

# DIGITAL DIVIDE IN THE EUROPEAN UNION

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## Abstract

*This paper aims to demonstrate that income, education and infrastructure play a critical role in shaping the divide.*

*The global challenge for the new millennium is to build a society where everyone can access and share information. A fully integrated digital world has become a reality, and all segments of society must embrace it in order to be contributing partners to future success in the EU.*

*As they are fast becoming an essential tool for economic activity, Information and Communication Technologies (ICT) became a vital engine of economic performance. The problem, however, is that in many countries technological diffusion is obstructed by the limited capacity of networks to carry large amounts of knowledge swiftly and the limited access of individuals even to networks in which knowledge products are minimal.*

**Keywords:** *digital divide; information society; Information and Communication Technologies (ICT); education; ICT infrastructure.*

## Introduction

*If you want to know what difference communication technologies make? Answer: Try living without them from tomorrow...*

At the World Summit of the Information Society in December 2003, presidents and prime ministers from all over the world declared that the global challenge for the 21st century is to build a society where everyone could access and share information. We must encourage individuals and communities to achieve their full potential in promoting their development and improving their quality of life.

The growth of E-commerce and general expansion in the use of information technology (IT) in all organizations have created profound issues that reflect racial, educational, and income disparities. Among the challenges is an increased demand for IT workers and a significant shortage of potential employees with the necessary technical skills.

Information and Communication Technology (ICT) is becoming very fast a distinct part of national Development strategies across the globe. ICTs have a significant role in enhancing efficiency and productivity in the process of economic growth..

The UNSC in its 38th Session presented a "Report of the Partnership on Measuring Information and Communication Technologies for Development: information and communication technology statistics" wherein it noted that "*During the last decades, advancements in the access to and usage of information and communication technologies (ICTs) have been a driving force for changes in business and in society. While ICT diffusion and usage presents an opportunity to developing countries, the digital divide between developed and developing countries persists, posing a new challenge for development.*

The Digital Divide is the gap between individuals, households, business and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies (ICTs) and to their use of the internet for a wide variety of activities.

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The OECD defines it as follows: „The term Digital Divide refers to the gap between individuals, households, business and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities.”

## First step in understanding the digital divide

A knowledge base is required in today's knowledge based society in order to be efficient as a social or economic agent. Those without qualifications are consequently less likely to participate effectively in lifelong learning. Also the risk in being left by the wayside is increasing in today's knowledge based society. However is very important on long term to diminish the percentage of early school leavers - is essential on long term the effort on trying to achieve the magic trio for European Union: Economic Growth, Sustainability and Equity.

In the year 2000, the „digital divide” was defined: „It is a precondition for better economic performance that we create a society with greater social cohesion and less exclusion.[...] The emergence of new information and communication technologies constitutes an exceptional opportunity, provided that the risk of creating an ever-widening gap between those who have access to the new knowledge and those who do not is avoided”.(Source: European Council on Employment and Social Policy, Introductory Note to the „Objectives in the fight against poverty and social exclusion”.

## Why should we study The Digital Divide?

1. Long-Term Employment in The European Union; basic ICT skills are basic requirements for a growing number of jobs.

2. An Equitable participation of society members in the „Information society”; not having ICT access or skills will increasingly be a major disadvantage in social and economic life (Example: buying my books on-line.

3. Economic reasons (demand side economics); part of the population not having ICT access won't be able to be e-consumers.

The European Union needs an adequate output of scientific specialists in order to become the most dynamic and competitive knowledge-based economy in the world. The rising demand for scientific specialists is underlined by the conclusions of the Barcelona European Council (2002) “that overall spending on R&D and innovation in the Union should be increased with the aim of approaching 3% of GDP by 2010”.

## The digital divide and „social exclusion”

The important role of ICT has been acknowledged and is wide reflected in official policy documents including: Social Policy, Health Policy, Education Policy, Employment Policy and Info-society Policy.

We can determine a vicious circle between :

Unemployment	
Poor skills	
Low income	and Social exclusion
Poor health	
Digital exclusion	

In a knowledge society individuals must update and complement their knowledge, competencies and skills throughout life to maximise their personal development and to maintain and improve their position in the labour market.

The Lisbon European Summit called for a “substantial annual increase in the per capita investment in human resources”. In the Communication “Investing efficiently in education and training: an imperative for Europe”, the European Commission proposes a number of issues of relevance for the efficient investment in education and training that should be analysed in detail. The Council is looking forward to the outcome of ongoing work before deciding on further action.

IT tools can help soften on absorbing the knowledge generated anywhere on the globe and thus help raise income but cannot jump obstacles in improving or implementing institutions.

We must pay attention when we construct policies in reducing the digital divide because we must consider the real inefficiencies in the management of the organizations. In the same time the digital exclusion is also a factor of the effective demand for the technology, or rather for the services that it can provide, from society and its component individuals. This is a much more difficult matter to identify, partly because it is so entangled with other social issues, and thus less popular as a policy target.

Overcoming ‘material access’ has been the primary target of digital inclusion policy in most Western countries: make the technology physically accessible to people, and usage will follow.

In many countries the access to the information technologies represents a problem. There are cases in which the access is limited by its high cost. In others, international differences in technology standards may make it impossible to eliminate technological heterogeneity. What would help overcoming the costly access is a strengthening of the collaboration in open-source technologies, which provide tremendous opportunities to lower the cost of access, and to make the information society more inclusive.

Governments and legislators should have an interest in investing in robust national information infrastructures, which enable the access of these groups since such investments can help removing communications and information access barriers that restrict business and social interactions.

On one side the consumers are not fully aware of the potential use of their personal information for purposes other than the original ones, or of its delivery to third parties. On the other side, governments throughout the world have a poor track record in protecting personal privacy.

## **Towards e-development**

Adam Smith defined land, labor and capital as the key input factors of the economy in the 18th century. Joseph Schumpeter added technology and entrepreneurship as two more key input factors in the early 20th century, recognizing the role and dynamic nature of technological change and innovation, as well as path dependencies in shaping the health and future of the economy and moving away from the static approach of neoclassical economics.

In the late 20th and the beginning of the 21st century, numerous scholars and practitioners, such as Peter Drucker, have identified knowledge as perhaps the sixth and most important key input and output factor of economic activity.

ICT have brought about significant changes in the way people create, share and consume information. It has changed and continues to change the way organisations within the for-profit, public and nonprofit sectors run their businesses and provide services. As ICT become embedded in daily life, there is a growing need for ICT literacy in public and private life.

ICT may allow commodity-based economies to evolve into knowledge-based and possibly knowledge-driven economy. The need for e-Development interventions is also stressed by the development of the e-Economy and the increased competitiveness and openness that it brings about. The knowledge economy is fostering market transparency, integrating separate geographical markets and facilitating integration into innovative global markets.

The need for standardization, of both processes and policies, calls for action of an overarching organization that can provide appropriate guidance and advisory services to transitional economies willing and able to take advantage of knowledge economy. The benefits for EU-accession candidate countries from engaging in the knowledge economy development framework are those generally predicted for the intra-industry integration.

Re-conceptualising the digital divide in terms of digital inclusion and exclusion requires policy and projects to focus attention on the social, cultural, economic, educational and material factors that continue to exclude people from participating in society generally and specifically the information economy. This approach recognises technology use and skill as a complex milieu of physical, digital, human and social resources and relationships. Thus, at least as much attention, planning and resources need to go into the human and social systems that supports technology use. Using technology to promote social inclusion is a more productive approach to ensuring digital inclusion.

The barriers to digital inclusion cover social, economic, technical and cultural issues that may be experienced by many groups in society. Some groups may experience a number of these factors which need to be addressed holistically. Addressing the broader reasons and impacts of non-participation is critical to developing appropriate solutions. Digital inclusion therefore recognizes how the combination of elements may limit participation in the information economy. The range of elements to focus on include:

- access;
- integration;
- support;
- technical-specifications;
- applications.

## Europe's Information Society

In 2004 an average 54% of the households in the EU had a personal computer at home while 43% had a home Internet connection. About one in three connected households had a broadband connection to the Internet (15% compared to 43%).

As expected, the presence of children in the household has a big impact on the take-up of ICTs. A personal computer can be found in 70% of all homes with children but in only 46% of all childless households.

From the regional dimension, we can observe that the degree of urbanisation is an important factor of accessing ICTs. Internet penetration has a low degree of penetration in the rural areas of the European Union. The availability of broadband technology in remote areas probably plays a role in this discrepancy.

Discrepancies can be observed when we compare prosperous economic regions with relatively poorer regions (regions where the GDP per capita is below 75% of the EU average). The internet penetration is almost twice as high (55% compared to 29%) in the relatively prosperous regions of the European Union. The main reasons why people did not have internet at home in 2004 were that equipment costs are too high and they lack the skills of using the internet connection.

„The first objective of i2010 (Information Space. Innovation & Investment in R&D inclusion) is to establish a Single European Information Space offering affordable and secure high-bandwidth communications, rich and diverse content and digital services.” (European Commission). EU Commission’s aim is to create a modern market that can absorb the digital economy.

The creation of the Single European Information Space means solving the problems of digital convergence. This is the main issue of the telecommunications market that should be discussed in governments countries from EU.

The main European Commission’s actions for 2008-2009 are to:

- Develop a broadband performance index and invite Member States to set national targets for high-speed internet usage to reach a 30% penetration rate among the EU population by 2010;
- Help prepare the information society for the future internet economy by issuing a Communication on the future of networks and internet;
- Propose measures to ensure a high level of resilience of critical communication networks and information infrastructure (like the internet) and to guarantee continuity of services;
- Support the adoption of the regulatory package for e-Communications and in particular the creation of the European Electronic Communications Market Authority (EECMA);
- Make spectrum management more efficient by facilitating the harmonisation and trading of the pan-European part of frequencies;
- Publish a guide that explains users' rights and obligations in the digital environment;
- Respond to the challenges to privacy and trust stemming from new converging services in the future ubiquitous information society;
- Address issues concerning the interoperability and transparency of digital rights management systems (DRMs) for consumers in the Recommendation on Content Online.

The main challenges of The European Information Space are:

- The infrastructure challenge – EU must promote incentives to long-term investment which can ensure sustainable competition to all intermediary levels;
- Achieving an Internal Market for SMEs which have e-profile
- Removing barriers to developments in fixed-mobile convergence;
- Problems with online distribution of illegal content;
- Developing a community with wide licensing process for digital copyright protected material.

## **Innovation and investment in ICT research in EU**

„This priority of i2010 focuses on the EU’s research and development instruments and sets priorities for cooperation with the private sector to promote innovation and technological leadership. Actions implemented under this priority aim to strengthen European innovation and research in ICT through instruments such as the „Seventh Research Framework Programme (FP7)” the „European Technology Platforms” and „Joint Technology Initiatives (JTIs).” (European Commission)

Propose improvements to the EU's ICT standardisation system;

- Adopt an Action Plan to further promote e-Signature and e-authentication;
- Launch the Joint Technology Initiatives as the first true Europe-wide public-private research partnerships;
- Promote the European Technology Platforms, in particular closer cooperation among them;

- Promote the role of the public sector as a first buyer of innovation;
- Launch a process to ensure Europe's leadership in ICTs with a Communication on ICT Research and Innovation;
- Promote the role of e-Infrastructures in a changing and global research environment.

## ICT adoption and the Digital Divide

The rapid development of ICT accelerates the transmission and use of information and knowledge and reduces the gap of the Digital Divide. This powerful combination of forces is changing the way we live, and redefining the way companies do business in every economic sector.

The introduction of high-speed Internet access is particularly important for the transformation of Information Societies since it opens up new possibilities and visions on how the Internet can provide a platform for enhancing countries social and economic development. Besides opening up new markets and revenue streams to businesses, broadband has proven an important driver for the delivery of e-government, e-learning and other services. The uptake of e-commerce is also closely linked to growing broadband penetration rates.

The phenomenal growth in information and communications technologies (ICTs) has important implications for economic growth in both developed and developing countries. The ICT-producing sectors (both services and manufacturing) create direct and indirect benefits in the countries where they are located. Growth of these industries results directly in new jobs and revenue. The size of these direct benefits depends on how large the ICT goods and services producing sectors are relative to the economy, and how fast they have grown.

The telecommunication sector deserves special recognition for its impact on the economy worldwide. The telecommunication services sector, which in most countries is larger than the ICT manufacturing sector, is growing rapidly in literally every part of the world. Access to telecommunication services (in terms of telephone subscribers) has been growing at high speed, exceeding global economic growth over the last two decades. Besides telecommunication users, the now largely privatized and competitive telecommunication services sector is reaping the benefits of growth.

Most studies analyzing the impact of ICTs on the economy (outside the ICT sector itself) center around 'productivity' effects. In developed countries, considerable resources and creativity have been devoted to analyze productivity gains in the whole economy, and at sector and firm levels. Several comparative studies have been carried out to analyze the difference in productivity gains in different countries and regions of the world. While the extent of the impact may differ, there is a general consensus that ICTs have a clear impact on economic growth by increasing productivity.

Macro economic research, as well as firmlevel data, confirms that ICT investment and higher infrastructure and usage levels alone are not sufficient to produce tangible benefits. This has been described as the "Wal Mart phenomenon" and refers to Wal Mart's (the world's largest retailer) enormous productivity gap, which it was able to develop over its competitors in the industry by combining managerial with technological innovations. It highlights that ICTs have the largest beneficial impact in conjunction with other changes, including a new set of ICT skills/training, structural changes within business models and the economy, and institutional and regulatory adjustments.

There are clear indications that in countries with relatively high ICT levels, B2B (business to business) and B2C (business to consumer) transactions are taking up an increasing market share. Broadband uptake is closely linked to this development. In the UK, the value of Internet sales rose

by 81 percent between 2003 and 2004, by when Internet sales accounted for about 3.4 percent of the total value of sales by businesses in the non-financial sector. In Canada, combined private and public sector online sales rose to over 28 billion \$ in 2004, from 19 billion \$ in 2003, an increase of almost 50 percent. By 2004, close to 80 percent of Canadian public sector businesses and 43 percent of private sector businesses used the Internet to buy goods or services.

There are a number of financial benefits linked to e-commerce, which allow companies to reduce production, administrative and sales costs and increase revenues. The major barriers to e-commerce uptake include concerns on authentication and security of transactions. Other impediments include the lack of credit cards and convenient payment methods, legal issues, and the lack of broadband Internet access. There are many examples of the beneficial impacts of teleworking and a number of countries and businesses have acknowledged the public and business interest of having people work from at home. Besides reduced congestion and environmental impacts due to reduced traffic, telework saves people and businesses time and money.

By early 2006, eleven thousand of the 100000 employees at British Telecom (BT) were working from home. These teleworkers each save the company accommodation costs of some GBP 6'000 per year; they have an increased productivity rate between 15 and 31 percent, and each average only three days sick absence per year against an industry average of 12 days. Based on these changes alone, British Telecom estimates that ICT enabled telework allows the company to save over GBP 60 million per year. In addition, British Telecom also has 70000 flexible (nomadic or occasional home based) workers, which helps the company to make efficiency savings by cutting down on travel costs.

While it is not easy to measure the impact of ICTs in the area of government, health and education, the repercussions that information and communication technologies are having in these sectors are real and a number of studies and surveys have produced some concrete results.

There are a number of impacts that can be identified with regard to e-government, including improved information flows, reduction of process time and cost, and an increase in efficiency and transparency. There have been some efforts to measure benefits, including a 2005 study by the EU, which confirmed that e-government services were producing real benefits for EU citizens, governments and businesses – namely in terms of saving time and gaining flexibility. Online income tax declarations save European taxpayers an estimated seven million hours per year. When generally available and widely used in all member states, such e-services could save over 100 million hours each year. Compared to the same transaction completed offline, the average online transaction saves 69 minutes for citizens and 61 minutes for businesses.

## **Conclusions**

- Access to information and communication technologies continues to grow at high speed and the digital divide – in terms of mobile subscribers, fixed telephone lines and Internet users – keeps getting smaller.

- The world continues to be separated by major differences and disparities in terms of ICT levels. High growth rates in some areas, and particularly the mobile sector, are not sufficient to bring digital opportunities to all and many developing countries risk falling behind, particularly in terms of Internet access and newer technologies such as 3G and broadband.

- It is important to counteract the new technology divide, particularly since broadband is playing a crucial role in transforming countries into Information Societies. Some of the applications that are having the greatest impact on people and businesses are closely linked to broadband uptake.

▪ Since the access to basic communications in the developing world has largely been achieved through mobile communications, broadband wireless access is expected to play a key role for developing countries seeking to foster the Information Society.

▪ The world has made some important progress in agreeing upon a common set of Information Society access and usage indicators and efforts continue to improve the availability and comparability of core Information Society indicators.

▪ The work carried out in the area of impact measurement is still at the beginning stage, and often restricted to developed countries. Despite the potential of ICTs to be an engine for social and economic development, there is limited quantifiable proof and little internationally comparable data.

▪ The debate on the role of ICTs for development and their potential to reduce major development concerns calls for the identification of appropriate impact indicators.

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