INTANGIBLE ASSETS AND INTELLECTUAL CAPITAL AS KEY FACTORS OF ROMANIA'S CONVERGENCE*

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The main aim of the chapter is to provide the readers with a synthesis of the new international framework of debate dedicated to the topics of intangible assets and intellectual capital. Considering the topics of the whole book, this chapter is focussed on the role played by intangible assets and intellectual capital for attaining convergence and for increasing competitiveness.

Keywords: *convergence, knowledge-based economy, competitiveness, competitive advantage, intangible assets, intellectual capital.*
JEL*: E24; I23; I28; J24; O15; O47*

1. Lisbon targets and the European common objectives for permanent education and training

As part of *the Lisbon strategy*, the Barcelona Summit of 2002 endorsed *common objectives for Education and Training in Europe***.** The Lisbon European Council of May 2003 agreed on five targets to be met by 2010:

a. The percentage of early school leavers should be at most 10% on the average.
b. At least 85% of the 22-year-olds in the European Union should have completed upper secondary education or higher one.
c. The percentage of low-achieving 15-year-olds in reading literacy in the European Union should have decreased by at least 20%, compared to the year 2000.
d. The European Union average level of participation in lifelong learning should be at least 12.5% of the adult working age population (25-64 years).
e. The total number of graduates in mathematics, science and technology (MS&T) in the European Union should increase by at least 15% while at the same time the gender imbalance should decrease.

The last report of European Union Commission called "*Progress towards the Lisbon objectives in education and training"* (the fourth report from the reports of 2004, 2005, 2006 and 2007) analyses the performance and progress towards the Lisbon objectives in education and training. On the 25th of May 2007 the *European Council on Education* has introduced 16 core indicators recommended to be used

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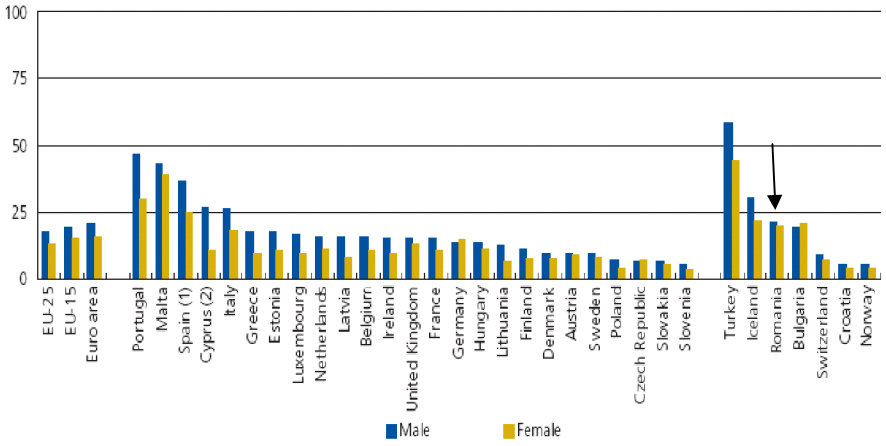
in order to monitor the progress with respect to Lisbon objectives in education and training (*Commission Staff Working Document Progress Towards the Lisbon Objectives in Education and Training Indicators and Benchmarks 2007)*.

According to available data we will try to analyze Romania's position according to the Lisbon targets concerning education and training achievements in 2010.

a. The percentage of early school leavers should be at most 10% on the average

Early school leavers refers to persons aged 18 to 24 in the following two conditions: either the respondents declared that the highest level of education or training attained is, according to international UNESCO classification, ISCED 0, 1, 2 or 3c short, or the respondents declared not having received any education or training in the four weeks preceding the survey. The denominator consists of the total population of the same age group. Based on *Eurostat Yearbook*, Figure 1 presents Romanian position according to the percentage of early school leavers. This index affects in a negative way investments in human capital and the general level of education of the population.



(1) Break in series.
(2) Most tertiary students study abroad and are not included.
Early school leavers refers to persons aged 18 to 24 in the following two conditions: the highest level of education or training attained is ISCED 0, 1, 2 or 3c short and respondents declared not having received any education or training in the four weeks preceding the survey; the denominator consists of the total population of the same age group.

Source: "Europe in Figures" - Eurostat Yearbook 2006-07, p. 89.

Figure 1. Early school leavers, 2005 (% of the population aged 18 to 24 with at most lower secondary education and not in further education or training), in %.

In Romania the percentage of early school leavers is *more than double the Lisbon target established for 2010 at a level of most 10% on the average*. In 2005 it was 20.8 % on the average and it diminished as compared to 2000 (22.3%). But it is much lower if compared to countries like Turkey, Portugal, Malta, Spain, Cyprus, Italy. On the other hand, there are countries that have reached this target

and have now a lower level (Norway, Croatia, Switzerland, Slovenia, Slovakia, Czech Republic, Poland, Sweden, Austria, Denmark, Finland).

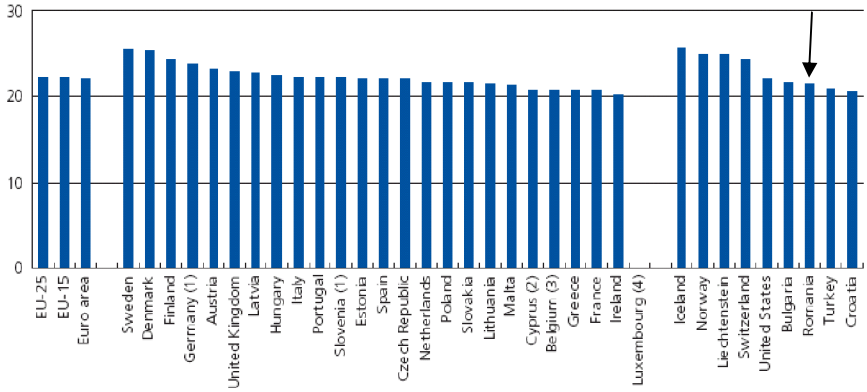
The gender distribution for this index in Romania was in 2005: 20,1% for female and correspondingly 21.4 % for male. There are countries where there are gender gaps regarding this index: Turkey (where for male the rate is greater than 50%), Portugal, Malta, Spain, Cyprus, Italy, Greece. In the last report published by UE in October 2007, Romania and Bulgaria have a defavourable situation according to the first objective-early school leavers- with percentages of 19%, respectively 18%. However, in 2007 on the last positions there are countries such as Malta and Portugal, with percentages of 41.7% and 39.2%. But, in the case of other countries, such as Czech Republic, Poland and Slovacia the percentages corresponding to the first Lisbon objective were 5.5%, 5.6% and respectively 6.4%.

b. At least 85% of the 22-year-olds in the European Union should have completed upper secondary education or higher education.

In order to analyze the second Lisbon target we take first into account two indexes:

Ø *The median age of a given population* is the age separating the group into two halves of equal size; in the case of this indicator it means that half of the student population, i.e. persons enrolled in tertiary education (*ISCED levels 5 and* 6 under international classification), is younger than the median age and the other half is older (Figure 2).

Ø The indicator *youth education attainment level* is defined as the percentage of young people aged 20 to 24 years having attained *at least upper secondary education level*, i.e. with an education level ISCED (3a, 3b or 3c long); the denominator consists of the total population of the same age group (Figure 3).



(1) Excluding ISCED level 6.
(2) Most tertiary students study abroad and are not included.
(3) Excluding independent private institutions; excluding the German speaking community.
(4) Not available.
The median age of a given population is the age separating the group into two halves of equal size; in the case of this indicator it means that half of the student population, i.e. persons enrolled in tertiary education (ISCED levels 5 and 6), is younger than the median age and the other half is older.

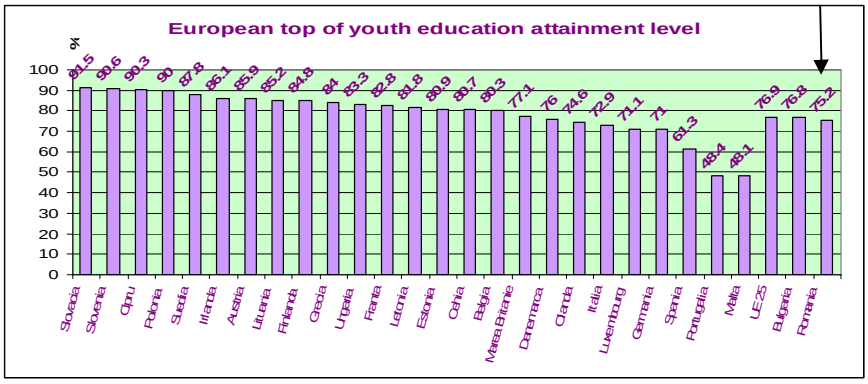
Source: "Europe in Figures" - Eurostat Yearbook 2006-07, p. 88

Figure 2. Median age in tertiary education, 2004 (years old).

In Romania *median age in tertiary education* was 21.4-year-old in 2004 (increasing as compared to 20.7 years old in 1999).

It is quite close to the average values in EU-25 (22.1-year-old) and EU-15 (22.2-year-old). There are countries with a higher value such as: Sweden (25.5- -year-old), Denmark (25.3-year-old), Finland (24.2-year-old). There are countries with lower levels such as Turkey and Croatia (20.5-year-old).

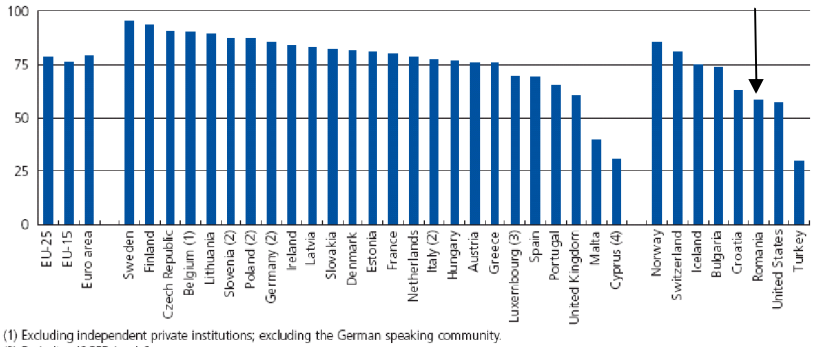
In Romania *youth education attainment level* was 75.2 % in 2005 as compared to 75.8 % in 2000 - Figure 3.



Source: http://epp.eurostat.ec.europa.e

Figure 3. Youth education attainment level (in %, in several countries of EU).

We also consider useful to look for another index: 18-year-olds in education. We take this into account because the cohort of school age population that was 18 years old in 2004 will have in 2010 the age of 24 years (Figure 4).



(1) Excluding independent private institutions; excluding the German speaking community.
(2) Excluding ISCED level 6.
(3) Most tertiary students study abroad and are not included; many students at ISCED levels 1, 2 and 3 study abroad and are not included in the enrolment data but are included in population data; therefore, all participation rates by age are underestimated; excluding ISCED level 5.
(4) Most tertiary students study abroad and are not included.
This indicator gives the percentage of all 18-year-olds who are still in any kind of school (all ISCED levels); it gives an indication of the number of young people who have not abandoned their efforts to improve their skills through initial education and it includes both those who had a regular education career without any delays as well as those who are continuing even if they had to repeat some steps in the past.

Source: "Europe in Figures" - Eurostat Yearbook 2006-07, p. 88

Figure 4. 18-year-olds in education, 2004 (% of all 18-year-olds).

At the European level, according to the last report from October 2007, it is estimated that more than 2 million people will have to graduate the high school, such as to register a higher percentage of graduates from the secondary level and to get close to the objective of 85% until 2010. Countries that are on the top according to this objective are Czech Republic, with a percentage of 91,8%, Polonia with 91,7% and Slovacia with 91,5%. Regarding convergence with respect to this Lisbon target we can see that Romania has now a lower level than both EU-25 and EU-15 on the average.

There are countries where this target has been reached (Sweden followed by Finland, Czech Republic, Belgium, Norway) or countries that are very close to the target (Lithuania, Slovenia, Poland, Germany, Ireland, Latvia, Slovakia, Denmark, Estonia, France, Netherlands).

c. The percentage of low-achieving 15-year-olds in reading literacy in the European Union should have decreased by at least 20%, compared to the year 2000

In Table 1 we present the literacy rates in Romania compared to the EU average values.

Table 1

Literacy rates, selected years, youth and adult population

Literacy rates		1990	2000-2004	2000-2004 European countries average
Adult (15+)[1] %	MF	97.1	97.3	97.0
	M	98.6	98.4	98.7
	F	95.6	96.3	95.5
Youth (15-24)[2] %	MF	99.3	97.8	98.6
	M	99.3	97.7	99.1
	F	99.2	97.8	98.1

Note: [1] Considering this category we take into account people over 15-years.
[2] Considering this category we take into account people belonging to the 15-24 year age group.
Source: www.uis.unesco.org.

Data in Table 1 are quite comparable for Romania and the EU average. But the lower level for youth population should be an alarm signal for the policy makers in education mostly because the Lisbon target is to diminish these values in 2010 by at least 20% compared to the year 2000. We consider it useful to look also at TIMSS (*Third International Mathematics and Science Study*) that illustrates the number of students who received grade eight in science and mathematics assessments (Table 2):

Table 2

TIMS eight grade students assessment results for science and math for selected countries, 1995, 1999 and 2003

Country	Mathematics mean score			Science mean score		
	1995	1999	2003	1995	1999	2003
Czech Republic	546	520	n.a.	555	539	n.a
Slovak Republic	534	534	5+8	532	535	517
Hungary	527	532	529	537	552	543
Bulgaria	527	511	476	545	518	479
Slovenia	494	n.a.	493	514	n.a.	520
Latvia	488	505	505	476	503	513
Romania	**474**	**472**	**475**	**471**	**472**	**470**
Lithuania	472	482	502	464	488	519

Source: Nicholas Barr (ed), *Labour Markets and Social Policy in CEE*, World Bank, 2005.

The two international assessments - *Third International Mathematics and Science Study*-TIMSS and PISA *(Programme for International Student Assessment)* - show a more negative picture as compared to the previous data.

Romania's eight grade students participated in the TIMSS in 1995 (before the reform), 1999 (when the reform was implemented) and 2003 illustrate that Romanian students performed less in mathematics and science disciplines for each of the three rounds than the average of participating European and Central Asian countries. Particularly disturbing is that about 70 % of Romania's 15-year-olds performed below level 3 - that is, at levels 0, 1, or 2. Scoring at level 3 or higher generally seems required in a modern economy and society.

A survey[1] that included more European countries illustrates that Romania is in the middle of this ranking system regarding the number of teaching staff corresponding to 100 pupils and *PISA registrations* regarding reading capabilities. In Romania the values corresponding to the two indicators were 87.3, respectively 68.5; countries such as Czech Republic, Latvia and Finland had maximum values for both indicators. The minimum values for both indicators have been in Luxemburg, and countries such as Germany, Poland and Sweden had obtained maximum points for the first indicator. The UE' Report in October 2007 regarding the low-achieving 15-year-olds in reading literacy had illustrated that one from five persons having the age of 15 years old had difficulties in reading. Finland (5.7%), Irland (11%) and Netherlands (11.5%) are the countries with the best results from this point of view.

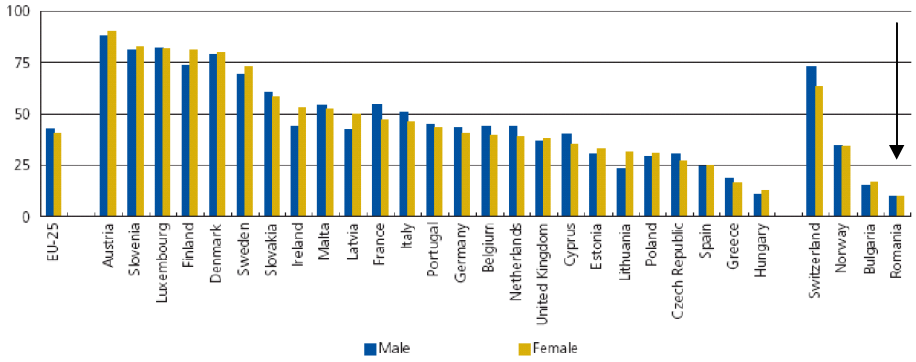
d. The European Union average level of participation in lifelong learning would be at least 12.5% of the adult working age population (25-64 age group).

The European objective established for the average level of participation in lifelong learning is 12.5% from the adult population from the age groups 25–64 years.

[1] CRELL computations (based on Eurostat UOE data and OECD PISA data), Annex 2 A *Progress Report 2007*, www.europa.eu.int

In the last report from October 2007, at the European level, the countries that are on the top according to this benchmarking are Sweden (32.1%), Denmark (29.2%) and United Kingdom (26.6%). Regarding the participation of adult population in tertiary education the top country is Denmark with a percentage of 35%.

In order to look for *Romanian convergence* according to this target we consider first the current situation that place Romanian on the last position with only 1.6% percentage of male/female population aged 24 to 64 years that is involved in any learning activities (formal, non-formal and informal) according to lifelong learning approach (LLL) - Figure 5.



Formal education and training corresponds to education and training in the regular system of schools, universities and colleges; non-formal education and training includes all types of taught learning activities which are not part of a formal education programme; informal learning corresponds to self-learning which is not part of either formal nor non-formal education and training, by using one of the following ways: making use of printed material (e.g. professional books, magazines and the like); computer-based learning/training; online Internet-based web education; making use of educational broadcasting or offline computer-based (audio or videotapes); visiting facilities aimed at transmitting educational content (library, learning centres, etc.).

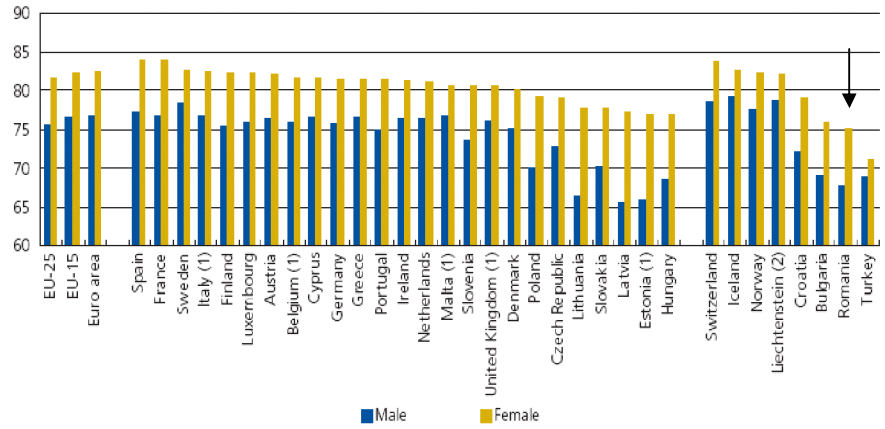
Source: "Europe in Figures" - Eurostat Yearbook 2006-07, p. 94.

Figure 5. Participation in any learning activities (formal, non-formal, informal), 2003 (% of population aged 25 to 64).

According to *the National Employment Strategy* in Romania there is a target of 7%, until 2010, for the adult population, 25-64-year-old ("Formarea profesională continuă în procesul dezvoltării tehnologice din economia românească", in *Observatorul Național al Ocupării şi Formării Profesionale a Forței de Muncă*, Direcția Programe şi Strategii de Forță de Muncă, Raport**,** Bucharest, April 2007). That is far from the European target of 12.5% and it means that Romania has to focus on LLL where the gap as compared to EU average is substantial in terms of convergence.

To make things clearer we mention also that Romania has to face the demographic challenges[2] of a diminishing and ageing population under the circumstances of an increasing life expectancy at birth (Figure 6). That fact suggests that Romanian population is expected to live more and that is challenging but it also offers a lot of opportunities in terms of *LLL (lifelong learning*).

[2] On the CEPES-UNESCO Conference, 12-14 October 2007 in the National Romanian Report there has been presented the impact of the demographic factors on the higher education institutions. C. Suciu, V. Ghețău, M. Roman, *Romanian Report*, October 2007



(1) 2003.
(2) 2002.
The mean number of years that a newborn child can expect to live if subjected throughout his/her life to the current mortality conditions (age specific probabilities of dying).

Source: "Europe in Figures" — Eurostat Yearbook 2006-07, p. 59.

Figure 6. Life expectancy at birth, EU-25.

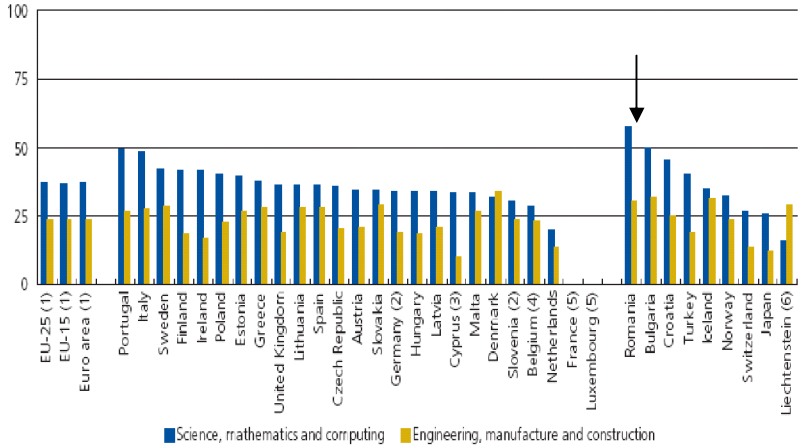
Gender gap suggests that the life expectancy for women is also higher in Romania. That means a new paradigm in terms of a new life style that has to change mentalities. This would be supported by age management and lifelong learning programmes. It is essential for supporting *Romania's convergence* in terms of lifelong learning to *invest in human* and *intellectual capital*, considered to be an important, efficient and effective *investment in intangible assets*. In order to support that investment we need more alternatives to finance LLL. Public-private partnership and business-universities should be supported since public expenditure on education has a very low level.

e. *The total number of graduates in mathematics, science and technology (MS&T)* in the European Union should *increase by at least 15%*.

The Lisbon target established that the number of graduates in *mathematics, science and technology (MS&T)* in the European Union should *increase by at least 15%* until 2010. According to the last Report of the *European Union Commission* from the 3rd of October 2007, the average rate of this indicator has been considered satisfactory. It is estimated that, if this rate is preserved, in 2010, in Europe there will be more than one million graduates from these fields. The best performances are registered in countries such as: Ireland, France and Lithuania. In 2002, at the European level, there have been adopted a special *Resolution on LLL and for core competences*[3].

[3] Council Resolution on lifelong learning of 27 June 2002, Official Journal C163/01 of 9.7.2002

The Recommendation of the European Parliament and of the Council of December 2006[4] and the Report from 2007 had highlighted the need to introduce a new set of indicators that include as key competences for LLL: competences in reading literacy, mathematics and sciences; competences in foreign languages; competences in ITC; civic competences; competences of "*learning to learn*". Regarding the competences in mathematics and science, Finland is a top coutry in Europe, follwed by Netherlands. The countries with the highest progress on this indicator are Malta, Lithuania, **România**, Cipru, Poland and Latvia. In 2004 Romania ranked first according to the *proportion of women among tertiary students, involved in science, mathematics and computer (% of total number of tertiary students in each field)* - Figure 7.



(1) Excluding France and Luxembourg.
(2) Excluding ISCED level 6.
(3) Most tertiary students study abroad and are not included.
(4) Excluding independent private institutions; excluding the German speaking community.
(5) Not available.
(6) Science, mathematics and computing, 2003.
This indicator presents the percentage of women among all students in tertiary education irrespective of field of education and among all students in the fields of mathematics, science and computing and in the fields of engineering, manufacturing and construction; the levels and fields of education and training used follow the 1997 version of the International Standard Classification of Education (ISCED-97) and the Eurostat manual of fields of education and training (1999).

Source: "Europe in Figures" - Eurostat Yearbook 2006-07, p. 92.

Figure 7. Proportion of women among tertiary students,
2004 (% of total number of tertiary students in each field).

In order to illustrate the importance of investment in human capital with a high level of qualification and competence as a key factor for Romania's convergence, we consider it is important to look at data regarding Ph.D. students (Table 3).

[4] Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning.

Table 3

Ph.D. students, % of female Ph.D. students, % of Ph.D. students in science, mathematics and computing % of Ph.D. students in engineering, manufacture and construction , 2004

Country	% of female Ph.D. students	% of Ph.D. students in science, mathematics and computing	% of Ph.D. students in engineering, manufacture and construction
ROMANIA	51.4	10	16.2
EU-25	46.6	21.3	16.4
EU-15	47.4	22.0	14.9

Source: "Europe in Figures" - Eurostat Yearbook 2006-2007, p. 245.

In Romania, the percentage of Ph.D. students in mathematics, science and computer is 10% that is much lower than the average value for EU-25 (21.3 %) and EU-15 (22%). This gap is important in convergence terms mostly regarding the Lisbon target. But it can be seen that for engineering, manufacturing and construction, data are quite close (16.2% in Romania and correspondingly 16.4 for EU-25 and 14.9% for EU-15 on the average).

After passing through Romania's position according to the five Lisbon targets established by the European Commission to be met by 2010 we consider that it is important that Romanian policy makers should get as close to these targets as possible in order to expect a medium and mostly long-term *catching-up* in terms of education and training convergence.

Intangible assets and intellectual capital have a key role to play mostly in the context of a knowledge-based economy and society.

9.1. Intangible Assets and Sustainable Competitive Advantage in a Knowledge-Based Society

In a speech at the *Harvard University* in 1943 Winston Churchill observed that *"the empires of the future will be empires of the mind."* He might have added *the battles for talent,* as it is suggested in a paper from *The Economist (*"A survey about talent: The battle for brainpower*"*, in *The Economist,* Oct. 5th 2006). The old battles for natural resources are still with us. But they are being supplemented by new ones for talent not just among companies but also among countries. For both the battle for talent and "*brains power"* are crucial for the "*balance of power*". Our world is a world of *brainpower*. Industries such as microelectronics, biotechnology have no natural geographic home and will be located wherever someone organizes the *brainpower* to catch them (P. Krugman, 1994, p. 24). This explains why many international organizations focus on the idea of *"putting people and their competence first"*. The *Competitive Intelligence approach* has developed a competitive analysis tool called "*intelligence mapping*" (A. Cook, 2002). It means to *map the intelligence resources* that can be found in a particular country/region/industry/company.

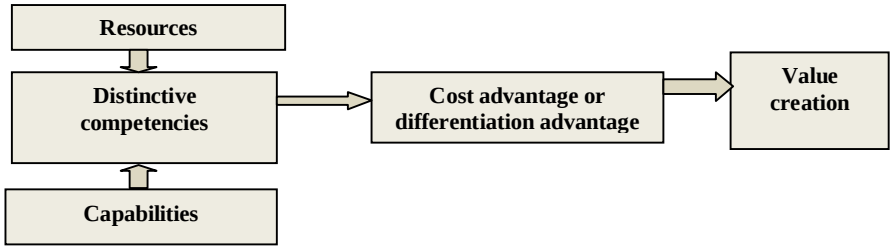
One of the most frequently used definitions of *competitive advantage* (M. Porter, 1990) suggests that it is possible to deliver the same benefits as competitors but at a lower cost (*cost advantage*), or deliver benefits that exceed those of competing products (*differentiation advantage*).

Cost and differentiation advantages are known as *positional advantages* since they describe the firm's position in the industry as a leader in either cost or differentiation.

There are many new approaches of competitive advantage such as those developed in: *evolutionary perspective* (*Nelson, Winter*, 1982); *knowledge management* (*Nonaka*, 1994; *Nonaka and Takeuchi*, 1995). Some studies and researches have demonstrated the role of intangibles in convergence and competitiveness (PIMS Associates, 1994; RCS Conseil, 1998) at company level, but also at the national and even European level. We will focus on the resource-based vision.

The resource-based view emphasizes that a firm utilizes its resources and capabilities to create a competitive advantage that ultimately results in value-added (Guzzo & Shea, 1992).

Sustainable competitive advantage allows for maintaining and improving the enterprise's competitive position in the market. It is an advantage that enables people/organisations/regions/countries to survive against competitors over a long period of time. It asks for a more enlarged vision that combines the resource-based and positioning views to illustrate the concept of competitive advantage (Figure 8).



Source: http://www.quickmba.com/strategy/competiti.

Figure 8. How the resource-based approach and the positioning views of competitive advantage can be combined.

A more enlarged and comprehensive vision of competitive advantage would explain why one firm could perform much better than another firm, even when they find themselves in the same national environment. Competitive advantage in the new economy shall only belong to those who will be well informed and wise enough to recognize that the true resources of the 21^{st,} century are knowledge, information, innovation, creativity and intellectual capital. Interest for *intangible assets* has become higher and higher in the last decades. *Competitive advantages* based on intangibles assets is also a problem of combining resources (both tangible & *intangible*) in a very distinctive way by organizations. In a knowledge-based society there are four *key interrelated dimensions of competitiveness:*

a. *Resources and inputs* (R&D investment, technology acquisition etc).
b. *Intangible assets* built by combining resources. This can lead to specific *outcomes* such as: *knowledge, patents, brand names, reputation, networks*.
c. *Management of change* - one of the most important levels for implementing a dynamic view of organizational change.
d. Development of *competitive advantage, efficiency and effectiveness* as key sources for performance both at the macroeconomic and microeconomic levels.

More and more *the main sources of competitive advantage have become intangible assets.* According to the new vision supported by *endogenous growth theory* and other modern approaches, traditional factors of production (natural resources, labour and capital) have diminished their significance. At the same time the importance of intangible assets, like information, knowledge and creativity has increased. Intangible investments are important factors of competitiveness and convergence.

While land, capital and labour all follow *the law of decreasing returns*, *knowledge and information enjoy increasing returns* instead. The consequences of these are staggering. Any small progress in the competitive battlefield can now cause unpredictable avalanches of change in the competition landscape.

The *intangible economy* is not synonymous with information and knowledge economy. The intangible economy is seen as *the triumph of bits over atoms* (Negroponte, 1995). This is an oversimplification. More importantly, the intangible economy transcends the opposition between bits and atoms the same way that quantum physics transcends the opposition between particles and waves (*econophysics perspective* belongs to *the science of complexity*).

In order to understand better the intangible economy, some authors propose to approach it from three different perspectives (Goldfinger, 1994):

- *Demand perspective*: intangible artefacts; final output for consumption.
- *Supply perspective*: intangible assets, used by firms to establish and maintain their competitive position. They include: brand, intellectual property, the human capital, research and development information and know-how.
- *Economic system perspective*: an interrelated set of trends and forces that affect all economic activities, changing the nature of economic transactions and market structures.

In order to use intangible assets effectively and efficiently as *new engines of wealth creation in a knowledge-based society* we have to move away from previous engines of the industrial economy, which itself replaced the agricultural economy.

The topic of *intangible assets* is addressed by various disciplines including accountancy, information technology, sociology, psychology, human resource management, training and development (Bontis, 2002) as well as management of research projects. In the past decades there have been many debates about methods for the valuation or measurement of intangible assets.

Intangible assets are defined by Arthur Andersen as: "*…resources controlled by the enterprises which possess the following attributes: non physical in nature; capable of producing future economic net benefits; protected legally*" (Arthur Andersen, 1992). *Intangible assets constitute almost 80 percent of the stock market value of modern corporations. Accenture*, a management consultancy company, has established that *intangible assets* have shot up from 20% of the value of companies in 1980 to around *70%* today.

McKinsey makes a similar point in a different way. The consultancy has divided American jobs into three categories:

- "*transformational"* (extracting raw materials or converting them into finished goods);
- "*transactional"* (interactions that can easily be scripted or automated);
- "*tacit"* (complex interactions requiring a high level of judgment).

McKinsey points out that over the past six years the number of American jobs that emphasize "*tacit interactions*" has grown two and a half times as fast as the number of transactional jobs and three times as fast as employment in general. These jobs now make up some 40% of the American labour market and account for 70% of the jobs created since 1998 (McKinsey , *Skills shortage threatens the UK future*, http://www.martinfrost.ws/htmlfiles/skills_shortage.html).

The *real wealth of nations and organizations* has to be sought in *people, their knowledge and skills*, internal processes and the company's reputation. Moreover, there have been several projects, aiming at developing indicators for the knowledge-based economy (*Brusoni, et al., 2002, Eustace, 2003*). An important category of projects deals with measuring the intangible assets.

2.1. How to measure intangible assets?

It is obvious that *the importance of intangibles* is neither a necessary nor a sufficient condition for measurement. Stewart (2001, p. 291) calls the phrase "*You cannot manage what you cannot measure", "…one of the oldest clichés in management, and it's either false or meaningless. It's false in that companies have always managed various categories of resources such as: people, morale, strategy, etc., that cannot be actually measured. It's meaningless in the sense that it seems that everything in business – including people, morale, strategy, etc.–eventually shows up in someone's ledger of costs or revenues.*" More and more "*an ever increasing share of GDP resides in economic commodities that have little or no physical manifestations*" (Youngman, 2003: p.7). The value of a notebook is not in the physical weight of the product itself (the material substance). The real value lies in the knowledge and skills of the people who designed and made the products, and in *the marketing power* of the companies to sell the products. These are all *intangible assets.*

At the European level *Eurostat* has developed a *classification proposal concerning intangible investments*, in association with national statistics institutes, in particular with *CBS, Statistics Netherlands*.

There are a lot of methods used to measure intangibles. Overviews by Sveiby (2002), Bontis (2001), Bontis *et al.* (1999), Luthy (1998), Petty, Guthrie (2000) and Andriessen (2004) identify over 30 different methods. The enormous amount of methods is probably the result of the fact that "*Intangible Assets and Intellectual Capital research has primarily evolved from the desires of practitioners*" and progress has been made in creating sophisticated measurement tools and methods (Bontis, 2002, p. 623).

Now we briefly present four of the main methods used for measuring intangibles (Luthy, 1998 and Williams, 2000*)*:

- *Direct Intellectual Capital Methods (DIC)* estimate the monetary *value of intangible assets* (called symbolically value and expressed in monetary units*)* by identifying its *various components*. Once these components are identified, they can be directly evaluated, either individually or as an aggregated coefficient.
- *Market Capitalisation Methods (MCM)* calculate the *difference between a company's market capitalisation* and its *stockholders' equity* as the value of its intangible assets.
- *Return on Assets Methods (ROA)* average *pre-tax earnings of a company* for a period of time *are divided by the average tangible assets* of the company. The result is a company ROA that is then *compared with its industry average*. The difference is *multiplied by the company's average tangible assets* to calculate *an average annual earning from the intangibles*. Dividing the average earnings by *the company's average cost of capital* or an *interest rate*, one can derive an *estimate of the value of its intangible assets.*
- *Scorecard Methods (SC).* The various components of intangible assets or intellectual capital are identified and indicators and indices are generated in scorecards. *Composite indexes* may be produced from several indixes.

The methods offer *different advantages* and *disadvantages*. The methods such as ROA and MCM are useful in merger & acquisition situations and for stock market valuations. They can also be used for comparisons between companies within the same industry. By translating everything into money terms they can be superficial. Based on some of these methods there have been many studies dedicated to the estimation of intangible assets mostly for SMEs (Table 4).

Much of the international research that has been done in this area is considered theoretically interesting by many people, but unfortunately impossible to be applied and to become useful for managers. It is no problem to design indicators, the problem is how to control and interpret them.

The research within this field has brought forward some interesting Swedish projects (Johansson & Nilson 1994) at Ericsson and in the public sector, Telia[5]. As some best practice examples have proven it is possible to create superior share holder value by not focusing on tangibles, but on *intangible assets*.

Depending on an author perspective any indicator is subject to a large number of possible interpretations, so the coherent conceptual framework is the base that must be built first.

[5] *Telia Statement of human resources* 1994 in *Journal of HRCA* vol 1. No 1.

Table 4.

Estimation of the % represented by ten major intangible assets for an SME, from UK, in 2002, in %

Intangible Separable Assets	**Metric used**	**Internally estimated value**
1.Patents	rent generation licences	10
2.Brands	cost of replacement	10
3. Standard software	cost of selling	5
4. Structural capital (databases, clients, files)	cost of replacement	10
5. Knowledge portofolio	cost of replacement	15
6. Non-standard software, methodologies	cost of replacement	5
7. Human capital	cost of acquisition in mature business	10
8. New products and services	cash flow generation	20
9. Market niches resulting from first mover advantage	cash flow generation	10
10. Reputation	transaction costs reduction towards clients, human resources	5
TOTAL		**100**

Source: Pierre Buigues, Alexis Jacquemin, Jean-Francois Marchipont, *Competitiveness and the Value of Intangible Assets*, Edward Elgar Pub, 2001, p. 34.

2.2. Investment in intangible assets and non-financial measures

When a company invests in material assets like machines, or computers, the money is paid out of liquid funds, and a corresponding amount is booked as an asset on the balance sheet under a heading like "*machinery*". In accounting terms, there has been a negative cash flow, but no expenditure. The cost is incurred gradually, as the asset is depreciated.

When a company invests in an *intangible asset* like *education & training* or *a research program* or an entry to a new customer segment, it is not generally permitted to record such costs as assets on the balance sheet. Both types of investment are inspired by the same motive: to achieve higher profitability on long term. The difference in accounting treatment, however, is very confusing and is made more so by the fact that the "*cost"* of *intangible investments* can take forms other than direct payments. It may take the form, for example, of accepting an assignment that yields little cash revenue but has great publicity value, or seems likely to enhance competence. The *intangible asset* is *"financed*" by "*invisibles*". Expenditure on R&D generates value-added, which is clearly owned by the company, so it is reasonable to regard such expenditure as investment. True, the economic value is uncertain, but the same can be said of any investment, including the value of city centre office buildings. Many authors insist that *training and education costs* should be viewed as investments. When individuals pay for their own education, they are investing in their own personal human capital, but when such education is paid for by the company, the link between payer and asset seems to be broken. The company is paying for an asset, it will not own. Individual

competence is "*owned"* by individuals, not companies so, from the company's point of view, money spent on training employees should be treated as a cost, not an investment. It is tempting to try to design a measuring system equivalent of double entry bookkeeping with money as the common denominator. We consider that in the case of intangible assets we should break with exclusive financial measures. If we measure the new with the tools of the old, we will not "see" the new. Any measurement system is limited by *Heisenberg´s uncertainty principle* (1927) which says that it is impossible to measure simultaneously the speed and the position of particles.

The physicist Bohr (opposed by Einstein) argued that this means that the observer is always involved in the measurement and that is not always easy since the physical world does not have well-defined attributes. If truth is in the eye of the beholder in the physical world it is even more so for the world of business. There is no difference between money measures and other measures. Both are uncertain and all are dependent on the observer. There exist no "*objective*" measures. The 500-year-old system of accounting sheds little light on the vital processes in organizations whose assets are becoming largely non-monetary and intangible. We consider that within *a knowledge-based organization* there is no comprehensive system that uses money as the common denominator and at the same time is practical and useful for managers. Knowledge flows and intangible assets are non-monetary in their nature.

2.3. Intangible Assets Monitor Framework

Sveiby proposes a model based on *three families of intangible assets*:

- *external structure* (brands, customer and supplier relations);
- *internal structure* (the *organization*: management, legal structure, attitudes, R&D, software);
- individual competence (education, experience).

And now a few defining elements for each of these parts:

- *External structure* consists of relationships with customers and suppliers, brand names, trademarks and reputation, or "*image*".
- *Internal structure* consists of a wide range of patents, concepts, models, and computer and administrative systems.
- *Individual competence* is people's capacity to act in various situations. It includes skill, education, experience, values and social skills. People are the only true agents in business; all assets and structures, whether tangible or intangible, are the result of human action. Competence cannot be owned by anyone or anything but the person who possesses them.

This "*family-of-three"* model and corresponding theory about measuring intangible assets was developed by a Swedish working group in 1987 and published in a report in Swedish language, (Sveiby ed. 1988) and later in a book (Sveiby ed. 1989). The *Konrad theory* has since become widely used in Scandinavia.

More than 40 Swedish companies measured and reported their intangible assets according to these principles in 1995 (Öhman 1996). The theory was further developed for management a information purpose which is called the *"Intangible Assets Monitor"*, (Sveiby 1997a). An internationally well-known approach is the "*Balanced Score Card*" (BSC-Kaplan R.S., Norton, S., 1996), developed in the USA around 1990, independently from the Swedish efforts at the time. BSC is not designed specifically to measure and report intangible assets, only to take a more "*balanced view"* on internal performance measurement. There are some similarities between the two theories. Both theories suggest that non-financial measures must complement the financial indicators, mostly in the case of intangible assets. But there are also some important theoretical differences.

The *Intangible Assets Monitor* is based on the notion of people as an organization's profit generators. The profits generated from people's actions are signs of that success and human actions are converted into both tangible and intangible knowledge "structures". These structures are directed outwards (external structures) or inwards (internal structures). These structures are assets, because they affect the revenue streams. BSC does not make this assumption. While the Intangible Monitor Asset is based on a *"knowledge perspective"* of a firm, Kaplan & Norton regards the notion of the firm as given by its strategy.

They just want managers to take a more "*balanced view*": "*The Balanced Scorecard complements financial measures of past performance with measures of the drivers of future performance. The objectives and the measures of the Score Card are derived from an organization's vision and strategy*." (Kaplan R.S., Norton, S., 1996, p. 8). In a knowledge economy people should not be regarded as costs but rather revenue creators and that knowledge or people's competence are sources of wealth creation. If the notion of people as revenue creators is accepted, we have to come closer to "*the source*" of their knowledge if we wish to measure it more accurately. In 1993 Leif Edvinsson combined the two theories, the Konrad conceptual framework and the Balanced Score Card. He applied a Balanced Score Card presentation format to the Konrad theory and published it in a supplement to *Skandia's Annual Report*, using for the the word "*Intellectual Capital*", instead of the accounting term *"Intangible Assets*" (Edvinsson L., Malone M.S., 1997). In Table 5 we briefly present a comparative analysis of these approaches.

Table 5.

The three conceptual frameworks for Intangible Assets compared

Sveiby	**Kaplan & Norton**	**Edvinsson**
Internal Structure	Internal Processes focus Perspective	Organizational Capital
External Structure	Customers focus Perspective	Customer Capital
Competence of Personnel	Learning & Growth Perspective	Human Capital

Source: Stam, 1999, Stam, 2001, p. 9.

Some authors have suggested the extension of the general framework to determine the value of intangible capital at the macroeconomic level. We will present now some *best practice examples of how to measure intangible assets at the macro level.*

2.4. Best practice examples of how to measure intangible assets

In the EU countries there are many examples of best practice. We briefly present now the case of *UK, Germany* and *Italy.* We consider that these best practices examples might be helpful for Romania on its concentrated efforts of convergence towards knowledge-based Europe.

- **United Kingdom:** The UK government's recognition of the growing importance of the intangible assets was first evidenced in a document from 1997 entitled *"The UK's Investment Performance: Fact and Fallacy*". In the *UK Competitiveness White Paper* published in December 1998 *"Building the Knowledge Driven Economy"***,** there is a special dedicated chapter on "*intangibles*". In its implementation plan of *the White Paper*, three projects form a sort of "*Intangible Program*".
  Each of the projects approaches different aspects of actions outlined in the White Paper: *Accounting and company law Project*; *MARIA Project*; *Research Project: Conduct long-term research into the measurement and valuation of intangible asse*ts. UK Government, in its attempt to improve methods of valuing the intangible assets, has created the *UK Accounting Standard Board for Intangible Assets (ASB)* and the *Institute of Chartered Accountants in England and Wales* (*ICAEW)*.
- **Germany:** In Germany, there is no specific *Intangible Assets (IA)* agenda. The German government put a strong emphasis on *investments in intangible assets* developments, but it seems that there is no "*Intangible Action Plan*" such as in *Sweden* or the *Netherlands***.** However Germany has several research groups that work on intangible issues. Such a *Working Group on Intangible Assets is The Fraunhofer-Gesellschaft* that deals with *intangibles and knowledge management* being involved also in the *MAGIC project (Measuring and Accounting Intellectual Capital).*
- **Italy** appears to be in the same situation as Germany. Investments in knowledge are said to be a top priority but there is no specific awareness nor specific policy and agenda concerning intangible assets. In May 1998 *CSELT* (*Centro Studi e Laboratori Telecommunicazioni spa)* has started an internal project called *"Intellectual capital*".

2.5. The role of managing intangible resources within a knowledge-based organization

A real *competitive knowledge-based organisation* has to integrate the issues of intangibles assets within and to focus on:

- the organisation's project and the quality of its knowledge creation and development;
- the organisation's image, its brand impact and the singularity of its identity and strategy;
- *the capacity to activate human resources on long-term*.

Management of Intangible Resources (MIR) depends critically on: who manages the knowledge capital; the extent to which the management of knowledge capital can generate profits; by whom and to what extent trade in knowledge assets can take place.

Organizations that use their knowledge as a source of competitive advantage are called *knowledge-based organizations***.** Knowledge has become the primary ingredient of what we do, buy, and sell. MIR have to articulate three components: resources and competences; functions; processes. *Intellectual capital* is at the heart of the MIR scope.

3. Intellectual capital as the engine of convergence and development in new economics and knowledge-based society

The concept of intellectual capital is not new; in fact the economist Nassau mentions "*intellectual capital*" as an important factor of production in his book, published more than 150 years ago in 1836. The term "*human capital*" was first introduced by Theodore Schultz, Nobel Prize winner . In 1963, Schultz was writing about the necessity of *investments in education* in order to increase the agricultural productivity in the USA. In 1975, Gary Becker developed *a theory of human capital*, which stated that the level of education and the experience of a person add up as determinant factors of their income.

Economists highlighted the importance of intellectual capital as a production factor in comparison to traditional economic assets. As illustrated in the previous chapters of this book there are two theories regarding economic growth: the neo-classical theory of exogenous growth and *the endogenous growth theory.* Human capital is differently reflected in the *endogenous model of economic growth and development*. As an example, *endogenous growth model* states that the total level of output is defined as a function dependent on human capital accumulation. On the long run, the permanent growth is possible only if the human capital stock modifies virtually without limits. But in the last decades this perspective has been enlarged by including the concept of intellectual capital that also includes human capital but not only that. In this context, the work of conceptual thinkers such as Horiyuki Itami and Karl-Erik Sveiby, dealing with intangible assets has enormous potential for contributing to business strategy. This pioneering work has been continued.

3.1. Defining Intellectual Capital as a "hidden value"

The complex nature of the concept of intellectual capital caused it to have so many definitions and to be perceived in different ways. Leif Edvinsson uses the

metaphor of *a tree* to describe the hidden value. "*Hidden value*" he says, "*is the root system for the tree.*" The quality of the fruit, which you can see, relies on the roots, which you cannot see. For current bookkeeping methods, *intellectual capital is invisible as the roots of a tree* are to a person standing on the ground. Yet it is this hidden part that determines the future success (*Leif Edvinsson*). Furthermore, it is the condition of the roots that defines how well a tree performs in the future. The essence of the debates around intellectual capital consists also in the ability to give *a holistic and integrative view* on organizational development.

The theoretical roots of intellectual capital can be traced back to two different streams of thought called: the strategic stream and the measurement stream:

1. *The first one* studied the creation and use of knowledge, as well as the relationship between knowledge and success or value creation.
2. *The second* focused on the need to develop a new information system, measuring non financial data alongside the traditional financial ones.

In general *intellectual capital* includes *all intangible resources that are available to an organization, that give a relative advantage, and which in combination are able to produce future benefits*. In order to measure and manage intellectual capital, it is important to identify more precisely its different components. Comparison of several intellectual capital models (Table 6) shows us that many of them are based more or less on the same classification (Stam, 1999, Stam, 2001).

Table 6

Comparasion of intellectual capital models

	Intangible Assets Monitor (Sveiby)	Skandia Navigator (Edvinsson)	Intellectual Capital Index (Ross)
Human Resources	Individual's competences	Human Capital	Human Capital
Organizational Resources	Internal Structure	Process Capital	Infrastructure Capital
Relational Resources	External Structure	Customer Capital	Relational Capital

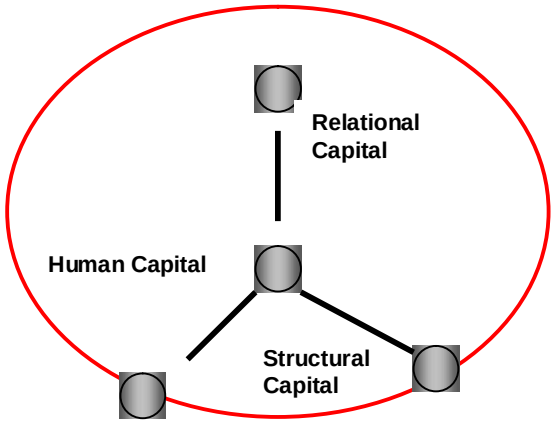
Source: Stam, 1999, Stam, 2001, p. 10.

The logic of distinguishing models of intellectual capital (called also the *taxonomy of three)* is that intellectual capital is the product of interaction of these three different classes of intangibles: human resources, organizational resources and relational resources (Roos, D., 2003). Now we will explore the concept of intellectual capital, and separate its different components.

3.2. Structure of Intellectual Capital

As a general perception, intellectual capital has three components: human capital, structural capital and customer (relational) capital (Figure 9).

- *Human Capital*, comprising the competence, skills, and intellectual ability of the individual employees;
- *Structural Capital*, including processes, systems, structures, brands, intellectual property and other intangibles that are owned by the firm but do not appear on its balance sheet;
- *Relational Capital*, which represents all the valuable relationships with customers, suppliers and other relevant stakeholders.



Source: http://www.geocities.com/kstability/learning/knowledge/intellectual.html

Figure 9. Structure of intellectual capital.

A closer look at each of these three components of intellectual capital can help to identify the problems and opportunities associated with managing.

- *Human capital* depends on the competence, intellectual ability, and attitudes of the organization's members. It is usually described as the gathered knowledge, skills and experiences that a company's employees possess. In new economics human capital is considered to be the company's most valuable resource, in any case when it comes to future value creation. Human capital is individual and cannot be owned by the company, nor can it be copied by other competitive companies. When a company invests in human capital, it increases its own value, gaining a sustainable long-run competitive advantage. Human capital has also been defined on an individual level as the combination of these four factors: genetic inheritance; education; experience; attitudes about life and business. In addition to individual capabilities, human capital includes *dynamics* of a *learning organization* in a changing competitive environment, its *creativity*, and *innovation potential*.
- *Structural capital* represents the infrastructure of human capital, including the *organizational capabilities* to meet market requirements. Structural capital is the part of intellectual capital that the company has in control. Infrastructure includes key elements like *management philosophy, corporate culture, management processes* and reach of *information technology systems*

and *networking systems*. Structural capital is often misinterpreted as consisting of computer hardware or equipment which are only tools already registered in the books as assets.

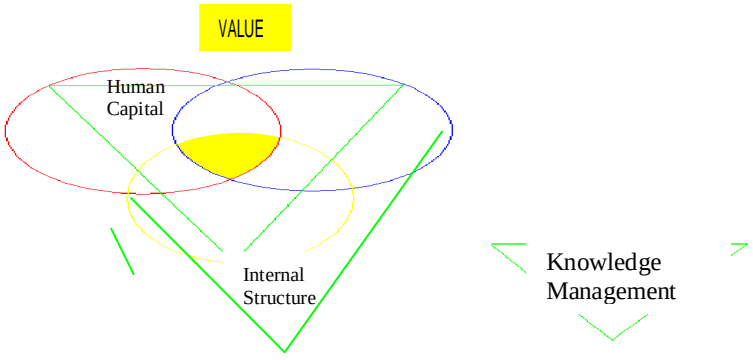
- *Relational capital* is represented by the company's relations to its stakeholders.

Stakeholders are those groups in the organization's environment, who have specific interests in the organization's activities. They can be customers, suppliers, media, competitors, the stock market, the government etc.

Many companies now equate their *competitive advantage* with their capacity to deliver complete customer satisfaction (making sense of the so-called *customer capital*). Since products are changing, and so are consumers, companies will have to make great efforts to improve and maintain good relationships with their clients. Companies should empower employees to help customers learn about the products and also hold product seminars to provide customer education. Organizations in their turn can learn a lot from customer, supplier and community feedback. They can develop call centres to interpret customer complaints and creating research and development alliances to generate ideas for new products. Some of these relationships can be converted into legal property such as trademarks and brand names. Their value is primarily influenced by how well the company communicates and transfers its knowledge to stakeholders.

3.3. The value platform model

Intellectual capital is traditionally defined as consisting of three parts covering the human aspects, the intra-organisational structures and the external environment. According to *the value platform model* (Figure 10), intellectual capital is the intersection of all three dimensions that form the basis for value creation. Even when two dimensions are very strong, the weak or inadequately directed dimension disrupts the value creation process.



Source: http://www.moyak.com/researcher/resume/papers/knowman.html.

Figure 10. The value platform model.

As we will illustrate further the management of intellectual capital means to focus strategically on different dimensions of intellectual capital.

The adopted strategy for *managing intellectual capital* varies considerably depending on the company's branch and strategic decision making processes. A common feature, however, is that a company's strategy often relies heavily on one particular dimension of its intellectual capital, which it supplements with a second dimension, while largely overlooking the third. This setting reveals both the strengths and most essential areas of development in intellectual capital. The various potential combinations are highlighted by a matrix presented in Table 7.

Table 7

The matrix that highlighted the various potential combinations and dimension of its intellectual capital

		Primary Intellectual capital		
		Human Capital	Internal structures	External structures
Secondary Intellectual Capital	Human Capital		Learning systems	Network of excellencies
	Internal structures	Systemized competence		Successful networking
	External structures	Competence without boundaries	Process efficacy	

Source: http://www.moyak.com/researcher/resume/papers/knowman.html

In pursuing *the holistic approach to organizational development*, it is important to also realize that companies differ in their environment, history, knowledge resources, management and competitive decisions.

3.4. Measuring Intellectual Capital

The measurement of the intellectual capital value may be either qualitative or quantitative. Indicators are often defined in such terms that they are not as black-and-white as normal quantitative measures. *Non-financial benchmarks* are crucial. The *IC-index* was first introduced by Goran Roos who suggested that the specific measurement of company by this index can be achieved by knowing: *the company's strategy, characteristics of the particular organization* and its *day–to-day operations (*Goran Roos, 1997). Annie Brooking makes a practical contribution to IC measurement by offering three measurement models (Annie Brooking, 1996). She defines IC as the combination of four components: *market assets, human-centered assets, intellectual property assets and infrastructure assets*.

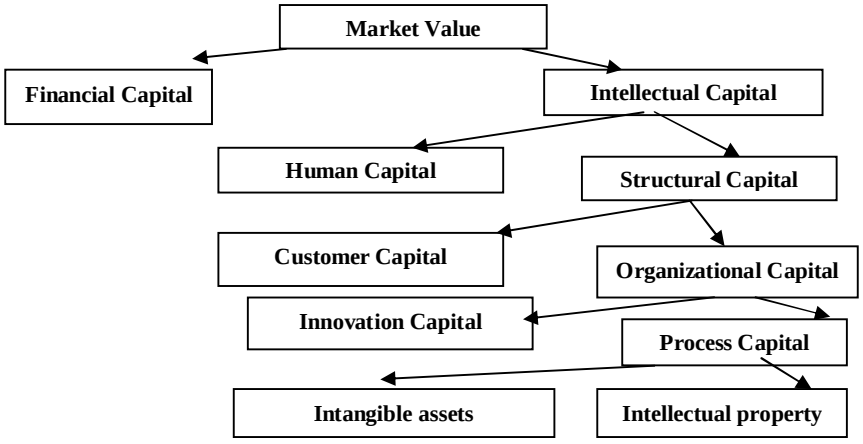
Brooking offers three methods of calculating a dollar value for the IC: the cost approach which is based on assessment of replacement cost of the asset; the market approach which uses market comparable to assets value; the income approach which assesses the income-producing capability of the asset.

Measuring the intellectual capital has become the main domain of research for researchers since the 1990s. That is why we consider that it is necessary to provide briefly some of the techniques used to value intangible assets:

- *Relative value* - Bob Buckman (Buckman Laboratories) and Leif Edvinsson (Skandia Insurance) are supporters of this approach, in which progress, not a quantitative target, is the ultimate goal. Example: to have 80% of employees involved with the customer in some meaningful way.
- *Balanced scorecard* supplements traditional financial measures with three additional perspectives - customers, internal business processes, and learning/growth originated with a couple of *Harvard Business School* professors, used by Skandia.
- *Competency models* - By observing and classifying the behaviours of "successful" employees and calculating the market value of their output, it's possible to assign a dollar value to the intellectual capital they create and use in their work.
- *Subsystem performance* - Sometimes it's relatively easy to quantify success or progress in one intellectual capital component. For example, *Dow Chemicals* was able to measure an increase in licensing revenues from better control of its patent assets.
- *Benchmarking* involves identifying companies that are recognized leaders in leveraging their intellectual assets, determining how well they score on relevant criteria, and then comparing your own company's performance against that of the leaders.
- *Business worth* - This approach is focussed on three questions. What would happen if the information we now use disappeared altogether? What would happen if we doubled the amount of key information available? How does the value of this information change after a day, a week, a year? Evaluation focusses on the cost of underutilizing a business opportunity, avoiding or minimizing a threat.
- *Business process auditing* measures how information enhances value in a given business process, such as accounting, production, marketing.
- *"Knowledge bank"* treats capital spending as an expense (instead of an asset) and treats a portion of salaries (normally 100% expense) as an asset, since it creates future cash flows.
- *Brand equity valuation* - Methodology that measures the economic impact of a brand (or other intangible asset) on such things as pricing power, distribution reach, ability to launch new products as "line extensions."
- *Calculated intangible value* - The intangible value compares a company's return on assets (ROA) with a published average ROA for the industry.
- *Micro lending* - A new type of lending that substitutes intangible "collateral" (peer group support, training, and the personal qualities of entrepreneurs) for tangible assets primarily used to spur economic development in poor areas.
- *"Colorized" reporting* - suggested by commissioner Steven Wallman. This method supplements traditional financial statements (which give a "*black and white*" picture) with additional information (which adds "*colour"*). Examples of *"colour*" include brand values, customer satisfaction measures, value of a trained work force.
- *Mapping and evaluating intellectual capital within clusters of firms.*

Similarly to hardware, software has introduceed the concept of *knoware*. There is no doubt that successful companies of today tend to be those that continuously innovate, take advantage of new technologies, and utilize the skills and know-how of

their employees. Intellectual capital includes those assets that are intangible in nature, such as human resources, relationships, culture, routines, and practices, as well as those that represent an intellectual property, such as brands, patents, trademarks and copyrights. *Skandia* has been *a pioneer* publishing *the first report on intellectual capital* as *a separate section* in its *1993 Annual Report*. Since *1994 Skandia* has published an *intellectual capital supplement with each year and half-year report*. *Dow Chemicals* followed Skandia's example in *1996* when published *"Visualising Intellectual Property in Dow"*, a report detailing the company's efforts to evaluate and use all its intellectual property. There are, however, signs in the business world that these reports will become more and more common in the near future. The purpose of these reports is to offer an understanding of what *the real value of the company is*. *Skandia* is considered the first large company to have made a coherent effort to measure knowledge assets. The *Skandia*'s value scheme (Figure 11) contains both financial and non-financial capital.



Source: N. Bontis, "Assessing knowledge assets: A review of the models used to measure intellectual capital", in *International Journal of Management Review*, Volume 3, issue 1, March 2001, p. 45.

Figure 11. Skandia's value scheme.

Edvinsson and Malone (1997) suggested 112 indices that can be used to evaluate IC. Goran Roos *has identified three generations of intellectual capital (IC) practices:*

- *first generation (scorecards like Skandia);*
- *second generation (IC indexes which focus on resources as well as transformations);*
- *and third generation (e.g., holistic value added).*

3.5. The Intellectual Capital Monitor at the micro level

Moreover the previously mentioned *taxonomy of three* has proven to be a sound basis for measuring and comparing intellectual capital on both firm (micro)

and national (macro) level. The starting point is considered to be Nick Bontis' proposed conceptualization (Bontis, 2002) of intellectual capital, in which he distinguishes between human capital, structural capital and relational capital. Based on this taxonomy *Sveiby was probably the first to use this family of three in "The New Annual Report, 1988"*.

Within *the Intellectual Capital Monitor* a second layer of classification has been added. Each of the three classes of intellectual capital is being monitored from three different perspectives in order to stress the importance and differences between *past, present and future developments:*

- *Assets (present)* - this perspective gives an indication of *the present power of an organization.* It provides an overview of *the current main assets.*
- *Investments (future)* - this perspective gives insight into *the future power of an organization.* To maintain/strengthen its power, organizations should invest in their potential continuously.
- *Effects (past)* - this perspective shows the extent to which the organization has made its intangibles productive during the past period.

A well-defined Intellectual Capital Monitoring consists of a combination of indicators from all three classes and all three perspectives. The windows and perspectives are combined in *a 3 by 3 matrix.*

Implementation of this *IC Monitor* means filling the fields with appropriate performance indicators. The power of this format appeared to be its simplicity, which makes it easy to implement, communicate and understand.

3.6. Intellectual Capital Management

There are three different origins of *the intellectual capital management* movement:

- *The first* was in *Japan* with the groundbreaking work of *Hiroyuki Itarni,* who studied the effect of *intangible assets* on the management of Japanese corporations.
- *The second* was the work of a disparate set of economists (Penrose, Rumelt, Wemerfelt, David Teece) seeking a different view or theory of the firm.
- *Finally*, there was a group of work consisting of authors such as Karl-Erik Sveiby from S*weden* who addressed *the human capital dimension of intellectual capital.*

The *field of intellectual capital management* is considered to be the *fourth generation* heading into a set of different directions:

- *The academic direction*: A better academic grounding of the claims made in the field as well as a better linkage to other existing bodies of knowledge.
- *The managerial direction*: Easier to use and better grounded tools with higher precision for assisting mangers to improve the effectiveness and efficiency with which they structure and extract value from the intangibles at their disposal.

- *The regulatory direction*: Better, transparent tools for disclosing intangibles in a way that complements existing financial accounts and that is acceptable to the accounting profession.
- *The third sector direction*: The *Intellectual Capital field* is one of the few fields that is suitable to be used in not-for-profit organisations, public sector organisations, and so on. This gives sense to a whole stream of new thinking emerging in this direction.

Intellectual Capital Management allows for the identification of the effectiveness by which any organisation has developed its intangible (and tangible) resources. The *trends* are linked to *the strategic logic of the firm* and therefore to the type of resources and transformations that are fundamental for *the value creation of the enterprise*. Intellectual Capital Management has its origin in *Scandinavia*, a culture where businesses traditionally have had *a longer time horizon and an "engineering" bias* with its high emphasis on R&D. The literal translation of "*business"* from Swedish to English is *nourishment for life*. In English the word "*business"* seems to originate in "*busy-ness*!". *Intellectual Capital Management* has taken root to a substantial extent in Korea, Japan, China, Taiwan, Singapore, Sweden, Norway, Denmark, Finland, Canada and Netherlands and to some extent in Austria, Australia, Spain, Italy and Israel, whereas the rest of the world (including Romania) seems mostly to still observe this process.

We consider that it is necessary to create a web-based knowledge exchange regarding intangible assets and intellectual capital (and for sure the process of *Management of Intangibles & Intellectual Capital Management*). We mention as a best practice example "*Tribute*" that is *a web-based knowledge exchange* used to measure, manage and monitor Intellectual Capital inside an organization. *Tribute knowledge exchange* software focus on the idea of helping people to be able to realize how important it is to share their precious knowledge and experience with the communities, teams, projects and organizations they work with (as "*nobody is as smart as everyone*").

3.7. Best Practice examples for intellectual capital reporting on the macro level

In *Australia* and *Japan* both governments have developed *a common set of guidelines and standards for intellectual capital reporting*. In *Australia*, the government set up a "*Society for Knowledge Economics"*, which includes *the Institute of Actuaries of Australia* and *Microsoft Australia*. The first task of the society was to develop guiding principles aimed at the management and reporting of intellectual capital.

In *Japan*, the government proposed a new model for the *voluntary reporting of intellectual assets* that is expected to "[...] *have a big impact in the worldwide trend*. " In light of the developments in Japan and Australia '*Reporting intellectual capital to augment research, development and innovation in SMEs (RICARDIS*)'. "*RICARDIS Report"* urges Europe to take prompt action to stimulate intellectual

capital reporting by SMEs. Only a few countries in Europe have sought to make IC a standard part of the companies' annual reporting. In *Germany*, the accounting standard recommends that companies report their intellectual capital in the management report, although this is not an obligation. *Denmark* requires companies to disclose information about their human capital, if relevant to the economic activity, while in *Austria* reporting of human capital is now mandatory for all universities.

On the European level, the expert group makes the following *policy recommendations* to the Commission to improve identification, measuring and reporting of intellectual capital:

- to establish a *European Task Force* that facilitates the *development of intellectual capital reporting* and *management* in research intensive SMEs and acts as *a learning platform*;
- to produce *a practical guide on intellectual capital reporting* for research intensive by SMEs, banks and investors;
- to use *intellectual capital* reporting as *a criterion for public support* as a *tool for government agencies*;
- to conduct further research on new business model dynamics and the importance of intellectual capital;
- to set up *an international standardisation steering group* to facilitate the development of consensus-based standardisation of taxonomies, indicators, and intellectual capital statements for research-intensive SMEs;
- to encourage banks to develop new forms of finance for research based SMEs.

3.8. Intellectual capital of a nation and competitive advantage

Intellectual Capital of Nations is a concept that applies the principles of intellectual capital measurement and management on a macro-economic level, in such a way that it helps to give direction to future economic developments. *An intellectual capital of nations report* uses a system of variables (indicators) that helps to *manage the invisible wealth* and gives insight into *the hidden value of a country or region of countries*. This insight could help to develop policy in order to give direction to future economic developments. The concept of intellectual capital can be translated to macro-economic level because "*the stories of success of our societies and of our nations are mirrors of ourselves and our organizations*" (Edvinsson, 2002). The main difference is its level of application.

Debra Amidon was among the first to recognize the possibilities of applying intellectual capital on a macro-economic level (Amidon, D., 2001). The most rigorous work in this field until now is considered to be done by Nick Bontis who defines IC of Nations as "*the hidden values of individuals, enterprises, institutions, communities and regions that are the current and potential sources for wealth creation*" (Bontis, N., 2004: p. 4).

Examples of earlier IC of Nations reports are the IC report of:

- the State of Israel (Pasher, 1999),
- National IC Index (Bontis, N., 2004),
- IC report of Croatia (2002),
- IC reports in the Netherlands (EZ, 2000; EZ, 2002) (Kennisland, 2003).

Some countries have already started to include Intellectual Capital in their policy to position themselves better on the benchmarking methods dedicated to the knowledge-based economy:

- Denmark set up *a National Competence Council* for collaboration between the government and the business community and to map *the knowledge competitiveness* of Denmark. This led to the establishment of guidelines for *reporting IC*.
- In Norway, several initiatives have begun. The Norwegian cabinet is working on an initiative on the IC aspects of the public sector, and the Norwegian Association of Financial Analysts launched guidelines for reporting on knowledge capital in 2002. The local municipality of Larvik is prototyping both *annual IC reports* and *IC ratings* for its activities.
- In Austria, the government passed a law that makes it compulsory for all universities and colleges to publish an *annual knowledge capital report.*
- In Italy, the AIAF (Italian Association of Financial Analysts) explored a prototype to model intangible assets, and in 2005, financial analysts plan to classify companies on the basis of their level of IC disclosure.

Based on the international developments in this field the IC of Nations can be defined as *all intangible resources available to a country or region, that give relative competitive advantage* and which, in combination, are able to produce future benefits. For the measurement of the IC of Nations, the same model as on a firm level can be used. However, to make it applicable on a national level, the meaning of the classes of intangibles are translated to an aggregate level:

- *Human Capital* represents anything related to people (knowledge, education and competencies of individuals in fulfilling national tasks and goals). Education is '*the basic building block of human capital*' (Bontis, 2004: p. 7).
- *Structural Capital* represents the '*non-human storehouses of knowledge, which are embedded in its technological, information and communications systems as represented by its hardware, software, databases, laboratories and organizational structures*' (Bontis, 2004: p. 8).
- *Relational Capital* is the comparison of measures of one country against another, or of one period against another that gives meaning to the figures.

Although the intellectual capital is unique and can never be compared objectively, we can improve comparability by using the same conceptual models.

The *IC Monitor* has proven to be a sound basis for measuring intellectual capital on both firm and national level.

Indicators for intellectual capital in the EU

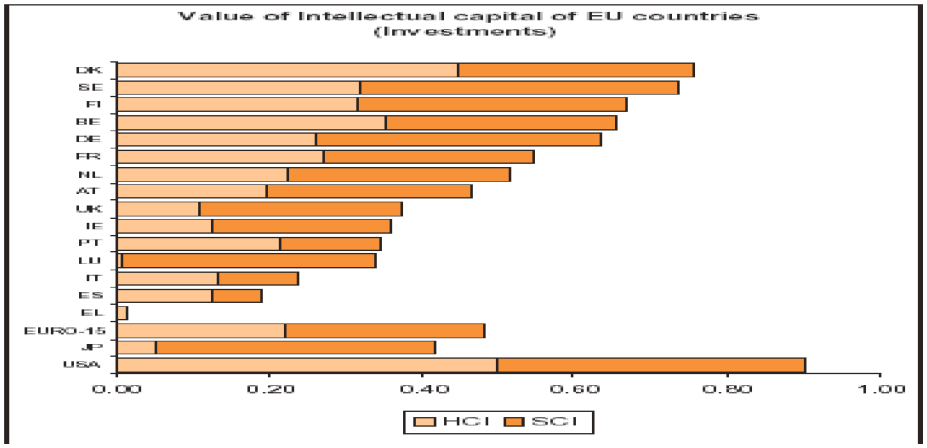
In order to achieve the *Lisbon goal* an *overall strategy* was formulated, aiming at:

- Preparing the transition to a competitive, dynamic and knowledge-based economy;
- Modernizing the European social model by investing in people;
- Sustaining the healthy economic outlook and favourable growth prospects by applying an appropriate macroeconomic *policy mix*.

The Lisbon Agenda gives an indication of the kind of intellectual capital the EU wishes to create in order to become competitive and dynamic. By *translating the Lisbon Agenda into indicators*, this results in *38 indicators for measuring the intellectual capital of EU countries*.

- Value of intellectual capital investment (*future-oriented approach*)

Europe as a whole has increased the value of its intellectual capital investments by 0.09 between 1999 and 2003. Most countries have increased the value of their intellectual capital investments, except for Ireland, Finland, the UK, Greece and the USA. In the UK, Greece and the USA there has been a lowering of investments in ICT between 2000 and 2003. For Germany (0.16), Italy (0.13), Spain and France (0.12) the growth in the value of investments has been the highest.



Note: HCI = Human Capital Investments, SCI = Structural Capital Investments.
Source: http://www.europa.eu.int/comm/eurostat/structuralindicators, p.16.

Figure 12. Investments in Intellectual Capital.

According to Figure 12, the Nordic countries (Denmark, Sweden and Finland) invest mostly in intellectual capital, whereby the focus of *Denmark* is on *human capital* and that of *Sweden* and *Finland* on *structural capital*. Denmark scores high on both investments in education and investments in labour market policy. Sweden and Finland score high on investments in R&D, being the only countries in the EU that exceed the rate of 3% of GNP. There is a group of followers that includes *Belgium, Germany, France, The Netherlands and Austria.* Belgium is second in terms of investments in human capital but its investments in structural capital are much lower, resulting in a fourth place. There is a group of laggards consisting of the *UK, Ireland, Portugal, Luxembourg, Italy, Spain* and

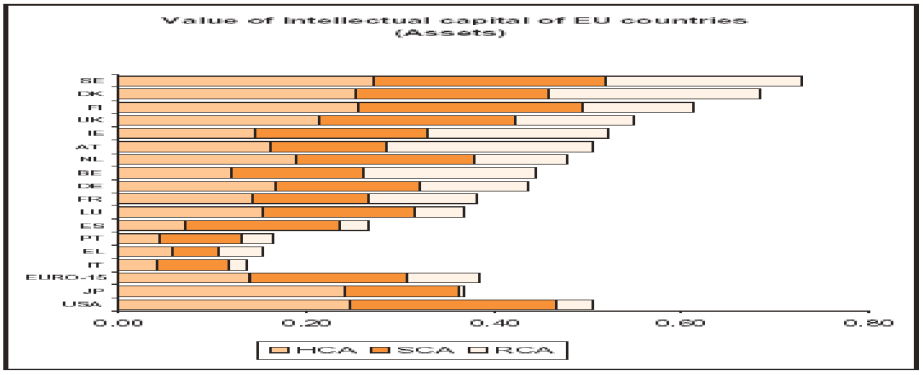
Greece. *Japan* scores high on investments in structural capital but low on investments in human capital. The USA have the highest values on both.

The average value of investments of the EU-15 is slightly higher than Japan's but substantially lower than the USA's.

- *Value of intellectual capital assets (present-oriented approach)*

This perspective gives an indication of *the present power of an organization/nation*. All countries have increased the value of their intellectual capital assets except for the USA. In the USA the employment indicators, the number of scientific publications and the number of patents has decreased, which explains a decrease in value of –0.005. Europe as a whole has increased the value of its intellectual capital assets by 0.05 between 1999 and 2003. Sweden has managed to achieve the highest growth in value (0.11). This is largely due to an increase in human and relational capital assets.

Human capital assets have increased as a result of progress in lifelong learning, number of researchers and employment. Relational capital assets have increased as a result of a rise in the number of foreign students and international outgoing telecom traffic. Second highest growth in value has been achieved by Finland and Ireland. In general we can conclude that the Nordic countries (Sweden, Denmark and Finland**)** perform considerably better than the others.



Note: HCI = Human Capital Investments, SCI = Structural Capital Investments.
Source: http://www.europa.eu.int/comm/eurostat/structuralindicators,p.16.

Figure 13. Value of Intellectual Capital in EU countries.

Figure 13 shows that the value of their intellectual capital assets is substantially higher than the value of a large group of followers (*Belgium, The Netherlands, Luxemburg, Germany, France, Austria, United Kingdom and Ireland*). Finally a group of laggards (Italy, Spain, Greece and Portugal) follows at considerable distance. This outcome is consistent with other comparable research and International Reports. The three most competitive European countries in the ranking of the *World Economic Forum* in 2004 is *Finland, Sweden and Denmark.*

Noticeable is that these three groups are geographically divided:

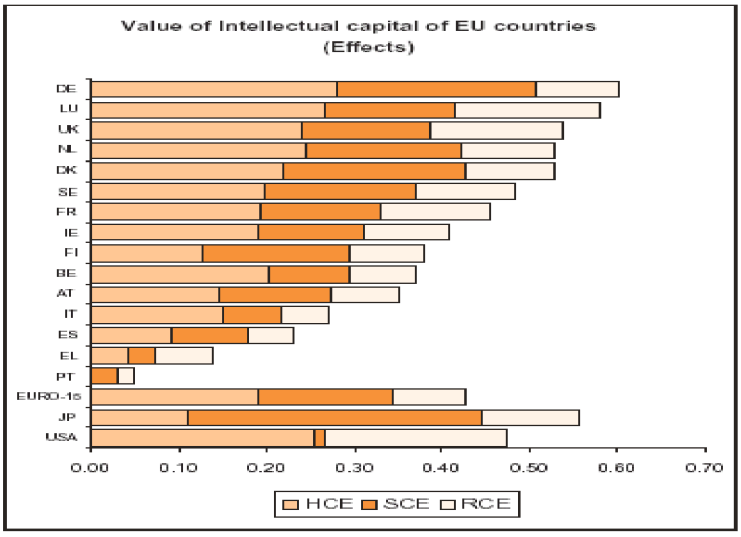
- the leading group consists of *northern European countries* (>54° latitude);
- the group of followers consists of *middle European countries* (45°-54° latitude);

- the laggards are all *southern European countries* (<45° latitude).

A possible *cultural explanation* for this could be that the Nordic countries throughout history have developed *an attitude of looking at the future*. In order to survive the long and severe winters they always had to plan their resources carefully.

- *Value of intellectual capital in the EU (past-oriented approach). Growth in IC Effects*

This perspective shows the extent to which the organization/nation has made its intangibles productive during *the past period*. Europe as a whole has increased the value of its intellectual capital effects increased by 0.06 % between 1999 and 2002. The greatest progress in value has been achieved by Denmark (0.10 %) mainly because of a substantial growth in relational capital effects: the export of services in Denmark rose from 16% of all exports in 1995 to 27% in 2002, and there was a substantial growth in the number of countries it collaborated with. Denmark is followed by France (0.08%) and Belgium (0.07%). Portugal is the only country where the value of intellectual capital effects has decreased, due to a relative decrease in labour productivity. It is striking that the ranking of the countries significantly differs from the previous two rankings (investments and assets). In this ranking Sweden, Denmark and Finland fall to 5th, 6th and 9th place, respectively. *High values of intellectual capital investments and assets* are no guarantee for *high intellectual productivity*. However, low values of intellectual capital assets do seem to be a guarantee for low intellectual productivity. It seems that *intellectual capital investments and assets are necessary, but not sufficient to make intellectual capital productive*. One explanation is that there is *a time lag* between investments, the creation of assets and the productivity of those assets.



Note: HCI = Human Capital Investments, SCI = Structural Capital Investments; RCI –Relational Capital Investments;
Source: IC EU REport 2004, p. 18.

Figure 14. Intellectual capital effects.

Related to the Lisbon agenda, *Germany* has the highest score, followed by Luxembourg. *Germany* has a high score on *labour productivity* as well as on *value added of knowledge intensive services, relative to GDP*. *Luxembourg* has the highest score on *labour productivity*. Germany also scores very high on the use of Internet. The high scores of Germany and Luxembourg reflect the strong emphasis of *the Lisbon Agenda* on improving social cohesion.

The social items on *the Lisbon Agenda* are often overlooked but are an integral part of it. Germany and Luxembourg are followed by the *UK, The Netherlands and Denmark. Denmark* scores very high on structural capital effects, especially the use of Internet, the birth rate of enterprises, but low on relational capital effects. A third group consists of *Sweden, France, Ireland, Finland, Belgium* and *Austria*. At the bottom there is the same group of countries found above: Italy, Spain, Greece and Portugal.

As a whole, the EU became better in making its intangibles productive. Moreover, if we calculate the ratio between assets and effects, we see that the EU is better in leveraging intellectual capital as compared to the USA. In the USA, one value unit of intellectual capital assets leads to 0.93 units of IC effects, while in Europe one unit of IC assets leads to 1.10 units of IC effects.

However, if we compare the EU with the USA and Japan we see that the value of its intellectual capital assets is considerably lower than in the USA and slightly higher than in Japan. This means that Europe still has a long way to go. In order to investigate *the impact of the Lisbon Agenda* this research will be repeated in the future. One could think there is a relationship between intellectual capital investments and wealth.

However, there is a significant statistical correlation between GDP per capita and investments in structural capital (0.531), not with investments in human intellectual capital. This means that richer countries do not invest relatively (per capita) more in human capital then poorer countries, although they will invest much more in absolute terms. There is also no statistical significant correlation between GDP and intellectual capital assets. There is no significant correlation between human capital & relational capital effects and GDP per capita. This indicates that the effects we are measuring are not only the result of intellectual capital, but also the effect of financial wealth. Our main findings with regard to the value of the intellectual capital of the EU-15 can be summarized as follows:

- *Investments in IC pay off* - as expected there is a strong and significant correlation between human capital investments and human capital assets (0.470) and also between structural capital investments and structural capital assets (0.686). So, countries that have a high value of intellectual capital investments also have a high value of intellectual capital assets.
- *Human capital and structural capital "go together"* - leading countries (Sweden, Denmark, Finland) have considerably higher value of both human capital and structural capital. Laggards (Spain, Portugal, Italy) have considerably lower value of human capital and structural capital. This supports the idea that human capital and structural capital are interdependent and mutually enhancing factors. They "go together" in the creation of intellectual capital. This is what Edvinsson (2002) calls the multiplier effect.

- *High value of IC is no guarantee for high productivity:* measurement of the extent to which intangibles are made productive reveal that *high values of intellectual capital assets are no guarantee for high intellectual productivity*. However, low values of intellectual capital assets do seem to be a guarantee for low intellectual productivity. It seems that intellectual capital investments and assets are necessary, but not sufficient to make intellectual capital productive.

One of the most recent paper regarding the methodology used to measure national intellectual capital is that signed by Dorota Weziak as a result of the research of November 2007 called symbolically *„How to measure the national intellectual capital: application for EU countries"* (Weziak., D., 2007). The method used by Weziak confirms the fact that, for the European countries, there are important connections between intellectual capital and GDP per capita. Weziak Report does not includ data for Romania. In the following paragraph we present some international comparative analyses that includ also Romania.

4. An international benchmarking based on human capital indicator including Romania

The enlargement of the EU towards the East has brought about much better opportunities and chances for investment in intangible assets for the new EU member states[6]. Human capital and the educational process of the population, plays a central role for the knowledge-based society. The *human resources indicator* provides a comparative overview of a country's human capital[7].

4.1. Methodological approach to the human resources indicator

A country's human capital cannot easily be '*measured*'. It is impossible to list the competence of a population as a whole at a macro-level and to assess it with regard to its relevance for the labour market. What is possible in fact is to compare *the qualification structure* of the respective countries on the basis of *formal education*.

The human resources indicator works like this. According to UNESCO *classification (ISCED classification*) education serves as a starting point for the *HR indicator*.

The indicator provides a comparative overview of the human capital in various countries. Due to the indicator focusing on formal qualification (initial education), further qualifications gained in further trainings cannot be taken into

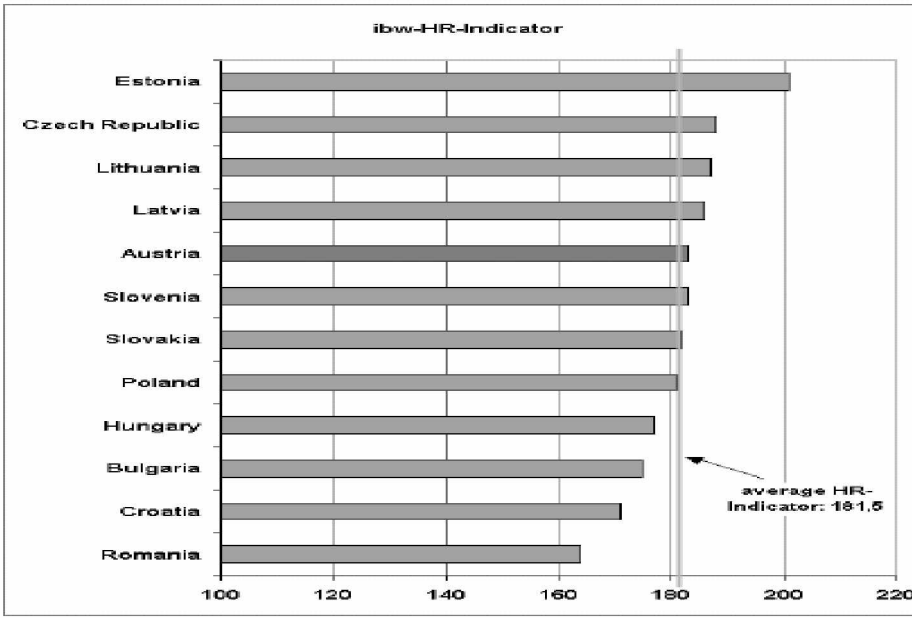
[6] This research brief is a short version of a study carried out by Kurt Schmid and Helmut Hafner: " Ein internationales Benchmarking anhand des ibw- Human-Resources-Indikators" IBW-Reihe Bildung & Wirtschaft Nr. 35, 2005. http://www.ibw.at/html/buw/BW35.pdf .

[7] Kurt Schmid, Helmut Hafner, *Human capital in the Central and Eastern European Countries. International benchmarking on the basis of the ibw's human resources indicator*, IBW-Research Brief – Issue No. 16 | November 2005.

account. The countries included for the compared analysis are: Bulgaria, Estonia, Croatia, Latvia, Lithuania, Romania, Slovakia, Slovenia, the Czech Republic, Hungary, Poland. The higher the HR indicator value is, the higher qualified the population is in terms of formal qualification. The HR indicator may be between 100 (meaning that the whole resident population's formal education is not above compulsory schooling) and 300 (meaning that the whole resident population holds a university degree or comparable qualification).

4.2. Romania's position on the international benchmarking based on the human resources indicator

In an international comparison, Romania comes last among the Central and Eastern European countries[8] (see Figure 15).



Source: Kurt Schmid, Helmut Hafner, *Human capital in the Central and Eastern European countries. International benchmarking on the basis of the ibw's human resources indicator,* IBW-Research Brief – issue No. 16, November 2005, p. 3.

Figure 15. HR indicator on country level.

Estonia heads the table with the highest value (201) of the HR indicator. The Czech Republic, Lithuania and Latvia come next. The third block is made up by

[8] Let us add an important note as regards the ranking. Countries or regions with similar index values display practically the same qualification level. Only at a difference of 7 or more points can we speak of significant differences between the countries.

Slovenia, Austria, Slovakia, and Poland. After Hungary and Bulgaria, Croatia and Romania come last. The absolute deviation between the countries with the highest and lowest indexes is 37 points; this shows that there exist distinct differences between the countries. Therefore, the human capital in these countries diverges significantly.

4.3. Regional benchmarking

The region of Prague tops the regional table, reaching 208 index points (Table 7). Estonia, Bratislava, and the Sofia regions follow. Vienna and Budapest come fourth, closely followed by Bucharest and the Brno region.

Table 7

Regional benchmarking based on IBW human resources indicator

NUTS-Region	NUTS-Code	HR-Indicator	Ranking
Praha	CZ01	208	1.
Estland	EE	201	2.
Bratislavský	SK01	201	2.
Yugozapaden	BG21	193	3.
Közép-Magyarország	HU1	192	4.
Közép-Magyarország	HU10	192	4.
Wien		**192**	**4.**
→ *Bucuresti*	RO08	190	5.
Centru	RO07	166	24.
Vest	RO05	165	25.
Sud-Vest	RO04	163	26.
Nord-Vest	RO06	162	27.
Sud-Est	RO02	161	28.
Sud	RO03	159	29.
Nord-Est	RO01	157	30.

Source: Kurt Schmid, Helmut Hafner, *Human capital in the Central and Eastern European countries International benchmarking on the basis of the ibw's human resources indicator,* IBW-Research Brief – issue No. 16 | November 2005, p. 4.

If we compare the *HR indicator*s of the respective regions, one sees first that capitals, other urban agglomerations and Estonia displays the highest values.

Moreover, *trans-regional clusters* can be identified, with a tendency *of West to East.* Another interesting point is that the range (the difference between the regions with the highest and lowest index values) is 51 points. This is a much greater divergence than the one in national comparison (37 index points). Thus, *regional variation of human capital is rather distinct*; and, there must be at least some countries that have high internal / regional variation of human capital.

For instance Bucharest ranks the fifth while the other regions of Romania are on the last seven positions – from 24 to 30). The range differences between its regions in Romania is 33 index points, while in the Czech Republic (30 index points). Croatia displays the highest range between its regions (48 index points). Hungary, Slovakia, and Bulgaria are almost in the same group (all reaching around 20 index points). Poland displays a difference of 14 index points. As for the Baltic States and Slovenia, no regional differentiation could be carried out due to the sheer size of the countries. This means that location potential regarding human capital depends heavily on regional circumstances. It is always the urban regions that reach the top index values within the respective countries.

The *HR indicator* is a crude measuring tool of *the education of a country's or region's population respectively*. When interpreting it, one has to consider that it aims at formal qualification and that it does not take into account any higher qualification gained from further training, or the quality of education and training. Vocational variants of education cannot be assessed due to restricted data.

As far as *employability and qualifications* to enter the labour market are concerned, graduates of vocational trainings can be assumed to be better adapted to the structure of the demand the labour market shows; lower youth unemployment in these qualification-oriented systems is also an indicator for this. The *HR indicator* is a stock figure and not a change flow ratio. Therefore it does not tell us anything about future changes in the qualification structures across Europe, or, generally speaking, the human capital of a country or a region. Such changes depend among other things on the demographic development, aspects of educational expansion, the quality of training, and, last but not least, on quality assurance and development of the national education systems.

In October 2007 the leaders of the human capital project from the Lisbon Council (Peer Ederer, Philip Schuller şi Stephan Willms) had published a *report regarding the human capital index in Central and Eastern Europe.* The study includes 10 member countries from this EU region and two countries that are not part of the UE: Turkey and Croatia. *Romania was on the 7th position according to this benchmarking (table 8).*

The study reveals that some of the countries that have become members of the UE recently are in the process of catching up with the regional UE-15 standards, according to *the Eurostat Reports*[9]; but in the case of other countries the differences as compared to the Western countries performances have been amplified. Regarding *investments in education*, the report suggested that Romania

[9] Eurostat, *Regional Gross Domestic Product in the European Union 2004*, in „*Statistics in Focus*" 104/2007.

is on the last positions (table 9). This conclusion is sustained also by the weak results obtained by the Romanian pupils on *PISA* and *TIMMS (Trends in International Mathematics and Science Studies)* tests that are in average with almost 30-50 points below the average of the other European countries. These issues and other important gaps regarding the educational system in Romania in the context of Lisbon objectives in education and training had been presented in paragraph 1.

Table 8

Human capital index in Central and Eastern Europe

Rank	Country	Value
1	Slovenia	22.3
2	Turkey	24.9
3	Lithuania	25.6
4	Czech Republic	26.3
5	Estonia	26.8
6	Latvia	28.2
7	**Romania**	**29.9**
8	Hungary	30.6
9	Slovakia	31.7
10	Bulgaria	32.7
11	Poland	34
12	Croatia	35

Source: Lisbon Council Human Capital Index, p.3

Table 9

Investment in human capital in 2006

Ranking	Countries	Value
1	Slovenia	156,081
2	Czech Republic	122,263
3	Estonia	114,021
4	Hungary	113,888
5	Lithuania	113,566
6	Croatia	96,465
7	Poland	95,338
8	Lithuania	93,463
9	Slovakia	75,468
10	Bulgaria	69,443
11	**Romania**	**64,379**
12	Turkey	61,375
	Average UE-14	242,772

Source: Lisbon Council Human Capital Index, pag.9

Regarding the way human capital is used, despite the fact that Romania is in the middle of this benchmarking (position 6 with a value of 48.5%), the result is not consider to satisfy the requirements covering the importance of this area. The way human capital is used is in a strong correlation with investment in humna capital: a high level of investments in human capital generate more easily jobs, fact that

generate new human capital accumulations. This is an additional argument that Romanian's competitive advantage has no longer to be interpretated with respect to the lower labour cost, but much more in a direct correlation with the competences, talent and the stock of intellectual capital and intangible assets.

5. Final remarks

Intangible resources and *intellectual capital* are essential pre-requisites for *sustainable competitive advantage* and long-run development. *Management of intangible resources* & *management of intellectual capital* are essential for *competitiveness and convergence, both at the micro and macroeconomic level.*

The chapter presents some new approaches and some best practices concerning *the role of intangibles & intellectual capital for competitiveness and for a sustainable long-run economic development*.

The new economy requires new methods of measurement of both tangibles and intangibles. Well designed indicators based on a coherent theoretical framework are like the words and the syntax of a language. It might help open-minded managers understand how the relationships between people look like and how profit can be made in their company.

Our organizations need more *creative space* and systems that support a more open dialogue that can contribute more to companies strategies supportive for a long–run sustainable competitive advantage.

Using *intangible resources* to create organizational value presents a significant *challenge* that has not yet been studied and published sufficiently in the Romanian literature.

Future work would have to make these dimensions operational in Romania and to conduct a methodological and empirical study based on knowledge sharing and dialogue in research interdisciplinary teams.

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