 first european action plan for the Information Society, entitled Europe's way to the Information Society, was developed.

The new theory of economic growth brings major changes recognizing technical progress as the product of economic activity. Factor information is superior to the traditional factors of economic growth. There has made the transition to a higher level approach: from a resource-based economy to a knowledge-based economy. During The Lisbon European Council meeting in March 2000 was proposed that European would hold a knowledge economy that fosters social cohesion and job creation through economy would become sustainable until 2010.

Gotheburg Summit (15 -16 June 2001) was materialized by implementation of the plan "eEurope - An Information Society for All", with the following objectives: ensuring communication online for every home, school, business and public administration institution, the creation of an entrepreneurial culture in Europe, of which dynamic investors willing to finance and develop these new ideas; ensuring the principle that the transition to the digital age is a process that includes the whole society, to ensure consumer confidence and strengthen social cohesion. First Report on the European Information Society was the communication of 2006. In this communication the importance of policy convergence in the ICT sector for economic growth, employment reported. I2010 initiative focused on three themes: forum eSafty, research program on information technology and communication actions. In 2007 the annual report on the Information Society was adopted. Europe 2020 Strategy launched in March 2010 by the European Commission complements the ideas of sustainable development by interest for smart, sustainable and inclusive growth. These priorities will contribute to a knowledge-based economy. "Smart growth" priority, orientated towards information society, corresponds flagship initiatives: *Innovation Union* (promoting excellence in education, increasing social benefits reform research and innovation systems, measuring progress, research orientation towards halting climate change, resource efficiency) ; *Youth on the Move* (providing grants to students and teachers to study abroad); A *Digital Agenda for Europe* (positive effect on growth of Internet use and social eGovernment services, Digital Single Market).

In Romania, interest in information technology has been confirmed in the Sustainable Development Strategy of Romania "Horizon 25" by stating: *"Information Society is an objective of development of the country and not a goal in itself, is an essential component of the political program and economic development and a major prerequisite for Romania's integration into Euro-Atlantic* ". It tends to "*cultural change oriented use of information society services, facilitated the development of capabilities through education and communication*".

3. The role of the ICT sector on the social and economic pillar

When we analyze the aims and achievements of the new form of development, relations between parts of the whole concept must be taken into account. Based on the scheme proposed by OECD connections elements of sustainable development, I focused on the impact of information and communication technology brought the economic and social pillars (figure 1).

1. ICT - economics: economic development (increase in employment, GDP growth, e-commerce, extensive and intensive development of production of goods and services sector, labor productivity growth)
2. economy-social: providing jobs, increase quality of life

3. ICT-social: access information, access information society services (e-health, e-government), access to education
4. social-economy: the quantity and quality of labor; use of e-commerce

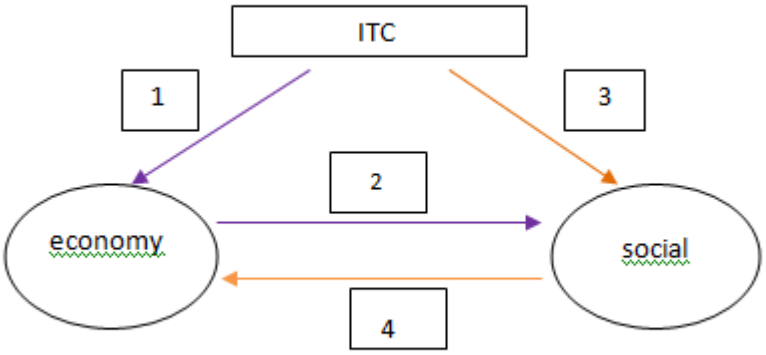

Figure 1 – Impact of ITC on economic and social pillars of sustainable development

There is an interdependence between the ICT sector, social and economy: ICT helps to increase the number of jobs necessary to improve living standards; citizens have access to information and education through ICT, so informed workforce contributes to economic growth.

Economic development improves quality of life. The welfare of the human being is the desire of development, built on principles that ensure a better life, both the present and future generation. Qualified human resource uses its superior knowledge and training to improve economic performance. Sustainable human development is achieved by increasing school expectancy, ensuring health, lifelong training involving investments in human resources. The efficiency of human capital can get a maximum value, which leads to financial efficiency.

A high level of employment and quality jobs is the relationship between economic and social dimension of sustainable development. This can be quantified by GDP and employment level, as primary macroeconomic indicators, but also the health of the population index - as a reservoir of labor in the long term (*Constantin Ciupagea, Dan Manoleli, Viorel Niţă, Mariana Papatulică, Manuela Stănculescu, Direcţii strategice ale dezvoltării durabile în România, Studiul nr. 3, Institutul European din România – Studii de strategie şi politici, p.9*). Health is a link in the chain formed of economic development - social development - environmental conditions (Teodorescu Ana Maria, *Quality of life and the effects of environmental issues on health*, Annals of University of Craiova - Economic Sciences Series, vol. 1, issue 40, 2012, p. 125). There is a close connection between these three elements. A country can not achieve economic development if human health or environmental condition are affected.

I wanted to highlight the results and goals of the information society indicators of economic and social prospects of sustainable development at European level (table 1)

Although the removal of social disparities within generations was a principle of sustainable development, there are 20% of the european population that has never used the Internet (2015 target is 15%) and 72% of the population regularly uses the Internet. The digital divide between generations is extensive and will thus be 30-40 years yet to come to an exchange of generations (*Stefan Iancu, Societatea informaţională – societatea cunoaşterii sau societate parţial informatizată?, Columna, nr. 2, 2013, p. 71*)

An objective of smart growth is Internet access in the european households. In 2014, the european average was 81%, and Ireland is approaching reaching the maximum level, with a result of 96%. High price of this service is why 24% of europeans without internet access, and lack of skills of internet usage is why 41% of Europeans.

As for the indicator "Internet Skills" european average for low level of 2013 was 30%. The highest percentage was recorded in Germany, 46%, and the worst result recorded Lithuania 12%. Romania benefits one of the fastest internet connections. Only 29% of romanians have low skills in using the Internet. 35 percent of Europeans have competence internet at medium level (Denmark 50%, Turkey 15%, Romania 23%). European average to advanced level of internet skills is 12 percent (the highest percentage was in Ireland, 34%; the lowest percentage was in Romania and Turkey, 5%).

In 2014, the european average low level on computer skills was 15% of the population aged 16-74 years, down 1 percent from the previous year. The highest percentage was in Belgium, 23% and the lowest percentage was in Portugal, 10%. The percentage for Romania was 18%. The european average medium level on computer skills was

26% (the largest percentage was for Luxenburg,33% and the lowest was for Romania, 13%. For advanced level, european average was 27-29%, highest percentage was recorded in Luxenburg and Norway 42%, and the lowest percentage was recorded Romania, 7%.

For 2014, 47% of europeans interacted online with public authorities, the highest percentage was in Ireland, 85%, and the lowest was in Romania, only 10%.

Table 1-Achievements and objectives of european information society indicators

Economic			**Social**		
Indicator	achie vements	objectives **(2015)**	Indicator	achievements	objectives **(2015)**
order online	41%	50%	Internet access	81%	100%
order online cross-border	12%	20%	Percentage of population who never use internet	20%	15%
IT Jobs	2,53%	increase by 16 milions	Regular use Internet	72%	75%
small and medium enterprises that sell online	14%	33%	IT Skills (Advanced)	29%	50%
contribution of the ICT sector in European GDP	4,38%	11 bilion	Percent population interact online with public authorities	47%	50%

EGDI Index (eGovernment Development Index) captures the relationship between social and information technology side through three factors: online services (reflects the percentage use online services), telecom infrastructure (the percentage of Internet users, subscribers to fixed telephony, mobile telephony subscribers, subscribers internet with fixed line subscribers and percentage of broadband communication services) and human capital index (reflects the level of education and enrollment). According to this index, Romania (with a result of 0.63) is placed at the end of the ranking, followed by the Republic of Moldova, Bulgaria and Ukraine. The highest result obtained France (0.89), the EU 27 average was 0.7.

In an information society, electronic commerce, both business to consumer and business to bussines, is the reflection of the impact of information technology on the economy. 41% of europeans citizens aged 16-74 years old ordered on the internet in 2014. The target for 2015 is 50%. The more confident in this trade are Luxenburg residents (62% used the Internet), and most of mistrust are Romanians (6% ordered online). This poor result is based on these statistics (*Strategia Națională privind Agenda Digitală pentru România, Septembrie 2014, Ministerul pentru Societatea Informațională)*: lack of confidence (only 52% of the romanians people have confidence in electronic commerce), fear of abuse to personal data (33%), fear about security operations (37%).

The European average online sales turnover was 15% for 2014. The highest result was in Ireland, 52%, the lowest in Bulgaria, 3%. In Romania, turnover from sales online was 6%. The contribution of the ICT sector in European GDP for 2010 was 4.38%, down from the period before the economic crisis, which develops the idea of the need for increased investment in this sector. For 2020 this contribution is intended to reach the level of 11 billion euros of the amount invested in R & D activities in the ICT sector. Sweden has generated the largest contribution of ICT to economic growth (6.4%) and the lowest contribution was in Lithuania (2.5%). In our country, the contribution of the ICT sector was 3.17% of GDP. As a percentage of jobs offered by this sector, the european average for 2010 was 2.53%. 4.41% of swedish citizens occupy jobs in the ICT sector and only 1.45% of romanian citizens.

Statistically, the loss of two jobs "non-electronic" creates five jobs "electronic" (*Să înțelegem politicile Uniunii Europene Agenda digitală pentru Europa, 2014, p. 4*). This reality is another reason that programs regarding digital literacy learning for people aged between 16 and 74 years must have an evolution.

Conclusions

Challenges such as technology, globalization, competition, efficiency, competitiveness, determine the businesses need to adapt to the new economy. Support information to doing business in these conditions is given by IT. Information, which became resource both in the business and in everyday environment, is the challenge that economic and social pillars of sustainable development must potency. Although in Europe plans and strategies on the transition to a knowledge economy were developed in the last 15 years, there are indicators of disappointing results.

Both in the economic indicators, as well as in the social indicators regarding the impact of ICT on sustainable development, efforts are needed in order to achieve goals by the end of 2015.

Although equity is a goal of sustainable development, there are discrepancies in terms of standard of living and schooling level. An objective of smart growth is Internet access in the european households. There are 20% of europeans people who have never accessed the Internet, while another 250 million use it daily.

In an information society, electronic commerce, both business to consumer and business to bussines, is the reflection of the impact of information technology on the economy. 41% of europeans citizens aged 16-74 years old ordered on the internet in 2014. The target for 2015 is 50%.

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