

## The Relation between Sustainable Innovation and Competitive Advantage: Romanian Perspective

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### Abstract

*Under the auspices of globalization, the competitiveness has to be reviewed from the perspective of some new organization structures of the international business environment.*

*In recent years, different approaches have been developed focusing on corporate **intangible resources**, competencies and capabilities as the main lever creating **competitive advantage**. Competitiveness has become a central issue in an increasingly open and integrated world economy. Successful economic development requires progress on multiple fronts simultaneously. Much discussion of competitiveness has focused on the macroeconomic side. The macroeconomics conditions are necessary, but not sufficient. Unless there is appropriate improvement at the microeconomic level, political, legal, monetary and fiscal reforms will not bear full fruit. So, an economy cannot be competitive unless companies operating there are competitive.*

*The European context requires the necessity for **Romania** to adapt itself to the conditions of the new economy and to the knowledge society, in which the competitive advantage is obtained by **innovation** and **knowledge**. Sustainable Innovation suggests that knowledge and innovation will be the key drivers of social and corporate sustainability in the years ahead.*

**Keywords:** competitive advantage, innovation, knowledge based society, knowledge management

### 1. Introduction

Under the auspices of globalization, the competitiveness has to be reviewed from the perspective of some new organization structures of the international business environment.

The task facing management is to create a new business design with which it can successfully compete for future performance and competitiveness.

### 2. Competitive advantage in the knowledge based society

According to Michael Porter, competitive advantage is at the heart of a firm's performance in competitive markets. The ability to produce innovative products and services at the global technology frontier using the most advanced methods becomes the dominant source of competitive advantage.

Following Porter's model we can identify **three stages of economic competitiveness**. First, there is *the factor-driven economy*, where basic factor conditions such as low-cost labor and access to natural resources are the

dominant sources of competitive advantage. Second, there is *the investment-driven economy*, where competitiveness is a result of increasing the efficiency of production and of improving the quality of the produced goods or services. Third, there is *the innovation-driven economy*, where the ability to produce innovative products and services at the global technology frontier using the most advanced methods becomes the dominant source of competitive advantage.

We live in a knowledge-based society where the economy is based on and fuelled by ideas, technology and capital – seen in a broad sense including many types of tangible capital. In new economics and knowledge-based society the focus is not on tangible resources like physical capital, but *on the intangible resources*. Thus market factor analysis becomes more complex and is based mostly on the competitive intelligence approach.

In a knowledge-based economy it is the *production of ideas*, nor goods, that is the source of economic growth. The reason that the new computing and telecommunications technologies are so economically revolutionary in their nature is that they allow ideas – in the forms of techniques, research results, diagrams, drawings, protocols, projects plans, chemical formulae, marketing patterns – to be distributed instantaneously and in a coherent way to anyone, anywhere in the world. *Intelligent competitiveness* suggests that intelligent organizations based on knowledge and information are those who might benefit on sustainable long-run competitive advantage.

Intangible resources are essential for sustainable competitive advantage and management of intangible resources is a central problem for a corporate competitiveness.

There are four dimensions of competitiveness based on intangible assets:

- *Resources and inputs* (R&D investment, technology acquisition)
- *Intangible assets* built by combining the resources - this can lead to specific outcomes such as: knowledge, patents, networks, reputation
- *Management of process change* – one of the most important levers for implementing a dynamic view of organizational change
- *Development of competitive advantage and microeconomic performance*.

By having superior intellectual resources, *an organization* can understand how to exploit and develop their traditional resources better than competitors, even if some or all of those traditional resources are not unique. Therefore, **knowledge** can be considered **the most important strategic resource** and *the ability to acquire, integrate, store, share and apply it the most important*

*capability for building and sustaining long-run competitive advantage.*

Today, **knowledge** is considered the most strategically important **resource** and **learning**, the most strategically important **capability** for business organizations. Business organizations are realizing that to remain competitive they must explicitly manage their intellectual resources and capabilities.

Many economists have argued that technological progress is really nothing but quality improvement in human beings. Some economists take even a broader view and speak of the 'production of knowledge' as the clue to technological progress. The production of knowledge is a broad category including outlays on all form of education, on basic research, and on the more applied of research associated especially with industry...invention and innovation.

### 3. Knowledge Management and Sustainable Innovation

In the actual society *knowledge management* is the conceptualizing of an organization as an integrated knowledge system, and the management of the organization for effective use of that knowledge. *Knowledge* refers to human cognitive and innovative processes and the artefacts that support them. The recent attractiveness of the term *knowledge management* appears to have been prompted by three major forces:

1. increasing dominance of knowledge as a basis for organizational effectiveness
2. the failure of financial models to represent the dynamics of knowledge
3. the failure of information technology by itself to achieve substantial benefits for organizations.

Knowledge management can be characterized by some features in the actual society:

- is a relatively new concept with a wide range of possible applications mostly in the content of new economics and knowledge-based society
- focuses on solutions that encompass the entire system: organization, people and technology
- any organization can use knowledge management to develop and improve their control and effectiveness
- the traditional view of knowledge management primarily focuses on information, whereas *the knowledge ecology* adds *the context, synergy and trust* necessary for translating such information into *actionable* knowledge.

*Managers in a knowledge economy* become facilitators of learning, mentors and coaches. *Their performance consists of their ability to create a learning climate in a team building spirit. Managers must balance knowledge generation with knowledge utilization.* A fresh approach is needed to the knowledge process – one that places people at its heart and that involves the integration of many learning and development process, operations and relationships such as to enhance

organizational effectiveness, adaptability and sustainability.

*Productive activities are based more and more on innovation.* Innovation implies making and implementing 'the new' or, as European Commission says "the capacity to assimilate and transform new knowledge in order to improve the productivity and to create new products and services". The innovation process is the only hope for ensure the high speed for technological changes into the productive processes involved by the social and economical changes that take place in entire world, being at the same time the premise for economic growth and economic development.

To manage better innovations than your competitors, using so called '*knowledge management*', becomes the main objective for each modern firm. The firms fail often because they are not following their competitors in developing new products and new improved production and distribution techniques. The success in the competition in the real world depends more and more often on the success in innovation management than on the success in adopting new adequate policies for prices or on the success in choosing the right decisions for the present technical possibilities.

Innovation is discovering new ways of creating value. Innovation serves as the lifeblood of many organizations whose survival and growth depend on developing new technology, products and services. A successful organization is a creative organization because creativity is the single most important contribution employees can contribute for its success. Innovation is of benefit only if it creates value.

**Sustainable innovation** is a new challenge for organizations. It is a process that should permeate the whole organization, in terms of its members, its tasks, its coordination mechanisms and its procedures. **Sustainable Innovation** suggests that *knowledge and innovation will be the key drivers of social and corporate sustainability in the years ahead.* It will be essential reading for managers and researchers in areas such as sustainability, innovation, knowledge management and organizational learning.

While many did not survive, there are examples of organizations that successfully added value. Some organizations have been able to come up with fresh ideas again and again leading to continuous revenue generation. Is there a secret or pattern to these company's successes? Innovation is the lifeblood of the modern competing organizational environment. In the fiercely competitive 21st century marketplace, innovative ability is essential for survival.

It is also remarkable the idea according to which the economic development and growth have as base the *human capital, the creativity and the innovation.* The technological progress implementation in the production process requires a certain know-how that can only be purchased by knowledge diffusion by "to learn while do you utilise" type processes. In this way appears a mutual feedback between the research and the employment level, based on a complementarily relation between the

work input engaged in the research activity and the economic development.

The new wealth of countries is considered to be people and thus investing in people and skills becomes crucial. It simply means investing in future. Investing in people includes investments in knowledge, skills and attitudes. One important ingredient of investment in people is considered to be investment in education. Educational and training have become crucial in the process dedicated to build a Europe of knowledge and a knowledge-based society.

In knowledge based society the strategies and policies dedicated to research, development and innovation are considered a priority. In European Union were adopted numerous measures and policies in order to sustain the research-development-innovation activities. A part of this measures are already implemented, others are being prepared. The European Union action plan in research-development-innovation domain includes four important action sets:

- **Building a research and innovation network**
  - strengthening and aggregation of national networks
  - open research network for schools/high-schools/universities/research institutes
  - raising investment funds to develop and strengthen the research network and create laboratory networks
  - promoting centers of excellence
- **Innovation and technological transfer programs (scientific and technological parks)**
  - creation of public-private partnerships for the development and use of specific technologies of a knowledge-based economy, mainly through the development of specific technologies for virtual centers of technological services and technology transfers (focused on advanced technologies and environment-friendly technologies)
  - promotion of links between domestic and international research
  - improving the legal framework to protect the outcome of research

- **Developing the capacity of the economy to absorb R&D achievements**
  - development of the technological transfer and innovation infrastructure (technology information and assistance centers, technology transfer centers, incubators, etc.);
- **Incentives for the creation and development of innovative SME's**
  - creation of zones where various incentives (other than fiscal ones) will be provided to firms (scientific and technological parks)

#### 4. Measuring Innovation – The Summary Innovation Index: Romanian Position

The main statistical instrument developed by European Union to provide a comparative assessment of the innovation performance of EU Member is **innovation scoreboard**.

**Innovation Scoreboards** are the main statistical tool of the “European Trend Chart on Innovation”, developed yearly. It allows relative strengths and weaknesses of the innovation performances of the EU Member States. The “European Innovation Scoreboard 2007” compiles a set of commented indicators (25 innovation indicators) under five categories:

- *Innovation drivers* measure the structural conditions required for innovation potential
- *Knowledge creation* measures the investments in R&D activities
- *Innovation & entrepreneurship* measures the efforts towards innovation at the firm level
- *Applications* measures the performance expressed in terms of labour and business activities and their value added in innovative sectors, and
- *Intellectual property* measures the achieved results in terms of successful know-how.

Overall innovation performance is captured by a composite index, the Summary Innovation Index, as a weighted average of the re-scaled values of the indicators, where the highest value is set to 1 and the lowest value to 0. The value of the Summary Innovation Index ranks by definition between 0 and 1.

Table 1: European Innovation Scoreboard 2007 –Summary Innovation Index (SII) scores over a 5 year time period

SII Scorecard a 5 Years time period	2003	2004	2005	2006	2007
Sweden	0.82	0.80	0.78	0.76	0.73
Switzerland	0.68	0.69	0.68	0.67	0.67
Finland	0.69	0.68	0.65	0.67	0.64
Israel	0.63	0.63	0.64	0.63	0.62
Denmark	0.68	0.66	0.65	0.64	0.61
Japan	0.60	0.61	0.61	0.60	0.60
Germany	0.59	0.59	0.59	0.59	0.59
United Kingdom	0.57	0.57	0.56	0.55	0.57
United States	0.60	0.59	0.57	0.55	0.55
Luxembourg	0.50	0.50	0.53	0.57	0.53
Iceland	0.49	0.50	0.49	0.49	0.50
Ireland	0.50	0.49	0.50	0.49	0.49
Netherlands	0.50	0.49	0.49	0.48	0.48

Austria	0.47	0.46	0.48	0.48	0.48
Belgium	0.51	0.49	0.49	0.48	0.47
France	0.48	0.48	0.48	0.48	0.47
<b>EU27</b>	<b>0.45</b>	<b>0.45</b>	<b>0.45</b>	<b>0.45</b>	<b>0.45</b>
Canada	0.48	0.48	0.45	0.44	0.44
Estonia	0.35	0.34	0.35	0.37	0.37
Czech Republic	0.32	0.33	0.33	0.34	0.36
Norway	0.40	0.39	0.38	0.37	0.36
Australia	0.35	0.35	0.35	0.35	0.36
Slovenia	0.32	0.34	0.34	0.36	0.35
Italy	0.32	0.33	0.33	0.33	0.33
Cyprus	0.29	0.29	0.30	0.32	0.33
Spain	0.32	0.31	0.32	0.32	0.31
Malta	0.27	0.27	0.28	0.29	0.29
Lithuania	0.23	0.24	0.24	0.26	0.27
Greece	0.26	0.26	0.26	0.25	0.26
Hungary	0.24	0.25	0.25	0.25	0.26
Portugal	0.21	0.24	0.23	0.25	0.25
Slovakia	0.23	0.22	0.23	0.24	0.25
Poland	0.21	0.21	0.22	0.23	0.24
Bulgaria	0.20	0.21	0.20	0.22	0.23
Croatia	0.24	0.23	0.23	0.23	0.23
Latvia	0.16	0.16	0.17	0.18	0.19
<b>Romania</b>	<b>0.16</b>	<b>0.15</b>	<b>0.16</b>	<b>0.17</b>	<b>0.18</b>
Turkey	0.09	0.09	0.08	0.08	0.09

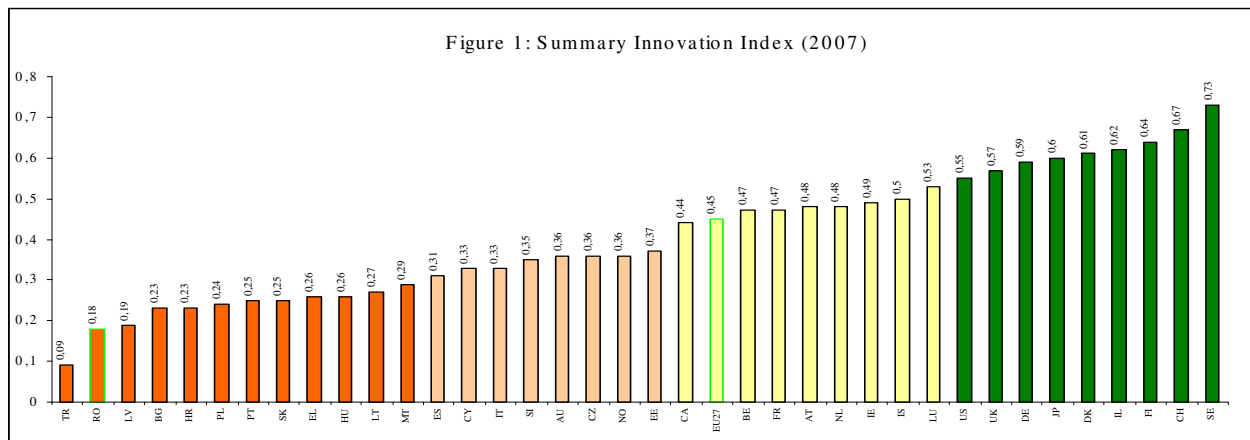
**Source:** European Commission, European Innovation Scoreboard 2007 — Comparative analysis of innovation performance, Luxembourg: Office for Official Publications of the European Communities

Based on their innovation performance (Table 1), the countries included in the *European Innovation Scoreboard 2007* fall into the following country groups (Figure 1):

- The *innovation leaders* include Denmark, Finland, Germany, Israel, Japan, Sweden, Switzerland, the UK and the US. Sweden is the most innovative country, largely due to strong innovation inputs although it is less efficient than some other countries in transforming these into innovation outputs
- The *innovation followers* include Austria, Belgium, Canada, France, Iceland, Ireland,

Luxembourg and the Netherlands

- The *moderate innovators* include Australia, Cyprus, Czech Republic, Estonia, Italy, Norway, Slovenia and Spain
- The *catching-up countries* include Bulgaria, Croatia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, **Romania** and Slovakia. Turkey currently performs below the other countries.



Malta, Lithuania, Hungary, Greece, Portugal, Slovakia, Poland, Croatia, Bulgaria, Latvia and **Romania** are the *catching-up countries*. Although their Summary Innovation Index (SII) scores are significantly below the EU average, these scores are increasing towards the EU average over time with the exception of Croatia and Greece.

The *catching-up countries* show a variety of efficiencies in transforming innovation inputs into Applications. On Intellectual property efficiency all countries are significantly below average with the exception of Portugal. For **Slovakia and Romania** the efficiencies for Applications are relatively high, suggesting that these countries need to increase inputs to increase performance in generating more Applications. The majority of catching up countries have below average efficiencies and this suggests that for these countries an important focus should be improving innovation efficiencies.

The recent trends allowed the upgrade of **Romania's** position in the Summary Innovation Index (SII) to a catching-up position. Leaving aside the rather debatable meaning that the indicators hold for Romania, hiding various local realities, the catch-up process risks to be rather slow: assuming freezing European values and sustained rates of growth for Romania, at their 2007 levels, between 5 and 10 years are needed for catch-up even for the most fast growing indicators in the scoreboard. A more realistic scenario, implying learning curves and reasonable assumptions regarding the rate of growth at the European level would push the duration of convergence at over 20 years. The very high rates of growth need to be insured for significant periods so that the catching-up to become a perceived reality can be induced only through in-depth, coordinated policy action.

In Romania, one of the main barriers to research and innovation is the lack of an enabling legislative framework. Furthermore, the institutional set-up is not yet sufficiently developed in the area of innovation and technology transfer. The level of Government funding for R&D has declined from 0.71 % of GDP in 1996 to 0.47 % in 1998 and to 0.39% in 2004.

The measures taken to develop an innovation technology transfer structure include logistical and financial support for: the organization of workshops, seminars and exhibitions; study case presentations; product, process and service demonstration projects; training courses; research technology and innovation projects; elaboration of instructions and guidelines for local technology transfer organizations. One of the priorities for support is projects, which involve partnership between R&D units, universities, ITT infrastructure and companies.

### 5. What should Romania do?

The European context requires the necessity for Romania to adapt itself to the conditions of the new economy and to the knowledge society, in which the competitive advantage is obtained by innovation and

by a government management able and decided to increase the aggregate efficiency (economic, social, ecological) of the whole labour potential of the country.

Romania, after integration, should follow the competitiveness promoting and sustain the innovation process by stimulation research and development and creative activity, both on institutional and material sides. On the other hand, *the innovation* should be approached step by step, and it has to involve education and instruction, technical and scientific qualification, science, technology, economic and financial principles, initiative spirit, management and social -economical conditions for converting scientific knowledge into physical realities.

The human resources development in R&D sector is very important, this type of intervention concluding in increasing number of specialists involved in R&D activities. The emphasis is on attracting and maintaining the young specialists and on promoting the integration for research activities from Romania into Europe.

Romania has a National Development Plan for R&D and innovation in the future, 2007-2013. The main objectives of this national plan are:

- **development of R&D infrastructures and activities** in research institutes and centres and in universities:
  - R&D programmes/projects with major impact on the competitiveness of technological sectors/domains
  - modernisation and endowment with performant research and IT equipment
  - support for the development of new/ extended high technology departments in institutes and universities
- **partnership between R&D institutions, universities and enterprises**, for:
  - research-based improvement/ innovation of the product&technologies
  - significant increase of the competitiveness of enterprises, in robust technological chains, at national and international levels

### 6. Conclusion

The European and global context imposes for Romania the acute necessity for increasing the economy competitiveness. It is well known the fact that the competitive advantage for a nation is not any more based on products and services or on having some natural resources or on historical and geographical particularities. The competitive advantage is today created through **innovation**, the high-qualified labour force and through the usage at high level of knowledge, so through knowledge based economy. In this context, the creating of knowledge based organizations remains an imperative for developing knowledge based society. It is also very important the high level assertion of Romanian creativity as main source of competitiveness and identity in an international environment with obvious trends of globalization.

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