INFORMATION SOCIETY: CONTENT, MANIFESTATION, SOCIOECONOMIC IMPLICATIONS

PhD. Dipl. Ing. **Stelian-Gheorghe BALAN**
S.C.ALSTOM Transport S.A. Bucharest
e_mail: sbalan_ro@yahoo.com

Abstract:

Information Society represents a new stage of human civilization, a new way of life of superior quality involving intensive use of information in all spheres of human existence and activity, with a major economic and social impact.

Technological advances in the last decades allowed the emergence of new multimedia services and telematics applications. The development of new means of communication and information technology is an important factor in increasing economic competitiveness, opening new perspectives for a better organization of work and to create new jobs. Also, it opens new perspectives for the modernization of public services, healthcare, environmental management and new ways of communication between public administration and citizens. Also, with new technology, broad access to education and culture can be achieved for all social groups regardless of age or geographic location.

This paper presents some general characteristics of Information Society, some forms of information and communication technologies (ICT) and their socioeconomic impacts.

Keywords: informational society, socio-economic, ICT forms

1. Introduction

Major changes in recent years (exponential growth of mobile communications and Internet users, the contribution of the Information and Communication Technology (ICT) to economic growth and creation of jobs, accelerated development of electronic commerce) support the transition from the industrial age to the post-industrial shift to "knowledge economy".

Knowledge-based information society is more than the progress of technology and information and communication applications, it integrates *social*, *environmental, cultural* and *economic* dimensions.

Building the new model of society raises major socio-political issues - both nationally and internationally - to mitigate the phenomenon of exclusion from the benefits of the new technologies for some social categories and geographical regions / zones and of social cohesion, preservation and promotion of the culture of nations and local communities, of citizen and consumer protection. Solving these problems can be achieved only through a broad dialogue between the government, business representatives, academics and civil society at national, regional and global levels.

Studying ICT issues requires taking into account a number of aspects of different types: *technical* (hardware and software, vulnerability of information systems), *managerial* (very useful in determining business policy), *legal* (new regulations and laws, imposing the effective application of the law, punishing criminal acts, etc..), *educational* (ICT users must become aware of the functions and potential effects caused by technical means and learn how and when they can be used safely), *ethics* (ethics of computer scientists) and *market* (competition and the demand of technical means users can generate many technical improvements hard or soft).

In this context, this paper is a brief presentation of specific ICT forms, and an analysis of their socio-economic impact.

2. Transition to the Global Information Society

Analyzes of various specialized bodies emphasize that in coming years the use of electronic computers will expand to all fields, as current performance will increase almost hundred thousand times. The name of this computer will be system-on-chip, and its price will be so small that the packaging will be more expensive than the system itself.

At the same time, information and communication technologies and the discovery of new materials will lead to the so-called cyberspace, whose backbone will be the Internet and virtuality through digitization.

J. A. O'Brien believes that in order to reach the global information society humankind must undergo four stages, namely:

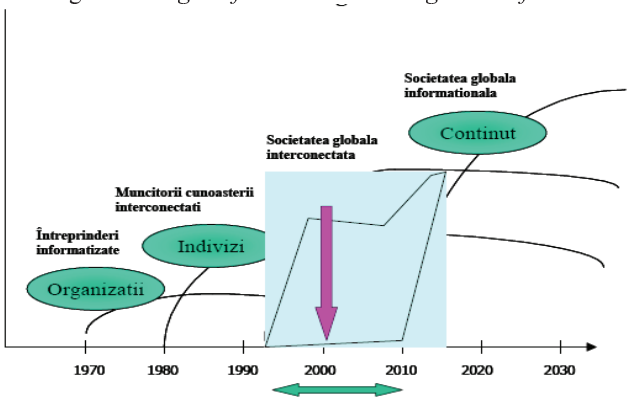
1. Computer company state, the period 1970-2010;
2. Knowledge workers network stage, which began in 1980;
3. Global Interconnected Society stage, started around 1992-1993;
4. Global Information Society state that will start after 2010 (Figure 1).

As shown in Figure 1, by 2010 the world was in a state of overlapping of the first three waves, indicating a *transitional period* with the specific risks and advantages. As it can be seen, mankind has not yet overcome even the first stage, but two others were already underway while the fourth stage started in 2010.

During *the first wave* attention was drawn to *organizations* as the key to making a profit. Thus, considering the electronic computer intended to decrease the time and cost to obtain information, and to reduce production costs. The goal was and it still is the *computerization of enterprises.*

In *the second wave* the emphasis was on *individual performance in a paperless environment.* The jump in productivity in these conditions is given through the *knowledge* available to individuals and the *degree of interconnection among them.* The goal in this stage is the status of networked knowledge worker.

Figure 1 *Stages of transition to the global information society*



Source: Tudorel Fatu, Alexander Tugui, *which follows the Information Society?,* www.edemocraţia.ro

Attention in *the third wave* moves towards achieving *connectivity* in the global society in which knowledge workers and firms operate computerized. Conducting value-creating activities under such conditions attracts increased efficiency. The ultimate goal of this wave is to obtain the *globally interconnected society (network society).*

The transition to *the fourth wave,* the computerization of companies is considered finished, which means that the computer will be a common tool that anyone will afford at a low cost. It will be the stage when the concept *system-on-chip* will be general.

3. Forms of ICT and their socio-economic impact

Widespread use of information and communication technologies and progress towards the Information Society provides economic growth with enhanced protection of the environment, reducing the speed of physical consumption in exchange for increased use of information and knowledge, moving the centre of gravity from investment in fixed assets to investment in human capital. The Information Society integrates *sustainable development objectives* based on social justice and equality of opportunity, freedom, cultural diversity and innovative development, environmental protection, restructuring the industry and business environment.

The change brought by the use of information and communication technologies affects all fields. The Internet phenomenon enhances transformation by providing people and organizations with widespread information resources.

If electricity needed a century to reach the whole world, Internet and Intranet networks are now used by nearly a billion people and applications based on them are spreading rapidly due to building a new technical infrastructure. ICT-related industries create jobs at a rate two times faster than other industries. While natural resource costs per unit of product produced steadily decreased in the last hundred years, the amount of information and knowledge embedded in products increased during the same period, at the same rate.

Information is considered, therefore, a new resource, a real capital of the modern economy. ICT impact on business results in changing the perception about information as a production factor. If before a deal was equivalent to people, technology and capital, in the new economy we speak about people, technology, capital and information. The transformation effect is of information resources on the industry and the gradual disappearance of boundaries between products and services.

Information and knowledge management is developing as a business function and as a new position in the organization, defending the new business opportunities of ICT.

Staff dealing with the collection, processing and dissemination of information becomes increasingly larger. For example, in the USA for three centuries (1700-1950), the share of the staff employed in these activities was estimated at 5%, but with the spread of ICT the proportion increased at the end of the twentieth century, to more than 67%.

The size of the ICT industry is also reflected in other economic sectors.

This industry attracts the highest level of investment oriented, mostly, not towards the computer companies, but towards their customers. For example, the ICT industry is now the largest industry in the U.S. WITSA 2004 Statistics notes that global ICT spending reached about 2,400 billion, i.e. 7.6% of the gross product of the entire planet. Organization-wide ICT spending per economic sector, country, geographic region, has come to be regarded as relevant for the economic behaviour of that entity.

➢ **ICT technologies and competitive advantage**

Using ICT becomes a source of competitive advantage. The fight for acquiring competitive advantage is lost from the beginning to a competitor using new technologies on a larger scale and more effectively.

ICT provide opportunities to change the way an organization works. If today the orientation is more towards functional areas and departments, future ICT-based management will be process-orientated. The procurement process will be considered unique per organization and it will be streamlined regardless of what they are buying. It will be similar for other processes.

Also, there are changes in organizations: they become more flexible and adaptable, more flat, teams and not hierarchy are important; the information is available in real time, determining the cost of different activities is effective.

Based on the European Commission's annual report on the progress of the i2010 it can be said that public and private investment in information and communication technology are beginning to pay dividends. It also shows that, as Europe moves towards a knowledge-based economy, technology fuels innovation and productivity and there are signs of fundamental changes in the market and consumer behaviour.

The European Commissioner for Information Society and Media, Viviane Reding, said that *"Our integrated European policy for growth and employment is now starting to bear fruit. However, do not rejoice yet. ICT companies in Europe are still not able to benefit from economies of scale, due to regulatory fragmentation that blocks the emergence of pan-European services and is affecting electronic communications operators and software companies opportunities to compete on the world market. European Union and its Member States must make, in particular, more efforts to remove the impediments services are facing in national markets"* [Press Conference, 13 March 2008, Bucharest].

➢ **E-business**

Electronic business is using global information networks qualities to achieve internal and external links in order to record a profit.

Computer mediated business started in developed countries since the late '70s, and economic business development is one of the important factors to foster the growth and prosperity of society.

Using e-business has advantages and disadvantages. E-businesses have the common advantages of computerization for various fields, but certain features are specific. Among the most important advantages of using e-business are: the significant increase in business dynamics; expansion of outlets / access for / to products and services, which involves competition on price and increasing the quality of required products and services; the facility to find products needed; reduction of the time for doing business, including the manufacturing cycle, the conclusion of agreements, contracts, reducing border difficulties and so on.

Difficulties in the implementation and use of e-business are higher the weaker the economic entity (country, region, company) that uses it. If in developed countries things can evolve relatively well through the efforts and cooperation of economic entities, in underdeveloped countries state support for determining priorities and monitoring echelons is needed. Many countries, primarily the economically developed countries have a policy of active e-business by creating committees or working groups and research centres for this purpose. Such entities were created not only in the U.S., UK, Germany, France, but also in developing countries such as Peru (1998), Cuba (1999), Philippines (1999) etc.

➢ **E-learning**

The societal impact of information and communication technologies led to a normal reaction in the educational systems, implementing new information technologies being considered one of the most important issues, elevated to national policy, in the late twentieth century and early third millennium.

It can be said that since the '80s a technological revolution was triggered in education. The use of computers has raised unprecedented hopes for the future of the educational endeavour. Internet-based training solutions provide faster results at lower costs, greater access to training and clear accountability for all participants in the training process. Internet training ensures accountability, accessibility and opportunity. It enables people and organizations to keep pace with the global economy evolving now with the speed of Internet.

➢ **Electronic commerce (e-commerce)**

Electronic commerce means, in its "traditional" use, to support for networks with value-added applications such as electronic transfer of documents (EDI), fax communication, bar codes, file transfer and electronic mail.

The extraordinary development of Internet computer interconnectivity, for all society's segments, has led to the companies' increasingly obvious tendency to use these networks for a new type of commerce, electronic commerce over the Internet, providing new services, in addition to the ones mentioned previously.

ECommerce successes are numerous and noticeable. It occurs all over the world, being essentially global, both conceptually and as outputs, and being very quick, it closely follows the deployment of the Internet and the World Wide Web. The impact of electronic commerce on businesses and society is particularly so in amplitude and intensity.

Regarding the impact on firms, e-commerce offers unique opportunities to reorganize the business, redefine markets or create new markets. E-commerce initiatives can generate cost reductions, increases in revenue and operational efficiencies for companies looking to gain a competitive advantage in the economic environment.

Electronic commerce enables firms to become more efficient and flexible in their internal mode of operation, to work more closely with suppliers and become more attentive to customer needs and expectations. It enables companies to select the best suppliers, regardless of their geographical location, and to sell in a global market.

This development has a major impact on the economy in terms of new business creation and diversification of the existing ones and especially on the labor market potential and employment rate in the future.

4. Impact of internet culture, society and economy

Internet and any use of open electronic networks have and will have a decisive impact on the society and its future. Internet's impact on society consists of a set of *functionalities and effects,* of which**:** Internet is a set of *functionalities* required by different research communities and particularly useful for an open exchange of digitized data via e-mail, computer file transfer and dissemination of information in a global network of Web sites; *simplifying work processes and*

communication; reduced costs; group work, collective creativity; establishing global connections; access to information sources.

Studying ICT issues requires to take into account different aspects: *technical* (hardware and software vulnerability information systems), *managerial* (very useful in determining business policy), *legal* (new regulations and laws imposing effective application of the law, punishment of criminal acts, etc.), *education* (ICT users must be aware of the functions and the potential effects caused by technical means and to learn how and when they can be used safely), *ethical* (ethics of computer scientists) and *market* (competition and the demand of technical means users can generate many technical improvements in hardware and software).

Technological changes or the introduction of new technologies usually require corresponding changes in the existing framework, the organization of institutions, business policy for changing the personal skills of those involved and even transforming mentalities. The new technology may make feasible activities or actions that previously could not be completed when the legal framework has been developed and, therefore, some of such acts and activities cannot be considered illegal or criminal until a law to ban them is developed.

The application of new technologies, even when solving current problems of production, increasing welfare or improving health, sometimes have undesirable side effects whose solution required and requires further efforts.

Therefore, it can be said that any new technology creates risks and causes problems for which the institutions designed to absorb the shocks caused when implementing the new technology are called upon to solve.

The European Economic Community has already adopted legal instruments to harmonize national laws of its Member States regarding the protection of personal data processed automatically, intellectual property, and prevention of cyber crime. At the CEE level have not yet been identified solutions regarding: the illegal and harmful content of Internet communications, criminal procedural rules, the security of computer systems and data protection sanctions.

In the telecommunications sector, Romania has requested a period of 6 years, i.e. until 1 January 2013 for the full harmonization of the radio spectrum in agreement with the European table of frequency allocation and use (ERC Report 25 - Brussels, 1994, as amended), and the implementation of all the decisions and recommendations of the European Radiocommunications Committee (ERC) under the European Union Council Resolution of 19 November 1992.

Consequently, Romania's ICT horizons for 2007 - 2010 in the context of the social, legal, economic, ethical impact of its use should include: i) the harmonization of the national and CEE legal frameworks, ii) development of a specific national strategy to counter cyber criminal activities and iii) creating the necessary infrastructure to enable the prevention of crime facilitated or generated by ICT.

References

1. Bennet, W. Lance and Entman, Robert M. (2001), *"Mediated Politics: Communication in the Future of Democracy",* Cambridge University Press;

2. Breton, Philippe (1995), "*Médias, médiation, démocratie : pour une épistemologie critique des sciences de la communication politique*", in : HERMES 17-18, CNRS éditions, Paris;

3. Ghita Paul Tanase (2000), *"New Economy. Horizon and changes"* www.crie.ro/ nouaeconomie / en;

4. Melody, William (1994), *"Electronic Network, Social Relations and the Changing Structure of Knowledge",* in: "Communication Theory Today", Stanford University, California;

5. Nica D. (2001), *"Government, citizen, information society,* Ed. SemnE, 2001;

6. Peter *Drucker, "* Human resources in the context of the information society " www.computerworld.ro

7. Preston, Paschal (2001), *'Reshaping Communications Technology. Information and Social Change* ", Sage Publications, 2001 Axford, Barrie & Huggins, Richard (ed.):" New Media and Politics', Sage, UK;

8. Tudorel Fatu, Alexandru Tugui, *"What happens after the Information Society?"* "Al. I. Cuza "Iasi, www. edemocratie.ro;

9. *** Candidate Coutries and European Commission: *eEurope +2003- A co-operative effort to implement the Information Society in Europe, June 2001*

10. *** Commission Europeene, Group of senior experts: Building the European Information Society for all , 1995;

11. *** Council of Europe, Draft Recommendation on *Cultural Work Within the Information Society - New professional profiles and competencies for*

information professionals and knowledge workers operating in Cultural Industries and ***Institutions,*** 1998;

12. *** Council of the European Union and European Commssion: *eEurope 2002 - An Information Society for All, Action Plan,* June 2000

13. *** Information Society Forum: *Towards a Global Sustainable Information Society - A European Perspective,* 1999

14. *** Prolegomene. Towards an information society, www.racai.ro