

# CASE Network Studies & Analyses

## Knowledge-based entrepreneurship in Romania

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## **Abstract**

The importance of new firm creation in the post-Communist economies of East Central Europe (ECE) has been subject to extensive research. This paper focuses on an area of entrepreneurship which has received relatively little attention in the transition economy context but which is of particular importance for the modernization of the transition economies: knowledge-based entrepreneurship (KBE), or new firm creation in industries considered to be science-based or to use research and development (R&D) intensively. We begin by sketching the situation in Romania's small and medium-sized business sector, then proceed to study the conditions for high-tech firm development in the country, focusing on the institutional infrastructure and policy initiatives. We then turn to the analysis of a series of case studies of firms active in the areas of information technology, pharmaceuticals, and advanced chemistry. Among the issues treated are the resources and strategies involved in KBE in Romania, the relationships (networks) of the firms in question and how they are used for knowledge acquisition. We find that overall Romania appears to be a poor location for KBE, with R&D spending as a percentage of GDP very low (and falling for much of the transition period) and a poorly educated population. Most of the firms studied here rely on foreign markets for development of their more innovative products, whereas domestic markets provide opportunities for higher volume sales of less advanced products. The nature of strategic business relationships and networks varies significantly across the firms studied, with some engaging in virtually no collaboration in the area of innovation, and others engaging quite intensively with academic partners in product development.

# 1. Overview of the Knowledge-Based Economy in Romania

Radu Gheorghiu and Geomina Turlea

## 1.1. Introduction

The main particular feature of the growth dynamics of Romanian economy during the 1990s is the occurrence of the two-phased transitional recessions. This reflects the gradualist approach and the stop-and-go policies, as periods of acceleration of reforms alternated with periods of stagnation or even trend reversals. With the resulting rather slow restructuring process, the Romanian economy has been having a recovery starting only 2001. Although since then the GDP growth maintained high, GDP per capita represented in 2004 one third of EU-25 average.

Taking into account Porter's classification/stages of economies as based on resources, capital and innovation, Romania is rather at the beginning of the second stage. This also explains its poor international competitiveness.

**Table 1. Romanian ranking in World Competitiveness Report**

	2004	2005
<b>Macroeconomic competitiveness index</b>	63/102	67/117
- Macroeconomic environment	71/102	73/117
- Quality of public institutions	74/102	78/117
- Technology	47/102	49/117
<b>Business Competitiveness Index</b>	56/102	67/117
- Quality of companies' operations and strategies	61/102	69/117
- Quality of business environment	57/102	67/117

Source: World Competitiveness Report 2004 and 2005

The structure of the economy is still unbalanced, with a huge part of population in agriculture (36% in 2003<sup>1</sup>) and a rather small part of employment in high-tech industries (less than 10% in 2004 compared with over 30% in EU-25<sup>2</sup>). When talking about high-tech export, the gap is even larger: only 3.3% of total exports in 2003, compared with 17,8% in EU-25.<sup>3</sup>

With regard to human resources, the number of tertiary education graduates per population is considerably lower than the EU average, but the fast increase of number of students

<sup>1</sup> Source: National Institute of Statistics

<sup>2</sup> Source: Eurostat

(tripling in the period 1991-2003<sup>4</sup>) is about to close this gap. The figure of 9.4% of 20- to 29-year-olds graduating in science and technology is coming closer to the 12.2% EU average.

The above mentioned economic development is also reflected in the general interest in technology. As reflected in a 2005 Eurobarometer survey, the number of persons very interested in inventions and technology represents half of European level.

**Table 2. General interest in new inventions and technology**

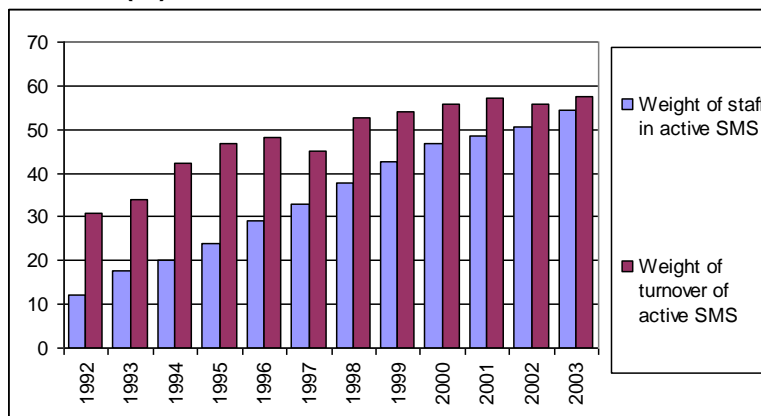
	Romania	EU-25
Very interested	15%	30%
Moderately interested	43%	48%
Not at all interested	36%	21%

Source: Eurobarometer- European Science and Technology, 2005

## 1.2. Romanian SME sector

The transition process in Romania started with an economy highly concentrated in large companies. Hence, in 2002 when Romania reached the 50% employment in SMEs, in the candidate countries this share was exceeding 70%.<sup>5</sup>

**Figure 1. Weight of SMEs staff and turnover in total employment and GDP in Romania (%)**



Data source: National Institute of Statistics

Most of Romanian SMEs are limited liability companies. Data show that between 1996 and 2002 their total number remained rather unchanged, the birth rate marking a downturn until 2000, with a gradual increase afterwards.

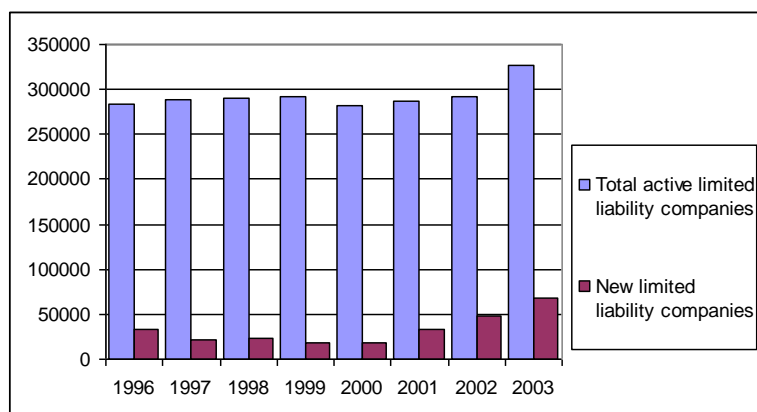
<sup>3</sup> Eurostat, Structural indicators

<sup>4</sup> National Institute of Statistics, 2005

<sup>5</sup> Data source: National Strategy for SMS Development 2004-2008



**Figure 2. New and total active limited liability companies in Romania**



Data source: National Institute of Statistics

Due to low availability of capital, during the 1990s SMSs have been concentrated in the trade sector. In 2001 trade was responsible for more than half of the number of SMEs, a weight more than double compared with EU countries. In 2004 the share of trade SMEs in Romania slightly changed. The service sector remains underrepresented.

**Table 3. Comparative structure of SMS sector**

	Candidate Countries (2001)	EU-19 (EU+AELS) (2001)	Romania 2001	Romania 2004
Manufacturing	12%	10%	14.4%	13.8%
Agriculture and constructions	-	-	3.2%	-
Trade	16%	13%	50.2%	48.7%
Tourism	19%	25%	3.4%	4.4%
Transport	5%	6%	4.6%	6%
Services	12%	6%	16.9%	21%

Data source: National Strategy for SMS Development 2004-2008 for EU countries and the National institute of Statistics for Romania

One aspect that should also be taken into account is that out of 122,000 employers in 2003, 92,000 are male.<sup>6</sup>

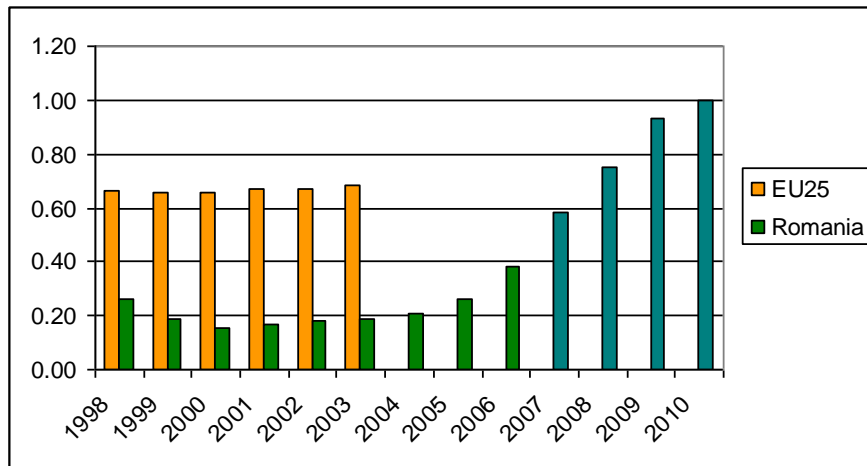
### ***1.3. An overview of the Romanian research, development and innovation system***

#### **1.3.1. A difficult transition**

The Romanian RDI system has gone through a long period of underfinancing, reaching a climax between 1999-2004, when the public R&D expenditure represented only 0.2% of GDP, less than a third of the EU 25 average. However, starting 2005 the public R&D expenditure increased significantly and the current target is 1% in 2010.

<sup>6</sup> Calculated based on National Institute of Statistics data.

**Figure 3. Public funding for R&D (%GDP)**



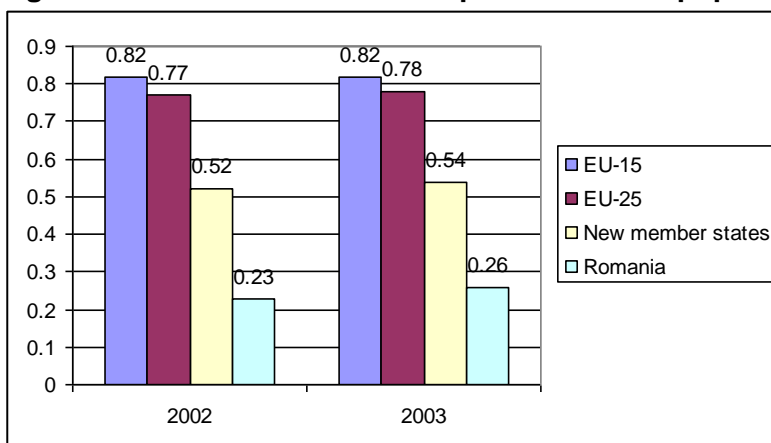
Data source: Eurostat and National Authority for Scientific Research

The private R&D investment was according to the statistics approximately equal to public funding in the period 1998-2004, but one can say that the current accountability system is not fit for providing reliable data on this issue.

This does not mean that private RDI is not active in Romania. For instance, only in 2006 the American company Oracle took the decision to create a development centre in Romania, responsible for the entire South-East Europe. Renault has taken a similar decision – to create a centre for technological development in Romania hiring 2000 Romanian specialists.

Not taking into account these promised developments, the under financing of the 1990s resulted in halving of the researchers' population. Hence, in 2003, the number of researchers per 1000 active population reached only one third of EU-15 average.

**Figure 4. Number of researchers per 1000 active population**

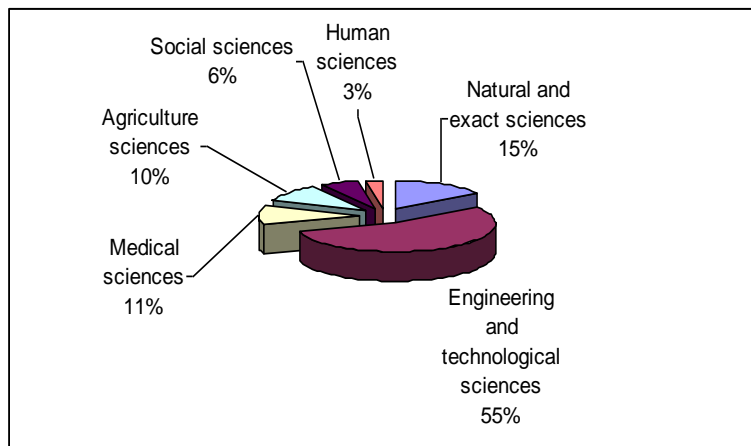


Data source: Eurostat

Most of R&D activities during the communist period were concentrated in public research institutes in specific industry branches and institutes of the Romanian Academy (with a bias

towards the humanities), rather than in either universities or industry.<sup>7</sup> The technological gap opened once the autarchic system come to an end and the delayed privatisation in industry drastically reduced the demand for innovation, isolating the RDI institutes. However, a positive characteristic of the Romanian RDI system remains the rather large weight of engineering and technological sciences.

**Figure 5. Researchers distribution by fields in 2003**



Source: National Institute for Statistics, 2004.

### 1.3.2. Results

#### a) Publications

Looking at the ISI statistics, in the last 10 years Romania had 3091 citations per million inhabitants, ranking 74 in the world. With 894 publications per million inhabitants Romania is ranking 69 in the world.<sup>8</sup>

#### b) Patents

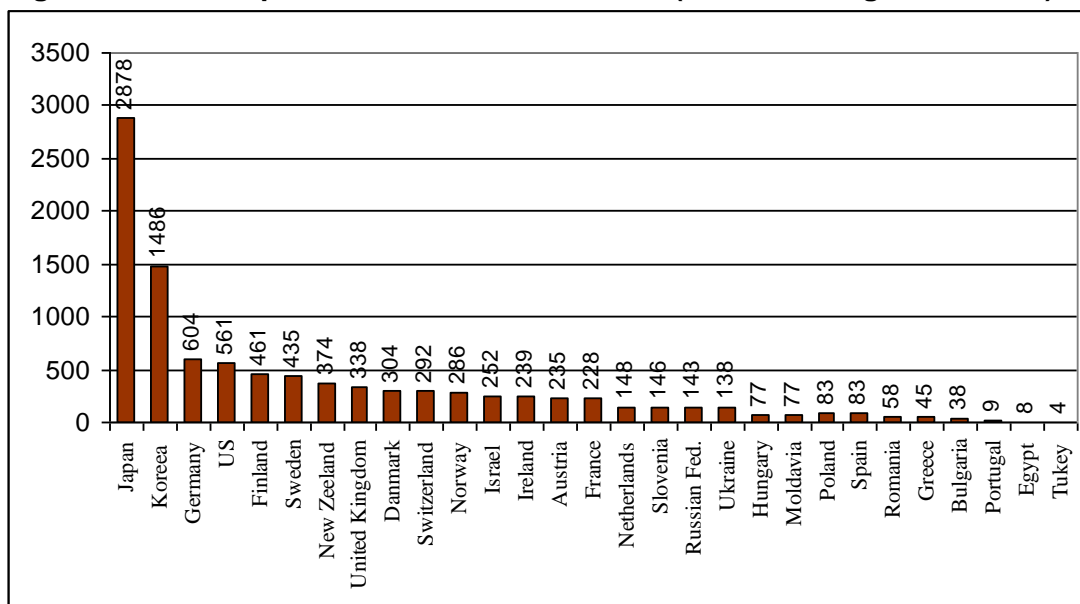
The number of European patents is 0.6% of the EU average. The situation is similar with respect to the patents granted in US and Japan, namely at most 3 USTPO patents per year and only two requests for the Japan Patent office in the last 10 years.

The national patents are also low, as can be seen in figure 6.

<sup>7</sup> Radosevic, S. *et al.* (1999), Restructuring and Reintegration of Science and Technology Systems in Economies in Transition, TSER Report ERB-SOE1-CT95-1008

<sup>8</sup> Cf. The Assessment of Romanian RDI System, 2006

**Figure 6. National patents in selected countries (annual average 1996-2003)**

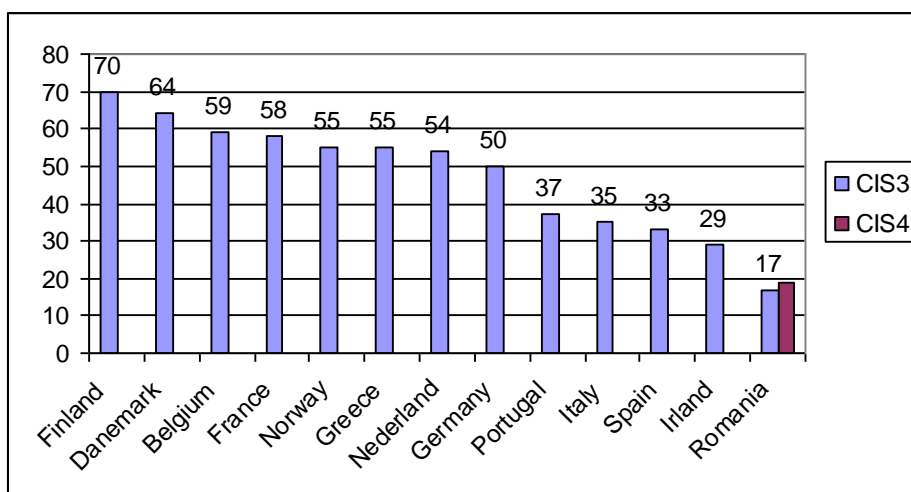


Source: State Office for Inventions and Trademarks in "The Assessment of Romanian RDI System", 2006

### c) Innovation

The share of innovative companies (according to Community Innovation Survey - CIS) was only 17% in the period 2000-2002 and 19% in the period 2002-2004, values representing half of the EU average.

**Figure 7. Share of innovative companies in selected countries**



Data source: Eurostat and National Institute of Statistics. CIS3 refers to the period 1998-2000 for EU countries and 2000-2002 for Romania. CIS4 refer to 2002-2004.

### 1.3.3. Institutional framework

There are three main **public RDI funding** categories of institutions in Romania:

**1. Ministry of Education and Research – National Authority for Scientific Research** (82% of the RD public funds in 2005). 95% of these financial resources are open for competition. Unfortunately, most programs are not coordinated with one another, and there is a generally soft monitoring system. The programmes directly related to innovation are:

- The INVENT Program (with a total value of 500 billion ROL in 2004-2006<sup>9</sup>) for support of the applications of inventions. There are certain doubts regarding the stimulating effect for innovation, as by now a large part of the patents accepted for financing in this program were older than five years. The enterprises co-financing 50% of the R&D activities obtain the full right of applying it. Moreover, the state may finance 20% of the applying costs.<sup>10</sup> The Ministry of Education and Research may finance the technological transfer of the innovation from the high-tech industries.<sup>11</sup> Also the ministry may co-finance the appliance of some research results for the companies owned by persons less than 35 years old.
- The RELANSIN Program with the objective of developing complex technologies with a high market potential. In order to be eligible a project should involve cooperation between economic units and simultaneously cooperation with R&D research units.

**2. The Romanian Academy** (8.1% of the RD public funds in 2005), a network of 65 institutes and research centres, coordinates its own research programs. Part of these funds are open for competition as grants.

**3. Other ministries (10.8%)** with independent R&D programs

The *National Council for Science and Technology Policy* that should be the governmental high-level policy co-ordination body in charge of coordinating RDI and other social and economic policies is not functional yet. At parliamentary level, RDI has a rather modest position being represented as a component of the Commissions for Education, Science and Sport of the two Houses of the Parliament. In 2006 the Romanian Office for Science and Technology at the European Union was also opened.

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<sup>9</sup> Daily newspaper "Gardianul", 18 March 2004.

<sup>10</sup> According to the GO no. 57/2002 approved by the law 324/2003

<sup>11</sup> According to GO no. 442/2003.

Other innovation-related institutions encompassed by the Romanian Network for Innovation and Technology Transfer include:

- 1) **S&T Parks** at early development stages in different regions of the country (Arad, Bucharest, Craiova, Cluj-Napoca, Deva, Iași, Râmnicu-Vâlcea, Timișoara, Tulcea)
- 2) **Technology Transfer centres**

**Table 4. List of technology transfer centers in Romania**

	<b>Technology transfer centers</b>	<b>Specialisation</b>
1	Centrul ECOTECH Bucuresti	- biotechnology for agriculture - biotechnology for health
2	Centrul de Transfer Tehnologic CTT Galati	- information technology and services - telecommunications
3	Centrul de Transfer Tehnologic ICPE-CA Bucuresti	- electro-technical materials, products and technologies
4	Centrul Releu de Transfer Tehnologic si Consultanta CRTTC Bucuresti	- Precision mechanics - Mechatronics - Micro-robotics
5	Centrul de Transfer Tehnologic pentru Microinginerie CTT-Baneasa Bucuresti	- micro and nano-engineer - micro-systems - micro-engineering
6	Centrul de Transfer Tehnologic CENTI Cluj-Napoca	- environment protection technologies - medical equipment - food technology - bio energy, biomass - alternative combustible
7	Centrul de Transfer Tehnologic in Sudura CENTA-ISIM Timisoara	- welding technology
8	Centrul de Transfer Tehnologic pentru Materiale Avansate CTT-AVANMAT Bucuresti	- Biomaterials - Intelligent materials
9	Centrul de Transfer Tehnologic pentru Optoelectronica CTTO Bucuresti	- Optical electronics - Lasers - Radiation Physics - Optics, spectroscopy - Technical Physics
10	Centrul de Transfer Tehnologic si Inovare Iasi	- Chemistry - Environment protection - Robotics
11	Centrul de Transfer Tehnologic CTT IPA Galati	- Automatic equipment and systems - Environment protection - Metallurgy and mechanical processes
12	Centrul de Transfer Tehnologic CTT IPA CIFATT Cluj-Napoca	- Automatic systems - Information technology
13	Centrul de Transfer Tehnologic MASTER-TT Bucuresti	- Automobile industry

Source: [www.mct.ro/technoinfo](http://www.mct.ro/technoinfo) (2006)

### 3) Technology & Business Incubators

**Table 5. Technology & Business Incubators in Romania**

	<b>Technologic and business incubators</b>	<b>Specialisation</b>
1	ITA Bucuresti	- Information technology
2	INMA-ITA Bucuresti	- Agriculture equipment
3	CITAF Bucuresti	- Machinery
4	ITA-ICSI Ramnicu Valcea	- Chemistry - Isotopic cryogenics - Energy - Ecology, wastewater treatment - Agro-tourism, mountain tourism
5	CITA Hunedoara	- IT - Electro-technical equipment - Animal breeding
6	INTESA Bucuresti	- Electric sciences
7	S.C. IPA S.A. CIFATT Craiova	- Automatic industrial processes - Software and electronics - Software and services
8	UAV-IT INCUBATOR Arad	- Agriculture - IT
9	CETI-ITA UPB Centrul de Electronica Bucuresti	- Packaging electronic

Source: [www.mct.ro/technoinfo](http://www.mct.ro/technoinfo) (2006)

### 4) Technology Information Centres

- 5) **18 industrial parks** (Bucharest, Moreni, Mija, Cluj-Napoca, Jibou, Valenii de Munte, Sura Mică, Fetești, București Metav, Selimbar, Hunedoara, Ploiești –Crângul lui Bot, Pitești, Giurgiu Nord, Sebeș Alba, Vidrasău Mureș)
- 6) **Industrial Liaison Offices** established with PHARE assistance in the framework of the 'Science and Technology Restructuring System' Programme that stimulates technology transfer and quality management.
- 7) **The Innovation Relay Centres (IRC) Network** aims at promoting innovation, encouraging exchange of research results between organisations and providing advice, consulting and training support. There are two IRCs co-ordinated by The Ministry of Education and Research and six regional partners based in universities, which provide information to SMEs, universities and research organisations.

The National System for the Protection of Intellectual Property includes the State Office for Inventions and Trademarks and Romanian Office for Copyright. These are the specialised government bodies for the protection of industrial property and copyright, respectively. Romania is a member of the World Intellectual Property Organisation (WIPO) and concluded a Co-operation Agreement with the European Patent Organisation (EPO) on the extension to Romania of the effects of the European Patents.

### 1.3.4. RDI organisations

At 2003 level the RDI system consisted of over 700 units<sup>12</sup>:

#### 1. 350 institutes and research centres

- 41 national R&D institutes, in 15 technological fields coordinated by 8 ministries;
- 120 institutes and research centres, half coordinated by the Romanian Academy and half by “branch academies”: the Academy for Agriculture and Forestry Studies, Academy for Medical Sciences and other ministries, including the Ministry of Education and Research
- 86 universities
- 100 state-owned companies with R&D as main activity;

#### 2. 350 companies that carry on R&D activities (2/3 of their employment is also in the public sector in 2004).

### 1.3.5. A new RDI strategy based on broad consultation

Beyond financing, the RDI system has been missing a restructuring strategy in post communist period. The Strategy project elaborated in 2002 has not been officially adopted, and the RDI policy has been *de facto* driven through the National RDI Plan, which, by its nature should be a document with specific objectives derived from a broader strategy. Hence, the already small resources have not been properly focused on priorities connected to the economic or social needs, or to the global trends. The dissipation of resources has been accompanied by the absence of an integrated monitoring and evaluation system of the public investment in RDI<sup>13</sup>.

At the beginning of 2005, Ministry for Education and Research – National Agency for Scientific Research launched the call for the project “The elaboration of the RDI Strategy 2007-2013, based on strategic planning elements”. The project has been won by a consortium that now includes Romanian Academy, Academy for Agriculture Sciences, Academy for Technical Sciences, Military Equipment and Technologies Research Agency, General Association of Engineers from Romania, 7 universities, 4 NGOs and 13 research institutes and 4 consultants, coordinated by CNCSIS-UEFISCSU (the executive entity of the National Council of University Research).

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<sup>12</sup> Annual Report on RDI policy development 2005 NASR, December 2005

<sup>13</sup> See *R&D and innovation policies in Romania. Report of the Policy Mix Review Team*, September 2005 (CREST Report)



The project started in May 2005 and will be accomplished by the end of October 2006. Its objectives are to deliver the National RDI Strategy for 2007-2013 and the National Plan for the same period. The social innovation is represented by an integrated flow between RDI system assessment, foresight, strategy and plan.

By May 2006, the national foresight exercise came to an end, providing the S&T priorities. During this national exercise, 7 consultation rounds were carried out, including workshops with almost 1000 representatives of interest groups and on-line consultations with over 4000 respondents.<sup>14</sup>

### 1.3.6. Structural funds for RDI

The National Strategic Reference Framework 2007-2013 (NSRF, approved in April 2006) establishes the priorities for the structural cohesion funds for the period 2007-2013. RDI has its place in this framework, with two priorities in the Competitiveness Operational Program.

The general objective of this program is to increase productivity of Romanian companies by reducing the disparities compared to the average productivity of EU. The target is an average annual growth of GDP per employed person by about 5.5%. This will allow Romania to reach approx. 55% of the EU average productivity by 2015.

**Table 6. NSFR allocation by operational programs (millions of euro)<sup>15</sup>**

	2007	2008	2009	2010	2011	2012	2013	Total
Economic competitiveness	80	180	380	470	470	370	290	2240
Transport infrastructure	289	409	542	639	674	710	747	4010
Environment infrastructure	309	404	535	618	654	702	738	3960
Regional development	238	340	444	520	548	576	610	3276
Technical assistance	16	17	19	22	24	26	26	150
Human resources development	214	305	427	488	519	549	549	3051
Administrative capacity	19	26	37	37	26	21	19	185

Two priority axes of the Competitiveness program are directly connected to RDI:

**1) An innovative productive system** (with a total budget of 1005 million euro for 2007-2013, 69% Community funding) with the following action lines:

- Productive investments and preparation for market competition, especially of SMEs
- Access to credit and financing instruments for SMEs

<sup>14</sup> For details see [www.strategie-cdi.ro](http://www.strategie-cdi.ro)

<sup>15</sup> Additional funds from European Agriculture Fund for Rural Development and the European Fisheries Fund are estimated at 7100 and 209 million euro.

- Entrepreneurship development

**2) Research and Development for competitiveness** (with a budget of 735 million euro, 64% community funding), having as action lines:

- R&D partnerships between universities/research institutes, and enterprises (industry) for generating results directly applicable in economy
- Investments in RDI infrastructure
- RDI support for enterprises

The unit responsible for allocating the RDI funds has been created as part of the National Agency for Scientific Research.

### ***1.4. Information society in Romania***

Considering three generations of information society programs at European level (eEurope 2002 with a stress on ICT penetration rates, eEurope 2005 with a larger focus on e-services, and i2010 with a stronger accent on the ICT industry and social-impact e-services), Romania is only at the end of first phase in what regards the ICT use, but much more advanced in ICT industry.

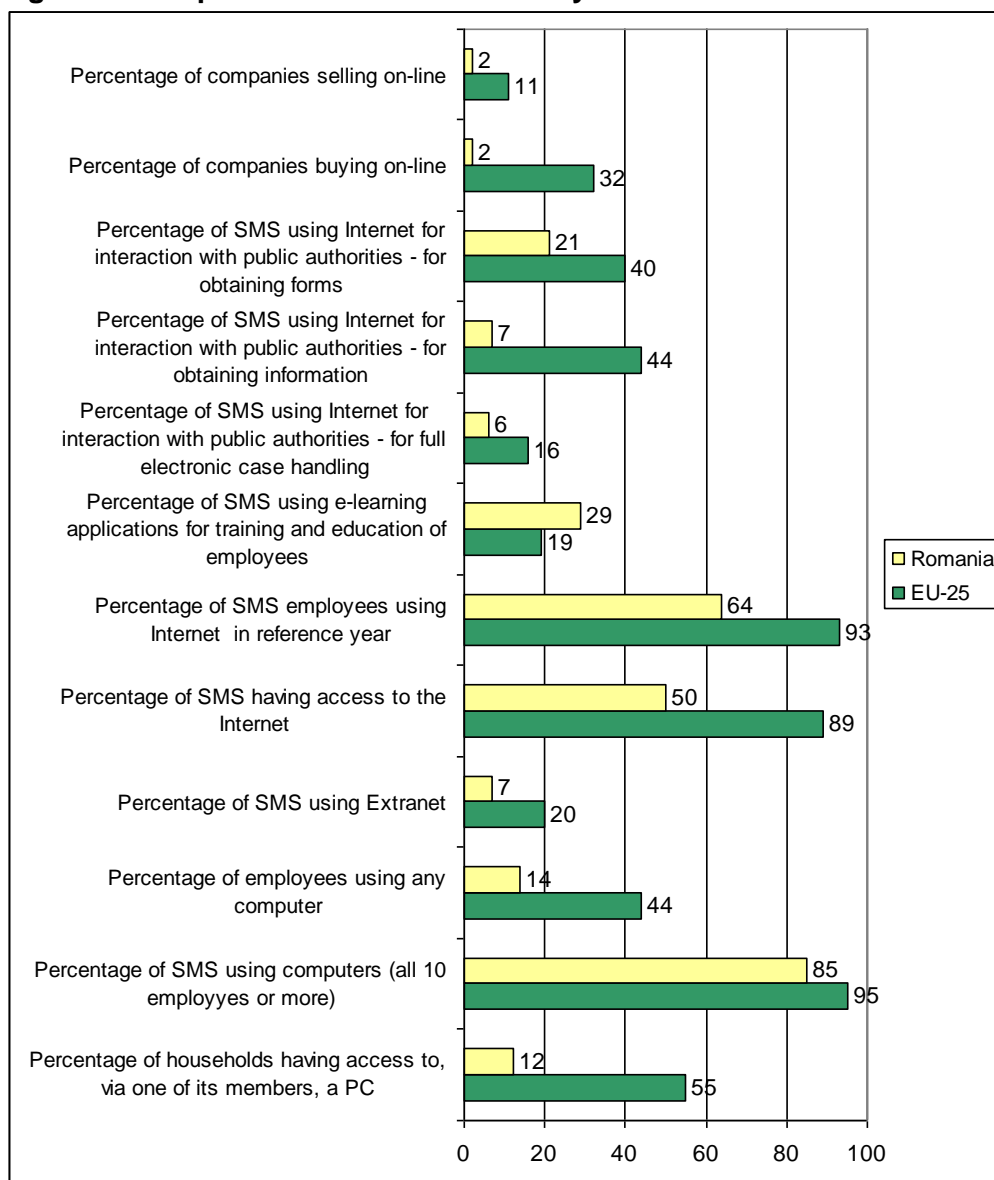
Looking at the Eurostat information society indicators the gap in 2004 between Romania and EU-25 is considerable. However, 2005 marked a leap as the number of Internet connections doubled, the share of broadband reaching 75% of total connections and for 2006 the trend is estimated to continue. The number of internet suppliers has also increased from 515 at the end of 2004 to 981 at the end of 2005.<sup>16</sup>

Structural funds are also allocated for this sector. The priority axis “IT&C for private and public sectors” supports IT use, public e-services and e-business. The IT use is meant to be supported mainly at company level by encouraging the demand side (as aid for SMEs) and also by supporting broadband infrastructure development in market failure areas. In what regards the e-economy, this supports the development of integrated systems for business and information management and other electronic applications for companies, the introduction of electronic tender systems and improving the security of electronic transactions.

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<sup>16</sup> Source: National Regulatory Authority for Communications, Electronic Communication Outlook 2006,

**Figure 8. Comparative information society indicators in Romania and EU-25 (2004)**



Data source: Eurostat

Although Romania has a certain gap in what regards the ICT use, the “supply side” of the information society is much more developed, the software industry being one of the most competitive. Although based on outsourcing, several Romanian companies reached the level of introducing new products on the global market.

**Table 7. Romanian export of software and IT services, 1997-2004**

	1997	1998	1999	2000	2001	2002	2003	2004
Exports, millions of USD	10	19	29	68	98	130	175	245
Growth rate		90%	53%	134%	44%	33%	35%	40%
CAEN 722 (% of total)		57%	53%	69%	66%	68%	57%	56%

Source: National Export Strategy

## **1.5. Final remarks**

With a delayed start, Romania is undergoing a fast restructuring period since 2002, which will be accelerated by the European integration process and the impact of structural funds. With the goal of “leapfrogging”, the RDI system has received consistent public spending, which will be managed under a new strategy. This attempts to recover the currently lost connection between business sector and research and to regain the “brains drained” in the knowledge production.

The non-research push for innovation is still unclear, as no fiscal or other horizontal incentive has been put in place. Very little is known about innovation at company level, and there is a clear need for improving the thin existing links between public and private RDI (as for instance innovation transfer centers). A new accountability system, more adequate to innovation activities, needs to be introduced.

The improving level of competition and the narrowing technological gap will most probably boost the managers’ interest for innovation in the next years.

## **2. Case studies**

**Stela Andrei and Romana Emilia Cucuruzan**

### **2.1. Description of the sample**

The studied companies represent a heterogeneous group, as the aim of the case studies was to present different aspects of knowledge entrepreneurship. The companies come from Bucharest (company A), and another important town of Romania, Cluj-Napoca (companies B, C, D). We also aimed to find samples of different entrepreneurship (including corporate entrepreneurship and academic entrepreneurship), as well as examples from different industries (IT, pharmaceutical and chemical industries).

#### **Company A (IT industry)**

Company A represents a typical example of entrepreneurship; its founder started alone the business 14 years ago with one PC, and has become one of the most successful businessmen in Romania and made the biggest transaction on the Romanian IT market with

Microsoft. The company developed mainly on its own internal resources (both intellectual and financial) and represents one of the best practices of the IT industry in Romania, and its entrepreneur one of the best-known “self-made men” in the country.

Company A (which in fact is Group A, being a group of companies since 2003) is now one of the most important Romanian groups in the IT sector. It is no more one company, as it became a group of five distinct companies after restructuring 2 years ago. It has 120 employees, and an estimated annual turnover of around 4 million euro (2004).

The company has been established in 1992 by today’s president of the group; he started it after graduation, developing its diploma project, which afterwards took the form of the first product to be sold by the new-born company. This first transaction of the new company represented and the source for financing the first investment – a personal computer. For the beginning years, the company has operated in the field of Computer Aided Design (CAD). After a few years, with a company counting 5 employees (including the owner), there came the first strategic decision, which was, to enter a market niche: security software.

Starting with 1994, this strategic decision has materialized in the activity of the following years, when the team worked on the development of antivirus software, which later has become the best-known product of the company. The product was tested on the Romanian market, but actually prepared for the international market, where it was successfully launched. Until 1996, the antivirus software was developed as an internationally high competitive product, its main feature being the compatibility with any operating system (it was platform independent). The product has become an international success on the IT market, becoming one of the best sales on the antivirus markets. As Microsoft initiated looking for acquiring antivirus products for Windows, they finally acquired the antivirus technology in 2003 from the company A, the biggest transaction on the Romanian IT industry.

### **Company B (pharmaceutical industry)**

B is one of the most important Romanian manufacturers of pharmaceutical products, with its headquarters in Cluj-Napoca, Romania. It has its roots in an older pharmaceutical company, registered as a commercial company in 1991. In 1996 it was privatized through the mass privatisation programme that was implemented in Romania by the time. In 2000 and 2004, big cuttings of personnel have been operated, in order to restructure and make the company

more efficient. Its development during the last years makes B a good example of corporate entrepreneurship.

B is a company that mainly produces generic products (the formula is acquired from research-based companies and the product is authorized to be on sale after the approval of the bio-equivalence tests of the product). However, the company also has its own products developed in the research department; some of them are very popular brands in Romania). One of the main issues of the new strategies in the company is to support the domestic brands and R&D.

After having more owners as majority shareholders, a multinational company of generic products (R) has recently acquired 96.7% of B shares from the previous major shareholder, for 324 million USD; as the major shareholder, R holds the majority of representatives on the board and brought a new management team – almost all of them Romanians; the interviewees were the new R&D director, the commercial director and HR director of the company. The new management came up with a new vision (following the main strategies of R), regarding expanding the market, support of the existing research and human resources development and tried to shape a new profile of the company.

B is now Romania's biggest exporter in the industry. The company has a product portfolio of 96 products, of which over 30% are registered on foreign markets (Source: Official website) and has 950 employees. It operates on 15 East European countries and its exports represented 16% of the turnover in 2004 (Source: Official website). Nowadays B registers 5.5% market share in value and 10.5%-11% market share in volume, with a total of 90 million USD sales (in Romania). It also opened offices in Russia and Ukraine (for marketing, sales and distribution purposes).

### **Company C (IT industry)**

Company C is an IT company located in Cluj Napoca (in the Transylvania region), and one of the most important companies operating on the Romanian IT market. The main activities of the company focus on *production and distribution of IT products*; IT&C system integration (hardware, software, applications, services) and *Performing services* in consulting, projecting and implementing data process solutions (networking, communications, and applications). It is a company oriented towards home market.

The idea of the start-up belonged to a group of Romanian software specialists, members of the Romanian traditional *Informatics Center Cluj (Centru de Calcul)* – a regional research institute part of a network of centers created in the centralized system of the Communist period. These centers were research institutes that frequently offered services towards various local companies. The company was founded in 1994, as a Romanian-German company (a joint venture at that time). The German investment consisted in capital investment; however, the foreign capital was withdrawn a few years later as the German investors reoriented from the Romanian market, and today C is entirely owned by Romanian shareholders.

From the very beginning the company developed its own brand (IT system), named SCS<sup>17</sup>, a registered trademark made under *ISO9001 Quality Standard Certify*, which has been constantly registering high sales and has positioned as one of the most reliable IT system at national level. The turnover of the company constantly grew, from USD 2.5 mil. in 1996 to USD 5.4 mil. in 2002 (source: official website).

Recently (at the end of 2005) the company became part of a Romanian holding (H) (gathering 40 companies covering complementary industries in IT retail, computer games retail and IT products and services). The company C kept its name and brands, but the holding took over 60% of the shares of C. The interviewee is now the executive director of the company, as he had joined the company for a long time. After the change of the major shareholder, no significant changes in the strategic decision have been made yet.

The company opened 3 other branches in Bucharest, Iasi and Timisoara (another two important cities in Eastern and Western Romania, respectively) with the intention to cover more than Transylvania area. The expansion was made both geographically and in terms of the services provided.

In 7 years, C has sold over 15.000 SCS computers (including service) to dealers and end-users as well. This brand conquered many prizes at the contests organized by the Romanian IT specialized magazines -Chip, PcMagazine, PcWorld<sup>18</sup>.

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<sup>17</sup> The SCS brand is certified at national level (IPA system) and C LEADER has been recently recognized by Microsoft as an IT system „Designed for Microsoft® Windows® XP”

### **Research Center D (chemistry and physics)**

The Research Center D is a part of a joint research unit of the Faculty of Physics and the Faculty of Chemistry and Chemical Engineering, within the Babes-Bolyai University of Cluj, Romania. The joint research unit is involved in two research fields, analysis of raw materials and ceramics and structural analysis. The center, founded in 2005, is intended to become an independent entity, in order to provide services for the specific market. The entrepreneurship is in the pre-start-up phase, as it prepares for a later incorporation. For now, it is an entity in the structure of the university, providing services to university departments and extending services towards businesses.

The activities of the Center include the analysis of the chemical and physical properties of various compounds. This implies the analysis of: raw materials, water composition, waste products, tests for physical properties of ceramic materials, etc. The Center was established in order to offer services by using standardized methods on one hand, and, on the other hand, to develop, validate and promote new methods of measurement, according to existing international and European standards

The idea of the center and its goal came out from the regular research services required by various internal requirements and external clients. From their experience, the researchers who founded the center (most of them senior researchers, with strong expertise) identified the needs of the market; they considered the EU accession of Romania a very good opportunity for developing services towards businesses. They especially envisaged the future certificates and chemical/physical analysis for products/wastes that will be required for many companies starting with 2007, as required by the *acquis communautaire* in the field of environment.

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<sup>18</sup> Data available on the company's official website



In this respect, the group of researchers who founded the center (researchers in physics and chemistry) realized that they needed a coherent structure able to provide interdisciplinary services for the university needs (tests for other projects in the university - Biology, Geography and Geology) and for private companies, and, moreover, to provide internationally certified services. The first steps were to create an entity within the university, to start the procedures for certifications and to look up for clients, as well as structuring an entire team for research.

## **2.2. Resources**

### **2.2.1. Finance**

*Company A* is a typical example of entrepreneurship, and it developed almost exclusively on internal resources. The first years did not mean big investments, but they did not mean big losses, either. However, when decided that the company would enter a new market niche (security software), financing for the development had to be found. The entrepreneur was decided to use internal resources, and based its plan on two main assumptions:

- the financing for the development of security software (the antivirus software that became the big success of *A*), using the financial resources which came from the sales and technical support division, considered a stable source of income, with a low, but constant rate of growth.
- after the development of antivirus software, this division was expected to have a very high and rapid growth rate, after the launching of the product on the market. The plan succeeded, the only external factor which prevented the achievement of the expected results was the crisis of the IT market in 2000, which led to some serious losses for the company. According to the president of the group, this was the only moment in the history of the company when they accessed external financial resources, namely a bank loan, in order to overpass the market crisis, together with prepaid sales; once the sales trend was restored, *A* started continuous growth, its antivirus product becoming a very successful product on the international market.

The strategy of the entrepreneur was always to use its own resources. With the one exception of the bank loan, he declares that the company never tried to have access to any

other funding sources (governmental, European, etc), a strategy that in accordance with the philosophy of the president, which is to stay away from the public sector.

A very important step for *company B* was the acquisition in 2004 by the multinational R. After a more difficult period until 2004, the company entered a new phase. B was considered an important asset in Eastern Europe. Therefore, important resources were used for the development of the company; the multinational R significantly invested in R&D, technology, human resources and market expansion, as the results are expected to be very rewarding. Reinvestments of profit were the only sources used.

Technology is essential in the pharmaceutical industry. In the last years, significant investments were made in equipment – over 5 million USD invested in new technology endowments production, and an investment of 1.5 million USD for bio-equivalence equipment.

In the opinion of the interviewee from *company C*, the *financial resources* are considered to be strategic. Along the years, a mixture of financing resources were used. In the beginning years, the joint venture capital helped the company to develop. C also got bank loans from private banks, from Glob Invest Fund, and European funding (to finance an information security system). The new acquisition by the holding R did not bring important investments in the company yet.

As it is in a pre-start-up phase, *research center D* is still part of the university (not legally incorporated yet). The main part of the financing of the center comes from the CEEX and INFRAS 539 programmes (public programmes supporting research, implemented by the Ministry of Education and Research through its specific bodies). An important share of co-financing has been provided by the university from extra-budgetary funds (that is, funds not coming from the governmental financing system, but from non-public sources of financing – tuition fees, external services - teaching, research, sponsorship, etc. These funds are autonomously managed by the university, independently by the resources coming from the public funds.

Only the technical staff is actually employed by the Center. The researchers work in different departments of the university as regular employees. For now, the main financing resources come from the governmental programme, from university resources (others than public) and from the services for various external clients (in development). The sources are used for

R&D activities, for the certifications (necessary for providing certain services for companies after 2007) and technology.

### **2.2.2. Human resources**

*Company A's strategy of human resources* is to make the organization function on the basis of every person's responsibility, and not on the basis of control. The president admits that this leads to a risk that loss of control would lead to lower performance. This risk has been however overcome by the creation of a culture of each employee's responsibility, which is a selection criterion itself. The recruitment is international, depending on each department's needs. The recruitment is made through different means, depending on the position and level required. Usually, for development positions (especially senior), informal recruitment is often used, rather than using Internet or announcements. Otherwise, recruitment is made through specialized publications, Internet, etc.

Usually for senior positions (development and sales) the recruitment is also international. However, the company keeps a significant percent of Romanian employees. Little importance is given to the collaboration with universities as a possible source of recruitment.

The knowledge updating is very important for the human resources development. As the president of the company admits, the employees are very aware of their development needs and the financing of a training course is often decided upon the request of the employee. The frequency and periods of formal and informal training, updating and information exchange depends on divisions; for the development divisions, each person participates in approximately 6-7 formal trainings per year, and up to some tens of informal updating events (web conferences, etc). Employees also have in their remunerations packages shares of the company (insignificant as percent of the total shareholding, but important for the individuals).

The personnel is evaluated yearly. The evaluation process is realized by combined methods; the intention was to create a system that would allow bi-annual evaluation, but as one evaluation period is one month, it would have perturbed the regular activity too much.

The human resources are a very important asset of *company B*. B has a strong human resources department, with a coherent and well-developed strategy. The aim of the department is to provide highly skilled, professional personnel. At a human resources level, B acts on two tiers:

One is to recruit people suited for senior positions (especially for research positions), and B is constantly recruiting externally highly skilled professionals (for management positions, but also very importantly pharmacists, chemists, etc, especially as the R&D division has been given major importance since the acquisition of B by the multinational R). They collaborate with academic institutions in that respect (the core group of the R&D division also came from a research institute). In the product development division, the team of the company has been remaining stable since 1999, when the lab for product development was set up.

The second tier of the human resource strategy is the development of the personnel internally, that is, to recruit personnel with the same vision and goals, in order to be compatible with the organisational culture of the company. Along with the professional skills, B also looks for the development of teamwork skills and the recruitment of persons with a certain way of thinking, capable to work in teams, who are passionate about the work they do. For this purpose, B mainly recruits young people (entry and middle level). B also collaborates with the local universities (Faculties of Pharmacy, Medicine, Chemistry, etc), offering internships and support for study projects for students, who represent a good basis for recruitment. In this respect, a system has been established for internal recruitment and internal promotion for all positions, including for management positions.

The company also focuses on the development of personnel, as they want to create a learning environment, which is essential for keeping up on the market. The training is aimed to top management, middle management and the deputy positions, including the research staff. The company works with a network of training providers, carefully selected, based on performance, prestige, efficiency in terms of costs, quality of services, capacity to meet the deadlines and achievement of objectives.

The specific training in the field (especially in the R&D department) is very important, and it is also held in Romania or abroad. Usually, the employees come with suggestions regarding their needs for training and the decisions are taken collaboratively. B also has training contracts with Hewlett Packard and Agilent (linked to the acquisition of equipment, for which the related training is included).

The training programmes are set in Romania, as well as abroad. For some specific and more frequent trainings (as for sales) the company has its own trainer (as the company has 250 people employed in sales), but also outsources a part of the training on sales. The sales staff also has quarterly exchange of experience, these programmes being considered

bonuses (exchange between the employees from the headquarters in Cluj-Napoca, and the Bucharest office).

B also provides training for teambuilding (a programme that involved almost 90 employees), business skills (for middle management and deputies), change management, etc.

Since 2005, the personnel evaluation is realised by a Centre for Internal Evaluation set up under the licence of a Profiles International methodology. The internal communication is quite developed, too, as an internal magazine is edited for highlighting successful employees, special company events, etc.

Today, *company C* has 100 employees. The main methods used for recruitment and selection of personnel consisted of the use of specialized websites offers (e-jobs websites) or the posting of job offers in local newspapers. The company promotes a long-term strategy regarding the training programmes provided for its employees, on a yearly basis. The training programmes target, mainly, the sales force and the technical staff in order to update their knowledge and skills in the field.

Due to the partnership developed with companies like Microsoft, Fujitsu Siemens, Hewlett Packard, the staff benefits from high quality training programmes, workshops and seminars, all being great opportunities to update their knowledge and to acquire new skills and competencies. As C is authorised to sell and offer service and support for the products of its partners, the usual partnerships with the big companies in the field offer in exchange training programmes, exchange of information, methodologies, etc. For instance, C is Microsoft Gold Certified Partner.

The company is clearly service-oriented, so training is perceived as a way to ensure high quality for the services provided. The company has also seized the opportunity of developing other skills (we refer to training in project management offered for the employees as a result of a partnership with the Chamber of Commerce and Industry).

*Research center D* is structured on three main tiers: Senior Researchers, Junior Researchers and Technical staff. The activity of the Center is sustained by three complementary components: basic and applied research, experience in the industry and expertise in equipment.

The senior and junior researchers are employed on different positions (teaching and research) in the structure of the two faculties (professors, lecturers, associate professors, teaching assistants, PhD students), and at present they are involved in the Center activities on a project basis. Besides the activities carried out through contracts and the labs, the Center also embodies a structure and a culture of researchers who exchange ideas and develop mentorship for younger researchers.

### **2.2.3. R&D**

Until 2003, *company A* was mainly structured in two divisions: the division of sales and support, and the software research and development division. Strong reinvestments of profit were made for the sustainability of the latter division, during the development of new products (which can take years). The total investments in R&D are up to USD 4 million. The R&D is realized mainly locally. As mentioned before, recruitment for research positions is made nationally and internationally.

The R&D division represents the core of the R&D activity of the company. Since 2003, when the company's antivirus technology was sold to Microsoft, all the knowledge in security systems had to be used in another market niche.

In this respect, since 2003, the R&D division restructured in three main directions:

- Security solutions (which took the form of a technological package dedicated to business environment, recently launched – January 2006)
- ePayment system
- the development of a mail server with high security systems, which mainly addresses businesses needs.

Regarding the innovation strategy, according to the president of the group, innovation has to be not a professional concern, but a passion. As people are a very important asset for the company, their selection and development is very important.

Much of the new activities of *A* are at an initial stage of entering the market, after a long period of research and technological development. Practically, after the restructuring in 2003, for 2 years no new product was launched, as the development phase had to be accomplished.

Mainly, there are two main phases for innovation products that can be identified: the first represents the “development” phase, which does not bring profit, as it is innovation-oriented, and not sales-oriented. Usually, a technical expert is in charge with the division in this first period. The second is the “sales” phase, in which the market penetration is very important, and also the profits. In this phase, the manager of the division is often a sales specialist.

The R&D in *company B* is oriented towards to kinds of studies: development of new products and bio-equivalence studies. Since 1999, an independent research laboratory of the company created by a small group of researchers became the department for the Development of New Products. In 2002, the department of clinical studies of bio-equivalence was set up (at the time, the department was the only department in Romania to be internationally certified GLP - good laboratory practice, a system of quality assurance, and GCP - good clinical practice).

However, the R&D activities do not involve many people, and the development of new products even fewer, as B mainly follows the production of generic pharmaceutical products. However, the new management of the company decided to strongly promote the existing products on the market (developed by the company, registered trademarks) and to strongly invest in the R&D department. The development of new products is regarded as a strategic asset of the company, as the knowledge already gained represents a very important knowledge resource. For instance, a very successful product of B was recently relaunched on the market, with qualitative improvements and supported with an aggressive marketing promotion.

In 2005, an important investment of 750,000 euro was made for the improvement of capacity and quality of the lab. In the same year, the Laboratory of Quality Assurance was set up, and the company succeeded to implement a Total Quality Management system.

All in all, in the last years, significant investments were made in equipment – over 5 million USD invested in new technology endowments production, and an investment of 1.5 million USD for bio-equivalence equipment.

For *company C*, R&D means innovation in the design engineers’ activity. Innovation refers to new methods for setting up networks, with different destinations, networks able to meet different needs. The company has a priority in sales and marketing activities, but R&D is important for upgrading the quality of the services offered, for motivating the employees, for ensuring the company’s competitiveness on the IT market. The first successful IT system of

the company was the result of years of development of the product. The development division is an important asset of the company, but diversified, as the company can now provide different IT solutions. The new owner of C did not announce any intention of changing the R&D department, but further developments might be expected.

As part of a university, *research center D* has to find financial and organizational solutions appropriate to the advantages and constraints that are connected with their academic status, and to take advantage of the resources and reputation of a recognized and important academic institution for developing market-oriented research.

The development strategy is therefore based on a few directions; the most important is the RENAR certification that allows the center to enter the market; RENAR is the Romanian Association of Accreditation (RENAR), member of the International Standardization Association and partner of European Committee of Standardization.

The other direction is the development of research (especially regarding the means and methodologies for analysis of various compounds). In this respect, the research in the center is quite advanced, as the university has a very good experience and results in this field. The resources for research are not very extended, and due to the nature of their work, the technology and consumables (e.g. various substances and testing kits) represent an important resource. However, technology has been acquired through the governmental funds.

The exchange of information is essential for the update of the researchers, who regard this issue as crucial for their professional development. The main ways to update and exchange information are: international conferences, publications, academic exchanges, post-doctoral scholarships (France, Spain, Sweden), joint PhD programmes, subscriptions to major publications (from ISI database) and other scientific events in the field.

### **2.3. Strategies and restructuring**

After the few first few years operating on the CAD (Computer Aided Design) software market, the manager and founder of *company A* decided to reorient strategically and enter the market of security solutions. Development of competitive new products represented a long term investment at the time, and was based on a business plan developed by the management of A based on the previous experience, and without external consultancy.



The success of antivirus software required substantial resources and time to develop, as its first version (which has been continuously developed afterwards) was launched after more than one year of development. The financial support came from the structure of the company itself. Until 2003, A was mainly divided into two divisions: the antivirus division, which aimed at the international market and had the development division. The other division of the company was home-market oriented, and realized software license distribution and provision of professional IT services.

The second department (not based on innovation) represented the resource for the financial sustainability of the antivirus division for the development period. The financing of the development period is a very delicate question, but A usually managed to finance the development of new products by reinvesting profits from the home-market oriented sales division

Therefore, until 2003, the structure of A followed these two main directions, and supported the strategy:

- the antivirus division, which required much investment; the advantage of the development of high-tech products is that once launched successfully on the market, they bring high incomes, with a significant rate of growth (the target of this division was the international market, where A entered with high-quality products), and
- the sales of licensed products of different partners, technical support and professional services, which were aimed towards the home market, and provided stable incomes.

After the sale of the antivirus software to Microsoft in 2003, A had to reorient the organizational knowledge and the skills of the human resources that had worked in the antivirus division. As the antivirus technology was sold, A found itself in the glory of the best deal on the Romanian IT market, but also in a turning point as a company.

Then, the complete restructuring of A was decided. The starting point for the restructuring was to look for market niches where the organizational knowledge of the former development division could have been useful. Therefore, the choice was for products that require a high input for security.

The restructuring was operated in-depth, as from the initial company, structured in two big divisions, the new A Group emerged. The Group is now composed of five companies, each

of them with different management. The board of the Group is common, as well as the President, founder and owner.

Each company is financially independent, which encourages employees (who are also shareholders, as they receive a small amount of shares as incentives) to make their own division competitive. At this stage, the new companies which develop innovative products are still financially supported, as they are expected to become profitable themselves in the short term.

The Group acknowledges innovation as its main intangible asset. In this respect, the structure of the new group has the following shape:

- The IT professional services division strengthened and was reshaped. The company is also divided in two main business lines: security solutions and license distribution (through its online shop). Its development division uses much of the organizational knowledge on security which was previously used in the antivirus division.
- The ePayment company has already entered the “sales” phase, after 2 years of investments in technology and development. There is expected an important growth on the market, and therefore the sales component is now much more important. ePayment provides eCommerce solutions on local market for each online shop and worldwide only for software authors.
- The company oriented towards the development and support for mail servers. It has recently launched a mail server with high security systems. According to the President of the Group, the product has been well received on the market.
- The technical support company is the last component of the group and basically supports with shared services the other three companies.
- A company dealing with call centers was also established inside the Group.

As A is a player on the international market, the benchmarking is realized on the most competitive products on the world market. However, the evaluation of the results is strictly directed to market share. The innovation is important, but only taking into account the results on the market.

Regarding the innovative products, the interviewee's opinion is that Romanian market is not the ready for Romanian quality products. The foreign standard products are perceived as better than similar Romanian products by Romanian consumers. Therefore, the strategy of

the company is to operate internationally, and the Romanian market represents a very little part of its sales.

However, the Romanian market is very important for the license sales, technical support and professional services, and, recently, as the main market for e-payments. It is interesting as a home market, but not strategically important for innovative products. The main markets A operates on for sales of its innovative products are US, Western Europe and Japan.

Usually, the US market is a test market, as the American users are far more interested to test new products. The European market is usually at the highest point of sales when a product is already launched and tested.

The Japanese market is still a challenge for the group, as it is very difficult to enter this very “traditional” market, where only tested and recognized products are accepted and where newcomers accede with much difficulty. For a better presence on the international market, A has three international offices, in the USA, United Kingdom and Hong Kong.

The new strategy of *company B*, after the take-over by multinational R, was to become an important presence on the Eastern European market based on production of generic medicine, the support and development of new products (own brands).

As B developed some own products, the company has patents for the synthesis of active substances. However, B mainly produces generic products and its position on the market is to be established from this point of view. Therefore, the company is not competing with research based, big international companies in the industry. They prefer to invest in research and production, in order to improve quality and to develop new products.

The target market is the Romanian market and the Eastern European market. The offices opened abroad, along with the internal network of distribution, ensure a good geographical coverage. A very strong sales department, with a highly dynamic and motivated team is very important in order to have good market share; the present sales team has been developed in a very short time (since 2004). B has now two branches abroad (as mentioned before, in Russia and Ukraine), and exports to countries such as Poland and Lithuania. However, the Romanian market is considered very interesting, as it is an emerging market; even if it is known that education for health is still missing to a great part of the population, and Romanians still spend less than European average on health, the market is growing.

For the development of new products, B uses a modular inter-department system: first, the Business Development department carries out market research, looking for the most wanted products on the market and potential niches to be attacked, as well as products registering highest sales; as a result, they propose a list of products with the following information and additional comments:

- when the patent for the original product expires
- the prioritisation of products.

Consequently, strategic decisions are made regarding the research activity for developing a new product (which usually takes 2 or 3 years), or to buy the final product. The list of products and prioritization is revised every 3 months. Therefore, the research and the commercial department have to work closely together for good co-ordination (as, for instance, only the products with bio-equivalence tests are on the list of the products with partial subsidization of the price from public funds).

Nowadays, *company C* is one of the most important companies operating on the Romanian IT market. Recently (at the end of 2005) C became part of the holding R, which is much involved in the retail and support services sector, and less in R&D. For now, no strategic changes have been announced, but it would be interesting to follow the future strategic decision (if the new owner decides to support the R&D division or the sales and support services division). Taking into account the declarations of the new owner, the goal of this acquisition was to strengthen the position of the holding on the IT market, which could include the strengthening of product development activity.

C made clear efforts to increase its competitiveness on the market, which was recognized by the Standard *ISO9001:2000 Quality Certificate*. The company's turnover constantly increased since 1994. In the past 2-3 years the company registered a remarkable development (last year they reached a turnover of 15 million euros).

C is not aiming to operate on external markets. Their main competitor is represented by a company located also in Cluj Napoca, but the real competition at a national level comes from strong companies located in Bucharest. From the interviewee's point of view, 60% of the Romanian IT market is located in Bucharest, and the company tries to cover the market at a national level (as they opened branches in Bucharest and two other important cities in Romania).

The competition represented by MNCs is more and more obvious on the international market but also on the Romanian market. Their presence has increased competitiveness, and has an important impact on Romanian companies. The fundamental research is carried out in the R&D departments of the multinational companies. Their interest is to access new markets for their brands. It is relatively simple, as “everyone wants to sell!” The interviewee perceives the delocalisation of MNCs as a positive phenomenon, for the IT market itself and for its clients as well. The MNCs benefit from good reputation and the Romanian companies might feel encouraged to develop partnerships with them, in order to speed up the process of skills and knowledge transfer.

The interviewee characterized the current Romanian IT market by saying that the supply for IT products and services is constantly growing; however, Romania is a weak producer in the IT industry, being still highly import-oriented.

From an entrepreneurial point of view, *research center D* is in the pre-start-up phase, as its immediate goals are:

- The RENAR certification. This goal has been set starting from the evaluation of the competencies already developed by the team of the Center; the entrance on the specific markets niches identified is however dependent on the certification at European level.
- The acquisition of new equipment, which is necessary as most of the equipment came from donations of universities and laboratories (which do not imply the latest technology).

For achieving these goals, the following steps have been realized since 2004:

- Study of the legislation regarding international standards for the services provided
- Study of the EU regulations and procedures for quality implementation in laboratories (ISO 17025); the following steps regard the preparation for obtaining the ISO quality certification.
- Evaluation of existing laboratory equipment and equipment needs
- Selection of types of testing to be provided
- The quality manual for the activities of the Center has been compiled
- The staff has been trained in quality audit
- New equipment has been purchased

- Laboratories have been organized, as this activity is extremely important for accurate and efficient analysis processes.

The contacts with the potential clients are so far maintained by direct contacts (formal and informal), e-mail and phone. However, the client relations and the development of the market is a very important issue, of which the management of the center is very aware, on one hand, but also acknowledges the need for consultancy in marketing and technology transfer, as the staff of the center do not have this kind of expertise. Therefore, the development of university internal services such as technology transfer and investor relations is expected to support the activity of the center (as the structures already exist, but the expertise is still at an early stage). For now, there is no evidence that the center would get any external consultancy on marketing or client relations, for two main reasons: lack of financing, and the approach of using internal resources (that is, the resources of the university) rather than contracting private companies.

#### ***2.4. Partnerships and relationships; Support and barriers***

Company A's partnerships are developed with private companies of all sizes and geographical spread, depending on the nature and size of the partnership. Usually, the partners of A are from the private sector. Partnership is available for any part of the activity of A, except for the research and development activities, for obvious property rights reasons. However, it seems that the networking is based very much not only on formal contacts, but on informal contacts and on the informal community which is created around common goals and interests. As in the case of company C, company A has established strong partnerships with worldwide providers (such as Microsoft, Microsoft, Checkpoint, Cisco Systems, Kaspersky), as the company sells and offers service for their products. In exchange, the partners offer partnership packages, such as trainings, information exchange, participation in various events, etc. The partnerships also are made with retailers all over the world (big private companies, as well as small companies). Usually the small companies are used as retailers for testing a product on the market, while bigger retailers are contacted later.

A prefers partnerships with private companies – in Romania and abroad. A does not realize partnerships with research institutes, universities or public authorities. The policy of A regarding public institutions (including public institutions as clients) is not to get involved in relationships with the public sector, as it is, in their opinion, too bureaucratic and has a different approach than A. Therefore, the private sector is the main area for partnerships and

sales. A also avoids public acquisitions and service tenders, as the strategy is not to get involved in any lobby activities in the public sector.

Regarding the scientific parks, A Group would be interested in a high-tech scientific park for two main reasons:

- the activity in a community that have the same interests (be they competitors or partners), and
- scientific parks would be a good place for small firms to be identified, as the owner of A is also interested in investing in small and promising IT businesses.

According to the president of the group, there is no scientific park actually developed in Romania; moreover, he thinks that for high-tech scientific parks, there should be one located in the Bucharest area, where A would be very happy to have offices.

A has patented its products in the US, for better property protection reasons. The position of the company is that, even if it is more costly, this is an issue of main importance, and there is hope that software patents will be also introduced in Europe. However, all products of A are registered trademarks in Romania. A is ready to pay more in order to have its innovation protected. For now, the products developed by A are legally registered at the Romanian Office for Intellectual Property Rights (Oficiul Roman pentru Drepturi de Autor – ORDA). As the President of the Group says, the copyright issues are the risks that any IT company has to take into account at the moment; however, the introduction of patents in Europe would be a very important step ahead in the matter.

Company B uses outsourcing for market development, such as marketing and advertising, media, pharmaceuticals market research, and market research. Important investment has been made in marketing and media communication, and, after a programme that cost 1.8 million USD, B is now known also abroad, and able to have a large network of partners.

As the company produces generic drugs, B developed partnerships for the acquisition of licences with Cilag, Ethypharm, Hoffmann La Roche, Janssen Pharmaceutica, Pfizer, Servier, etc.

In the research and development, the company is in very good cooperation with academia, and even offers support for students in the limits of confidentiality, as the company provides support in terms of equipment and substances.

B also has contracts with research institutes of Cluj and Bucharest, especially for specific scientific work, for which B has not enough expertise or capacity, as well as for various studies, as the other bio-equivalence centres in Romania are located in research institutes. The company also collaborates with Pharmaceutical Development Services (UK).

The legislative framework is regarded as a continuously changing one, as the *acquis communautaire* in the field is in course of adoption. However, the commercial director considers that the legislation encourages the Romanian producers, meaning the performance of the companies applying TQM. However, the interviewees showed some concern regarding the implementation of the *acquis* in the field of pharmaceuticals (with a deadline of June 2006). The European laws refer to strict rules with impact on quality, including in research and development activities, which are difficult to implement, and, according to the R&D director of the company, Romania did not succeed in negotiating a more realistic deadline for the implementation of the specific *acquis* (as Poland did, for instance).

In the opinion of the commercial director, the idea of a cluster based on the pharmaceutical industry is interesting, as the company is highly oriented in outsourcing various services, and are interested in relocating some of its activities in more advantageous areas. The idea of scientific parks is an attractive one, much more than one of an industrial park.

Company C has developed, for years, an important network of partners, including world-class companies as well as local authorities (Local Council, County Council, the Department for Persons Records, the Gendarmerie), the banking system, and insurance companies. Partnerships with top world companies were meant to contribute to the transfer of prestige and strengthen the company's position on the IT market. C has also developed important partnership with foreign providers of equipment, from the Netherlands, China or Taiwan (one of the most competitive world producers in the field)

Special importance is given to the collaboration with universities (an important joint project was developed with the Technical University and the University of Agricultural Studies and Veterinary Medicine, both located in Cluj Napoca, a project based on a software program meant to monitor raw materials processing in the food industry), mass media companies, NGOs, SMEs and various big companies. The renown of the partners helped C to reach a good position on the IT market, so it is right to talk about "a transfer of prestige" and to acknowledge the importance of networking for a constant exchange of information and



knowledge. Good partnership increases the chances to access European funds, to promote European projects in the field, so the network system is considered as a present and future opportunity.

The company is proud of the continuous enlargement of the network due to mutual confidence and willingness to succeed. The interviewee acknowledges the importance of word of mouth as an important means for attracting new partners, for maintaining the good name in the industry. Using its own capacities, the company's market share has increased, allowing a more active presence on the Bucharest market.

C is aware of the importance of information and constant improvement of knowledge and competencies. For a proper knowledge and information updating, C is monitoring the specialised magazines and websites (we may easily notice the constant presence of the company in these magazines). Moreover, the company is present at CEBIT Fair (one of the most important IT fairs, located in Hanover, Germany) and other two Romanian IT fairs. The participation in these events is considered of high importance for the company's development and visibility.

As far as the Romanian legislation in the field is concerned, the interviewee considered it rather unfavourable, insufficiently supporting the companies operating in this sector. The software producers and the companies promoting networks based on hubs seem to benefit more from the facilities offered by the law, especially fiscal exemptions. There is a clear need for establishing certain priorities in the Romanian IT sector, for increasing the changes for a competitive advantage. The Romanian authorities should promote coherent policies in order to motivate the existing companies and the potential investors as well to invest in the field. The interviewee referred to governmental measures and incentives to stimulate the investors, both Romanian and foreign (e.g. there should be incentives for reinvestment of profit in R&D, reductions on taxes if R&D and innovation in IT promoted, etc).

The main partnerships envisaged for the activity of *research center D* are joint analysis with complementary labs and check tests (inter-lab tests), which are often required for different kind of analysis and tests. The main partners (as well as funding sources, for now) come from the public sector.

The interviewee appreciates that the legal standards and regulations in Romania in the field are supportive, in the sense that Romania keeps up with European legislation. The environmental legislation changes are especially important for the center, as the new regulations actually open a new market for chemical and physical analysis. The center aims

to enter mainly the Romanian market. The interviewee appreciates as main competitive assets the human resources (highly experienced in research and practical work) and the equipment, which is getting updated, especially through the two governmental funding programmes accessed.

As the lab is in course of development, the benchmarking is still more important. The usual comparison is made to similar structures (centers or research institutes) of prestigious partners from USA and Europe; however, an important comparison is realized with other Romanian laboratories, visited for the preparation of the certification application.

Regarding the location in an industrial park, the interviewee sees two important aspects: for their kind of activity, it is more important to create virtual networks, than actual geographic agglomerations. On the other hand, as the center cannot afford to create its own production platforms space and labs, there would be room for subcontracting in production processes; consequently, in the long run, the center is looking for strategic partnerships for subcontracting production phases.

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