

Building a Knowledge Society in the European Union

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Abstract

This paper starts from the idea that knowledge has become the key resource of the modern world, where information emergence and use are predominant factors in the creation of wealth. The clear implication of the paper is that there is no alternative to prosperity other than making learning and knowledge-creation of utmost importance, with a focus on scientific and technological innovation through research and development (R&D). In particular, the EU suffers from a low level of private sector investment in higher education and continuous training. Skills, knowledge and competences are seen as crucial prerequisites for the competitiveness of the European economy.

Key words: *knowledge, knowledge society, European knowledge-based economy, European higher education*

JEL Classification: *O18, O30, O52*

Nowadays, terms like “knowledge society“ or “information society“ are frequently used. A definition for the “knowledge society“ was proposed in 1970s by Peter Drucker. In "The Age of Social Transformation"¹, Peter Drucker describes the rise of what he terms "the knowledge society". Drucker believes that the essence of this new society is mobility: "mobility in terms of where one lives, mobility in terms of what one does, mobility in terms of one's affiliations".

Throughout history and during the process of creation of various concepts and theories, this definition has been changed and expanded and presently can be considered in different ways: according to some authors "the knowledge society" corresponds to the information society, according to others – this definition means a further and more advanced development stage of the information society.

P. Drucker noticed that education and development, and to some degree training, would be the main concern of any knowledge society: "*Information is data endowed with relevance and purpose. Converting data into information thus requires knowledge. And knowledge, by definition, is specialized*". "*In the knowledge society, clearly, more and more knowledge, and especially advanced knowledge, will be acquired well past the age of formal schooling and*

¹ Drucker, F. P., *The Age of Social Transformation*, The Atlantic Monthly; November, Volume 274, No. 5, 1994, pp. 53-80.

increasingly, perhaps, through educational processes that do not center on the traditional school”².

The emergence of the knowledge society means an ever-increasing demand for a well-educated and skilled workforce across the whole economy. If managers and executives are not continually learning, they provide lower value to their employers and constituents. The success of their organizations is dependent upon what they know, versus what they do not know. Workers at all levels in the 21st century knowledge society will need to be lifelong learners, adapting continuously to changing opportunities, work practices, business models and forms of economic and social organisation.

P. Drucker wrote in *The Economist* about the Next Society in 2001: *“The next society will be a knowledge society. Knowledge will be its key resource and knowledge workers will be the dominant group in its workforce”³.* Its three main characteristics will be:

- Borderlessness, because knowledge travels even more effortlessly than money;
- Upward mobility, available to everyone through easily acquired formal education;
- The potential for failure as well as success. Anyone can acquire the “means of production”, i.e., the knowledge required for the job, but not everyone can win.

Together, those three characteristics will make the knowledge society a highly competitive one, for organisations and individuals alike. Information technology, although only one of many new features of the next society, is already having one hugely important effect: it allows knowledge to spread near-instantly, and make it accessible to everyone. Given the ease and speed at which information travels, every institution in the knowledge society - not only businesses, but also schools, universities, hospitals and more and more government agencies - has to be globally competitive, even though most organisations will continue to be local in their activities and markets. This is because the Internet will keep customers everywhere informed on what is available anywhere in the world, and at what price.

Nowadays, information and knowledge have become the key resources and we can say that information and knowledge mean power. Knowledge has value, but also value has knowledge about knowledge. Creating value is about creating new knowledge and capturing its value. In fact, not the knowledge assets (or repositories) are the critical factors today, but structures and processes of knowledge production and transfer. The generation and exploitation of knowledge is now the predominant factor in the creation of wealth. *“For countries in the vanguard of the world economy, the balance between knowledge and resources has shifted so far towards the former that knowledge has become perhaps the most important factor determining the standard of living – more than land, than tools, than labour. Today’s most technologically advanced economies are truly knowledge-based”⁴.* Thus, the most important property is now intellectual property, not physical property. And it is the minds (including emotional intelligence as well) of people, rather than traditional labour, which are essential to growth and prosperity.

Knowledge has always been a main resource, and a driver of economic and social development. Unlike capital and labour, information and knowledge have many of the characteristics of what economists call public goods. Once discovered and made public, knowledge can be shared at zero marginal cost and its value is not depleted in consumption – it is non-rival. Indeed, the economic and social value of information and knowledge actually increase as it is shared with and used by others. *“Just as the importance of land in production changed dramatically as the*

² Drucker, F. P., *The Age of Social Transformation*, The Atlantic Monthly; November, Volume 274, No. 5, 1994, pp. 53-80.

³ Drucker, F. P., *The Next Society*, The Economist, 1 November 2001.

⁴ World Bank, *World Development Report*, 1999.

economy moved from agriculture to industry, so too does the movement to a knowledge economy necessitate a rethinking of economic fundamentals"⁵.

"Actually, a knowledge-based economy cannot exist unless the production of knowledge and its exploitation into economic processes are interconnected. Thus, it is not the stock of knowledge that will trigger the knowledge-based economy, but its availability and its efficient use for economic processes. Therefore, the economic system will not become more competitive unless the knowledge producer, the academic system, is able to convert the new knowledge into inputs for economic processes"⁶.

In the knowledge society, sources of competitive advantage will increasingly depend on knowledge-based innovation. "Knowledge has become the resource triggering progress and competitiveness, while the capacity to innovate has become dependent on the available intellectual stock. The intellectual capital able to produce new knowledge and innovation drives competitiveness"⁷. The clear implication is that there is no alternative to prosperity than making learning and knowledge-creation of utmost importance, with a new focus on scientific and technological innovation through research and development (R&D). This requires not only a strong scientific and technological base, but also R&D capacity. Equally important is the capacity to link fundamental and applied research, to convert the results of that research to new products, services or processes, and to bring these innovations fast to the market.

"In this context, the duty of all stakeholders is to accompany the entry of enterprises and universities into this knowledge society, a society where the creation of value implies innovation, creativity, participation and competitiveness on a worldwide scale. Furthermore, competitiveness in terms of innovation involves research that ensures quality knowledge, education and training, which may result in the development of competences and the high quality of the intellectual stock requested by employers. Thus, the university becomes the key institutional resource of the European knowledge-based economy"⁸.

In order to build a European knowledge-based economy (and, in general, for any knowledge economy) four essential, and interrelated, elements are necessary⁹, as follows:

1. *Creating an appropriate economic incentive and institutional structure* that encourages the widespread and efficient use of local and global knowledge in all sectors of the economy, that fosters entrepreneurship, and that permits and supports the economic and social transformations engendered by the knowledge revolution.
2. *Creating a society of skilled, flexible and creative people*, with opportunities for quality education and life-long learning available to all, and a flexible and appropriate mix of public and private funding.
3. *Building a dynamic information infrastructure*, and a competitive and innovative information sector of the economy that fosters a variety of efficient and competitive information and communications services and tools available to all sectors of society. This includes not only "high-end" information and communication technologies (ICTs) such as the Internet and mobile telephony, but also other elements of an information-rich society

⁵ Stiglitz, E. J., *Public Policy for a Knowledge Economy*, Speech, Remarks at the Department for Trade and Industry and Center for Economic Policy Research The World Bank Group, London, U.K., January 27 1999.

⁶ World Bank, *Building Knowledge Economies: Opportunities and Challenges for EU Accession Countries*, May 2002, www.worldbank.org.

⁷ *ibidem*

⁸ *ibidem*

⁹ Zaharia, S. E., Mironov, C. M., Borzea, A. E., *The competences issue in the entrepreneurial university*, http://level3.dit.ie/html/issue6/zaharia/zaharia_1.html#higher.

such as radio, television and other media, computers and other devices for storing, processing and using information, and a range of communication services.

4. *Creating an efficient innovation system* comprising firms, science and research centres, universities, think tanks and other organizations that can tap into and contribute to the growing stock of global knowledge, adapt it to local needs, and use it to create new products, services, and ways of doing business.

In Europe, the universities remain the main producer of knowledge and competences, and consequently Europe's universities are a major force in shaping "the Europe of knowledge". The European Science and Research Commissioner, Janez Potočnik, said that "*universities are power-houses of knowledge generation*" and, for that reason, "*they will need to adapt to the demands of a global, knowledge-based economy, just as other sectors of society and economy have to adapt*"¹⁰.

"Given that the higher education sector is situated at the crossroads of research, education and innovation, it is a central player in the knowledge economy and society and key to the competitiveness of the European Union"¹¹. In fact, a European knowledge-based economy depends for its growth and welfare on the production of new knowledge, on its transmission through education and training - especially through the higher education sector, on its dissemination through ICTs, and on its use in new industrial processes or services. Because the universities play an important role in the fields of: research and exploitation of its results, through industrial co-operation and "spin-off" (young technological companies created by universities); education and training; and regional and local development, to which they can contribute significantly, they "are unique, in that they take part in all these processes"¹².

The European Council held in Lisbon in March 2000, marked a decisive moment for the direction of policy and action in the European Union. It set the goal of becoming "*the most competitive and dynamic knowledge-based economy in the world, capable of sustaining economic growth with more and better jobs and greater social cohesion*" by 2010. Education and training are crucial to achieving these goals. The knowledge sector is dependent on the ability of education, in particular, universities, to offer high quality curricula in knowledge-intensive areas and to attract a sufficient number of qualified persons to science and technology. Innovation is also dependent on the ability of social partners to ensure that a generally well-educated and creative labour force stimulates, uses, and underpins it.

"Europe needs excellence in its universities, to optimize the processes which underpin the knowledge society and meet the target...of becoming *the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion*"¹³. That implies a necessary modernisation of EU's universities. The European Commission has published a modernisation agenda for universities which is part of the Lisbon Strategy for Growth and Jobs. The main fields of the universities' reform are:

- Curricular reform: The three cycle system (bachelor-master-doctorate), competence based learning, flexible learning paths, recognition, mobility;
- Governance reform: University autonomy, strategic partnerships, including with enterprises, quality assurance;

¹⁰ European Commission, *Europe needs modernised universities*, IP/06/592, Brussels, 10 May 2006.

¹¹ Blackstone, T., *Education and Training in the Europe of Knowledge*, www.uniroma3.it/downloads/297_Lezione%20Blackstone.doc, 2008.

¹² idem

¹³ European Commission, *The role of the universities in the Europe of knowledge*, Communication from the Commission, COM (2003) 58 final.

- Funding reform: Diversified sources of university income better linked to performance, promoting equity, access and efficiency, including the possible role of tuition fees, grants and loans.

Curricular reforms are also promoted through the Bologna Process, in which 46 countries in the wider Europe are working towards establishing the European Higher Education Area by 2010. The European Commission is helping EU member states and neighbouring countries in their modernising efforts through policy initiatives, discussion papers and forums, as well as through EU programmes such as Erasmus, Tempus and Erasmus Mundus.

The Commission, in its communication on “*The role of the universities in the Europe of knowledge*”, identified five challenges and opportunities for European universities that result from the proliferation of places where knowledge is produced, the reorganisation of knowledge via the simultaneous rise of interdisciplinarity and increased specialisation, the development of effective and close co-operation between universities and industry, the internationalisation of higher education, the rise in demand for human and social capital and the societal shift of expectations towards lifelong learning and open access. It is clear that universities have to cater for new needs in education and training stemming from the knowledge-based economy and society. The contribution expected from universities to lifelong learning strategies leads them to gradually widen access to this area of tuition, to open up more to industry, improve student services, and diversify their range of training provision in terms of target groups, content and methods.

The resulting communication from the consultation¹⁴ also outlined three objectives that have to be taken onboard in order for universities to play a role in the creation of a Europe of knowledge. These are:

- ensuring that European universities have sufficient and sustainable resources and use them efficiently;
- consolidating their excellence in research and in teaching, particularly through networking;
- opening up universities to a greater extent to the outside and increasing their international attractiveness.

Under-funding of European universities damages their capacity to maintain and attract the best talent, and to strengthen the excellence of their research and teaching activities. As rightly noted in the communication on “*Investing efficiently in education and training: an imperative for Europe*”, the main responsibilities of authorities is not only to continue to provide higher education institutions and students with a sufficient level of public funding but also to find ways to add to it by increasing and diversifying private investment in higher education. There is an increasing need to ensure that additional resources produce higher quality and relevance, lower failure and dropout rates, and enhanced social equity in access to higher education and its benefits. The detailed work programme on the objectives of education and training systems calls for investments in certain areas that have been identified as shared priorities of the Member States.

One of the investments it calls for is in the training and retention of education staff. Higher education needs to remain attractive to young researchers and mature talent, which is to be achieved by building up bridges and mobility between universities, research laboratories and industry. Furthermore, identifying and eliminating inefficiencies in spending, will result in an increase in the return on investment at the Member State level. Sources of inefficiencies include

¹⁴ The consultations of the European Commission on “*the role of the universities in the Europe of knowledge*” had engaged all the stakeholders in the university community on the key issues of funding, the diversity of institutions in terms of functions and priorities, the setting up of centres of excellence, the attractiveness of careers, and work in networks.

higher than average failure and dropout rates, high graduate unemployment, excessively long degree courses. The communication from the European Commission on the Lisbon Strategy noted that there are no signs of any substantial increase in overall investment (be it public or private) in human resources. In particular, the European Union suffers from a level of private sector investment too low in higher education and continuous training. Moreover, there is no evidence¹⁵ of any great headway being made in more effective use of available resources.

Modernising higher education and increasing funding to university research will contribute to the EU's objective of becoming a competitive knowledge-based economy. The benchmarks for assessing the modernisation of higher education are that of devoting at least 2% of GDP (including both public and private funding - currently 1.3%) by 2015 to modernising higher education and that of increasing by 15% the number of graduates in mathematics, science and technology by 2010¹⁶. Progress will be measured using the following three core indicators:

- higher education graduates;
- transnational mobility of students in higher education (the goal of 3 million Erasmus students by 2012)¹⁷;
- investment in education and training.

What does the European higher education landscape look today? Are the European universities in a position to compete with the best universities in the world and provide a sustainable level of excellence?

These are legitimate questions because the European universities go about their business in an increasingly globalised environment, constantly changing and characterised by an important competition to attract and retain outstanding talent, and by the emergence of new requirements for which they have to cater. Yet European universities generally have less to offer and lower financial resources than their equivalents in the other developed countries, particularly the USA. According to all these, a briefly overview of the recent developments in the European higher education is presented in Table 1.

The general observation is that some progress has been made since 2000 and the performance of the European Union in higher education levels with the best in the World such as Australia, New Zealand, Canada, US and Korea. However the overall performance of the EU masks wide divergence between Member States.

Table 1. Recent developments in the European higher education

<ul style="list-style-type: none"> ○ About 19 million students were in 2006 enrolled in higher education in the EU, nearly 3 million or 18% more than in 2000. ○ There are 13 million more higher education graduates in the working age population than in 2000.
<ul style="list-style-type: none"> ○ Nearly 4 million students in the EU graduated from higher education in 2006. This increase of 37% since 2000 is about twice that of the general student population (partly a result of the strong growth of second degrees caused by the introduction of the Bologna structure).

¹⁵ European Commission, *The success of the Lisbon strategy hinges on urgent reforms*, COM (2003) 685 final.

¹⁶ European Commission, *The success of the Lisbon strategy hinges on urgent reforms*, COM (2003) 685 final.

¹⁷ European Council, Decision No.1720/2006/EC of the European Parliament and of the Council of 15th November 2006 *establishing an action programme in the field of lifelong learning*.

Table 1. (cont.)

<ul style="list-style-type: none"> ○ 197 universities from 18 EU Member States were among the 500 leading universities of the world in 2007, according to the Shanghai University ranking (while 166 were from the United States and 32 from Japan). ○ Out of the top 100 universities, 54 are located in the United States and only 29 in the EU. ○ The USA leads especially in terms of institutions at the very top: it has 17 of the ARWU (Academic Ranking of World Universities) top 20 universities. The EU has only two institutions in the top 20: Cambridge, ranked fourth, and Oxford, ranked tenth. Japan has one (Tokyo University, ranked 20th).
<ul style="list-style-type: none"> ○ The EU spends 100 billion Euros less each year on higher education than the US.
<ul style="list-style-type: none"> ○ Public spending in higher education in the EU-27 (in 2004) at 1,13% of GDP, is close to US levels (1.32%) and well ahead of Japan (0.65%), but private spending on higher education in the EU, at 0.23% of GDP, is much higher in both Japan (0.76% of GDP) and the US (1.91%) .
<ul style="list-style-type: none"> ○ There are wide differences in public spending on higher education across the EU. In the Nordic countries it is over 2% of GDP (in Denmark, Sweden and Finland total public spending alone already surpasses the goal proposed by the Commission of investing 2% of GDP - from all sources - in higher education), while in several southern and eastern European countries it is less than 1% (the share is below 0.8% in Italy Latvia, Malta and Romania).
<ul style="list-style-type: none"> ○ In 2006 there were about 200 000 more mathematics, science and technology graduates (+29%) than in 2000. This already exceeds the benchmark of a 15% increase for 2010. However, growth is even stronger in some major competitor countries. China had in 2006 already more than twice as many new tertiary mathematics, science and technology graduates as the EU.
<ul style="list-style-type: none"> ○ Although gender balance has been achieved for the field of mathematics and statistics, little progress has been made to reduce the overall imbalance in science and technology graduates. There continues to be a very low share of female graduates in engineering, manufacturing, construction and computing. However, women predominate in life sciences.
<ul style="list-style-type: none"> ○ 1.7 million students in the EU have foreign citizenship, twice the figure of 2000 (788000 in 2000), the great majority of which are European. The share of students with a foreign citizenship increased by 4 percentage points since 2000. ○ Two thirds of foreign students study in Germany, France and the UK.
<ul style="list-style-type: none"> ○ Over 600 000 EU students now study abroad, an increase of about 50% compared to 2000. ¾ of these studies in another EU country. ○ The only exception is the UK, where the majority of students studying abroad are studying outside the EU.
<ul style="list-style-type: none"> ○ About 1.7 million students have taken part in the Erasmus mobility scheme since it started in 1987. Participation in Erasmus continues to increase, currently at 3.2% a year.

Data source: European Commission, *Progress towards the Lisbon objectives in Education and Training, Indicators and Benchmarks 2008*, Brussels, Sec (2008).

The European Commission has identified 9 areas where changes should be made so that Europe's universities can contribute to the creation of a true knowledge economy¹⁸. Each institution should find the balance of education, research and innovation which is best suited to

¹⁸ European Commission, *Europe needs modernised universities*, IP/06/592, Brussels, 10 May 2006.

its role in its region or country. This will necessarily mean a differentiated approach. The aim is to create a framework within which universities can become stronger players in the global knowledge society and economy. The primary goal must be to achieve excellence in the teaching and research functions of universities. The proposals put forward by the Commission include:

- boost the proportion of graduates spending at least one semester abroad or in industry;
- allow students to make use of national loans and grants wherever in the EU they decide to study or do research;
- bring procedures for the recognition of academic qualifications in line with those for professional qualifications and make European degrees more easily recognised outside Europe;
- introduce training in intellectual property management, communication, networking, entrepreneurship and team-working as part of a research career;
- refocus courses to allow greater participation at later stages of the life-cycle, thereby addressing the skills needs of Europe's workforce, and ensuring that universities are able to adapt to Europe's ageing population;
- review national student fee and support schemes so that the best students can participate in higher education and further research careers whatever their background;
- review systems for funding universities, to be more focused on outputs and give universities more responsibility for their own long-term financial sustainability, particularly in research;
- allow universities greater autonomy and accountability, so that they can respond quickly to change. This could include revising curricula to adapt to new developments, building closer links between disciplines and focussing on overall research areas domains (e.g. renewable energy, nanotechnology) rather than disciplines. It could also include more autonomy at individual institution level for choosing teaching and research staff.

The Commission stands ready to support the modernisation of EU universities through a process of identifying and sharing good practice, and through its funding programmes for education, research and innovation: the Lifelong Learning Programme, the Seventh Framework Programme for research and development, the Competitiveness and Innovation programme, and the Structural and Cohesion Funds.

Framework Programmes, new funds for basic research distributed by a European Research Council (ERC), and structural funds can provide an adequate support to the building of a European Research Area (ERA). The Bologna process, the mobility programmes (Tempus, Erasmus, Erasmus Mundus etc.), the creation of universities networks and the bilateral collaborations are important tools for creating the European Higher Education Area (EHEA) by 2010. The EHEA and the ERA must be integrated to optimize their contribution to the knowledge society. "Research not only provides the necessary background for innovation but also creates a suitable environment for education, as was pointed out by the Berlin document in which the third cycle (PhD) was explicitly included among the priorities in the Bologna process. The knowledge society not only needs excellence and top rate research but also depends on a larger number of highly educated people who, while not engaged in active research, have sufficient knowledge to make good use of the latest research results"¹⁹.

The Barcelona objective of spending 3% of GDP on research and development by 2010 has implications for higher education, since about 22% of R&D spending in Europe goes into

¹⁹ Blasi, P., *The contribution of higher education and research to the knowledge society*, Council of Europe Conference on Public Responsibility for Higher Education and Research, Strasbourg, 23-24 September, 2004.

university-based research. In 2006 R&D spending had reached 1.84%. In March 2008 the European Council called for the removal of barriers to the free movement of knowledge by creating a fifth freedom based on:

- enhancing the cross-border mobility of researchers, as well as students, scientists, and university teaching staff;
- making the labour market for European researchers more open and competitive, providing better career structures, transparency and family friendliness;
- further implementing higher education reforms²⁰.

The growing attention given to higher education and research by the EU is also reflected in creation of the European Institute of Technology (EIT)²¹. The European Institute of Technology is a new flagship project of the Commission which aims at reinforcing the innovation capacity of Member States and the Community. It addresses several issues already highlighted in the modernisation agenda, notably the fragmentation of the European higher education and research system, the lack of excellence in certain areas and the low level of involvement of business in education and research. It is expected to boost Europe's innovation capacity by supporting full integration of the knowledge triangle (innovation, research and education) and pooling resources from universities, research organisations and business partners. While the EIT is not meant to address issues exclusive to higher education, the EIT's governance, working methods and relationship with business are expected to inspire change for the better throughout Europe.

In conclusion, we may say that knowledge and innovation are the engines of sustainable growth in Europe today, and the universities are crucial institutions towards achieving the goals set out by the European Council in Lisbon in 2000. The Knowledge Society relies on the quality of human capital, education, research and innovation policies as key to boost growth. If Europe wants to compete in the global knowledge society, it must also invest more in human capital. Skills, knowledge and competences are increasingly seen as crucial prerequisites for the productivity and competitiveness of the European economy.

Europeans have to be equipped with the tools they need to adapt to an evolving labour market and this applies to all positions, high and low-skilled, in both manufacturing and services. To this aim, the importance of higher education is clearly recognised, but this requires major funding and governance reforms to modernise universities due to the important role they are to play in the knowledge-based economy.

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Construirea unei societăți a cunoașterii în Uniunea Europeană

Rezumat

În cadrul acestui articol se pornește de la ideea conform căreia cunoașterea a devenit resursa-cheie a lumii moderne, în care generarea și folosirea ei au devenit factori predominanți în crearea bunăstării. Implicația clară a articolului este că nu există alternativă pentru prosperitate, alta decât plasarea învățării și a creării de cunoaștere la cel mai înalt nivel, cu accent pe inovarea științifică și tehnologică prin cercetare-dezvoltare. În particular, Uniunea Europeană suferă de un nivel scăzut la investițiilor din sectorul privat în învățământul superior și în educația continuă. Competențele, cunoașterea și aptitudinile sunt văzute drept cerințe cruciale pentru competitivitatea economiei europene.