CO-OPERATION BETWEEN HIGHER EDUCATION INSTITUTIONS AND INDUSTRY
THE CASE STUDY FROM WROCŁAW IN THE LOWER SILESIA REGION [1]

AGNIESZKA KLUCZNIK-TÖRŐ

INTRODUCTION

Under the conditions of the rapidly changing global environment, knowledge-based sources of economic and social performance tend to determine the direction and conditions of progress in the most developed countries. The quality and adaptability of human capital in response to technological changes represent the most valuable contribution to development in the contemporary international economic contest for investment and technology transfer.

Generally, and particularly in its most advanced forms—higher education and R&D—the process of education can be considered the potent source of sustained economic growth and competitiveness due to the fact that education is likely to have a significant influence on economic, personal and social development (Klucznik-Törő, 2007). The logical consequence is that through the responsive, structure of higher education, with its qualitative and quantitative understanding, sustainable development can be stimulated.

The sustained accumulation, expansion and renewal of knowledge through higher education institutions and programmes in response to a changing global environment provides for the creative assets and sources of higher added values in global competition. Hence, higher education institutions play a significant role in the creation of knowledge and its transfer, and these roles are recognised in the knowledge-based economy as core functions of higher education institutions. Development of co-operation between academia and the world of labour tends to focus on achieving aims such as:

- increasing employability of university graduates,
- decreasing alternative costs of higher education (higher in case of employment below qualifications or occupation without link with formal education),

[1] I would like to express my great appreciation and thanks for: Ms. Malgorzata Naskrent from City Promotion Office, Municipality of Wroclaw; Mrs. Ałła Witwicka-Dudek from Careers Service Office, Wroclaw University of Economics; Dr Csaba Törő for his irreplaceable help in the linguistic labyrinth of the foreign language.

- the "production" of highly competitive human capital—not in the context of lower costs of employment, but rather by means of higher qualifications and lifelong learning skills,
- giving a shape to the education system, responding to the needs of the current and future demands of the labour market,
- building more competitive industries.

Table 1. Partnerships, alliances and collaborations between the two actors/sectors of socio-economic life (i.e. universities and industry) can take various forms such as:

long term research agreements	between specific firms and specific universities
consortia of firms supporting research	in one subject area at a single or multiple universities
campus-based interdisciplinary research centres	which bring together scientists from different areas to focus on agendas presented by business or industry
technology parks	to locate businesses near university campuses and university facilities
incubator facilities	to nurture fledgling enterprises seeking to develop and market new technology and industry associates programmes
technical service agreements	
specialised training programmes	for high tech fields

Source: Clark, Neave, 1992, p.1602

The choice of the option of collaboration is dependent on organisational culture, previous experience on both sides and the purposes of the collaboration.

UNIVERSITY—INDUSTRY RELATIONS FROM THE HISTORIC POINT OF VIEW

The first universities in the world—Bologna (est. 1088), Paris (est. 1150) and Oxford (est. 1167) were built on three faculties—law, medicine and theology (Davis, 1996). The first universities, especially in Italy, enjoyed broad independence from the local communities and local guilds—the predecessors of industrial organisations. The history of many universities shows that they were established in one town, after four or five years moved to another town and after some time moved again or closed down (Bender, 1991). This happened in cases when the local, usually financial, conditions became unsatisfactory for professors. The number of teachers and students was made a change of venue feasible, e.g. the Italian Renaissance universities usually amounted to 30-40 teachers and 100-150 students.

It is interesting that both students and scholars created a corporate organisation: a student guild and scholars' guild that were recognised as a guild of "consumers/customers" and a guild of "service providers".

Besides the first Italian universities, most historic cases have shown that in the following centuries universities usually represented some symbiotic relationship with their local communities because those societies and the academics benefited from each other e.g. in the form of prestige for the city and a stable budget for the university.

Just to summarise the role of the first universities: not only now, but also in the past, universities have played the role of revitalising the local communities and towns, even though the relations between universities and guilds (predecessors of industrial organisations) were very limited or did not exist at all.

The Humboldtian university model was established (in 1810) by Wilhelm von Humboldt, rector of University of Berlin, without a long-run impact on industry—academic relations. The new model introduced the principle of academic freedom resulting from the status of academics who were conceived as an elite creating independent knowledge with no social obligations (Weber and Duderstadt, 2004). The positive effect was that academics could dedicate themselves to knowledge, learning and discoveries independently. However, on the other side of the coin came the separation of the world of academia from the world of industry, which in many cases of European universities exists to some extent to this very day.

In the late 19th century in the United States of America, a strong social criticism of higher education institutions appeared. The criticism was caused by the lack of responsiveness of universities to the needs of the labour market for the increasing role and importance of high tech industries. It gave an impulse to establish the first forms of co-operation between universities and industry. The pioneer in this field was the Mellone Institute at the University of Pittsburgh (1910). Later, there was a huge renewal of interest in the 1970s and 1980s (Clark and Neave, 1992: 1602).

What is the current state of co-operation within the European system of education? It seems that academic society has widely recognised the necessity of closer co-operation between universities and industry (business). But the fact is that it is still rather wishful thinking then reality. The EU Future Presidency conference in Stuttgart dedicated to European Researchers of Tomorrow—crossing the borders of Academia and Industry can be taken as one example. The topic and the high

status of the conference (organised under the German EU Presidency) and its localisation (in the stronghold of one of the German industrial regions) gave a perfect opportunity to link the sphere of knowledge with the sphere of industry. But the fact is that representatives of enterprises and business were not very much encouraged to participate in this event—among more then 300 participants there was only one representative of industry.

CO-OPERATION BETWEEN UNIVERSITIES AND INDUSTRY—THE CASE STUDY FROM THE LOWER SILESIA REGION

Since the opening of the system of education in Poland to the private universities in 1992 18 private higher education institutions established which number rised up to 221 in 2002 (Oświata i wychowanie, 1999; Szkoły wyższe, 2003), competition has been increasing in the educational market. A growing number of universities—from 112 in 1990 up to 344 in 2002 (Szkoły wyższe, 2003)—with a decreasing number of secondary school graduates has resulted in stronger competition between universities for new students. The offering of interesting pro-market programmes and courses is one of the methods applied in this competition; another is to offer possibilities to complement theoretical education with practical experience. The additional practical aspect of education is made possible by co-operation with industrial and business actors. The co-operation provides benefits for both sides. Universities benefit by providing students opportunities to obtain practical experience during the university period and increase their chances after university graduation for interesting and well-paid employment. For industry, co-operation with universities is the simplest way to recruit the most talented students.

However, until recently co-operation with universities has been recognised as a new phenomenon, mainly caused by the problems of the transitory Polish labour market and one of the highest levels of unemployment (above 19% in 2004 (Rocznik Statystyczny, 2006) in Europe. Currently the opposite process can be observed—the increasing problem of a lack of qualified and unqualified workers brought about greater openness of the industrial sector for co-operation with universities and other educational institutions.

So far experiences are positive on both sides and those companies which established their activity in Lower Silesia are pleased with the quality of their labour force. This quality results from the high level of education offered by universities in

Wrocław and the wider range of available courses. The quality of higher education institutions from Wrocław is confirmed by the fact that universities like the Wrocław University of Technology, the University of Wrocław or the Wrocław University of Economics are ranked as the best higher education institutions not only in the region but also at the national level.

A large group of companies have signed long-term contracts with universities, which guarantee access to top class specialists or commit them to conducting complicated research. Bilateral agreements have been signed among others by Electricite de France, Fagor, HP, Macopharma, Master Foods, Philips Lighting, Siemens, Volvo and Whirlpool.

Various elements of the regional picture have reinforced each other and produced a favourable environment for the achieved results. Intensified actions of local government have encouraged investors to set up their businesses in the region. Efforts were made by university leaders to meet the expectations of students and fulfil the social mission of universities by adapting education programmes to the needs of the economy as well as the co-operation of investors looking for human capital. Finally, a large number of students undertake university educations with the hope of achieving a competitive position in the labour market. All of these circumstances have contributed to the creation of 100,000 new workplaces in the metropolis since 2003 and around 80,000 more are predicted in the next 3-4 years.

The Wrocław University of Economics offers a remarkably successful example of co-operation between university and industry. The Careers Service Office was established as a unit solely responsible for this university activity. The main aim of the office is to play the role of the bridge between 1) the university and the labour market as well as 2) student/graduates looking for employment or work experience and employers looking for qualified employees. The mission of the office is to bring closer the two worlds—employers and students—by observing the regional (local) labour market and learning its needs, e.g. planned investments, forecasting of the labour market, etc. The activities worth mention:

- "Open Door Days" organised by the university to create an opportunity for firms to present themselves and advertise their work offers for students,
- "Meetings With Employers" events organised twice a year with the purpose to give a chance for a face-to-face meeting between students and 20-30 employers, who present their offers of work, training, practice etc.,

- training of generic skills co-organised together with employers from the region, giving a chance for students to learn such skills as operating with the integrated management system (SAP), office correspondence and trade correspondence, training of contacts with clients, telemarketing etc. The office has observed a new and interesting phenomena: employers expect the university to provide practical skills. Prepared trainings should fulfil this demand, at least to some extent.
- co-operation of the university with the Wrocław Agglomeration Development Agency also providing a great opportunity to learn the needs of employers and investors.

The development of co-operation between universities in the Lower Silesia Region and the business-industrial sector has been possible thanks to the great support from the local government, especially the City Promotion Office of the Municipality of Wrocław. Some of their pioneer actions are unique, not only at the city scale but also on a European scale. The most interesting among them:

- "Let's Win Index, Scholarship and Place in Dormitory—and Do Study for Free!"—internet competition organising, together with Wrocław University of Economics, Wrocław Technical University, Higher School of Banking, Higher School "ASESOR"; programme was addressed for secondary school graduates,
- "Taper Wrocław"—encouraging young people from the Ukraine to study in Wrocław by promotion of Wrocław as a place with a dynamic economic, social and scientific development and prospects.

Another important element has been the establishment of the European Institute of Technology in Wrocław became a priority for the local government. As part of its contribution to the project, the city would provide accommodation for its employees (flats), a complete infrastructure, organisational support at all stages of the implementation and later the operation of this significant investment and support related to developing its communication system (ICT, road and air transport).

A step forward into closer academy—industry collaboration—the European Institute of Technology and the response of Wrocław to the European Commission project

Although the framework and concept of education policy is generally defined at the national level, nevertheless the composition, the focus and orientation of coordinated programmes among EU member states can be influenced or stimulated by initiatives

launched at the level of the European Union. One illustration of these initiatives is offered by the European Commission in 2005. It proposed the establishment of the European Institute of Technology (EIT), its mission being to promote education, research and innovation:

- education—as a unique educational model would attract candidates for MA and Ph.D. students and would give them education at the highest international level,
- scientific research—it would range from basic to applied research with a particular focus on industry concentrating on interdisciplinary areas with a strong innovation potential,
- innovation—the EIT would develop strong links with the business community which would ensure that its work is appropriate for market needs and would help orientate its research in directions useful for the economy and society.

The idea of establishing the European Institute of Technology (EIT) was born as part of the policy of building the bridge between the European Area of Higher Education (EAHE) and the European Research Area (ERA), and represents promising elements of co-operation for rewarding and joint efforts to reproduce and renew the foundations of knowledge on the European scale. However, the Massachusetts Institute of Technology was regarded as the prototype and model in terms of financing and structure.

The essential condition of the creation of the EIT was determined as its capacity to generate more and new forms of co-operation among academic centres across the Union as well as between the Institute and potential industrial partners. The very first response of the academic world to this idea from the European Commission came from Wrocław and its scientific society. In favour of the quick decision expressing the willingness and readiness of Wrocław and its universities to host the EIT project was:

- excellent location of the town— in the middle of Europe at the crossroad between west—east and north-south of the continent, on the border with Germany and the Czech Republic,
- strong and long-lasting academic traditions coming not only from Wrocław itself but also from the university of Lvov, moved from eastern Poland to Wrocław after the Second World War with its firmly established achievements in sciences, especially in mathematics, chemistry and physics,

- great scientific potential of Wrocław linked with the quality and number of professors and students (135,000 academic students),
- massive investment on the part of the local government, the academic community and foreign companies (since 2003 investment has reached over 3 billion Euro resulting in the booming regional economy with its demands for further investments in knowledge.

Among the 6 pillars of the Polish offer to the call of this great EU project, the first two represent education, science and research, while the remaining are composed of business, local government support, regional potential and the generation of further growth. The foundations of the education pillar are as follows:

- the institute will attract the most gifted youth from the whole of Europe and provide students with access to top teaching staff from all over the scientific world of outstanding specialisations, e.g. IT, biotechnology, chemistry etc.
- English should become the official language of education and research at EIT,
- EIT will operate through integrated partnerships with universities, research centres and companies in the region and across Europe,
- EIT co-operation with leading companies from various industrial sectors will enable direct access of Wrocław laboratories and education to state-of-the-art technologies. It will also open a possibility to deal with management-related challenges.

The science and research pillar assumes that the main area of EIT knowledge will concentrate on IT[2], computer sciences, new materials, nanotechnologies, biotechnology, advanced medical applications and so-called "frontier research" especially in mathematics, physics and chemistry.

The research infrastructure has been already subsumed into given research units: Lower Silesian Centre for Advanced Technologies, Wrocław Technology Park, Wrocław Medical Science and Technology Park, Lower Silesian Centre for Energy Security, Lower Silesian Park of Business and Innovation, Wrocław Agency of Regional Development, Wrocław Agglomeration Development Agency.

[2] Just to mention some of the results achieved by students from the region in international rivalries so far: top positions in team programming world championship – ACM International Collegiate Programming Contest, Internet programmer competition – TopCoder and in application design competitions – Microsoft Imagine Cup.

SUMMARY

The logical consequence of the fact that education can exert a crucial influence on improved economic and social performance is that economic and social development through higher education is possible under the condition that the quantitative and qualitative structure of higher education will respond to economic needs. In order to achieve this, stronger and more efficient co-operation between universities and industry should be promoted and established.

The case study taken from the Lower Silesia region presents the possibility of co-operation between one of the universities—Wrocław University of Economics—and industry from the region.

The example also illustrates that the co-operation between universities from Wrocław and local industry is very much supported by the local government, especially by the City Promotion Office of the Municipality of Wrocław. It has been presented the interesting initiative of EU of establishing the European Institute of Technology and Polish answer for this call. From a regional point of view, the possibility of establishing the EIT in Central Europe offers a fresh and remarkable opportunity for increasing regional co-operation of universities with industrial actors from various EU Members and not only from Central Europe.

The EIT is meant to gather the best and the most talented students, researchers and academics from the whole world. They will co-operate with leading companies, which apply advanced knowledge and research, thus contributing to the general enhancement of the competence level in research and innovation management. The integration of teams from universities, research centres and companies under specific knowledge communities will give the Institute an edge over universities or networks organised in the traditional way.

REFERENCES

Klucznik-Törő, A. (2007). *From higher education to faster development*. In: International Technology, Education and Development Conference, published by IATED, Valencia, Spain 2007.

Clark, B. R. and Neave, G. (1992). *The encyclopaedia of higher education*. Vol. 3, Analytical Perspective, Pergamon Press, Oxford – New York – Seoul – Tokyo 1992.

Kairamo, K. (1989). (ed.) *Education for life, A European strategy.* Butterworth & Co, London –Boston – Singapore – Sidney – Toronto – Wellington.

Davis, N. (1997). Europe. *A history*, Pimlico, London.

Weber, L. E. and Duderstadt, J. J. (eds.), (2004). Reinventing the research university *Economica*. London – Paris – Geneve.

Oświata i wychowanie w roku szkolnym 1998/99, GUS, Warszawa 1999. (Education and manners in the school year 1998/99, Warsaw 1999.)

Rocznik statystyczny, GUS, Warszawa 2002-2006. (Statistical yearbook, Warsaw 2002-2006).

Johnston, S. F., Gostelow, J. P. and King, W. J. (2000). *Engineering and society. Challenges of professional practice*. Prentice Hall, London – Sydney – Toronto – Mexico – New Delhi – Tokyo – Singapore – Rio de Janeiro.

Szkoły wyższe i ich finanse w 2000 roku, GUS, Warszawa 2003. (Higher education institutions and their funds in 2000, Warsaw 2003.)

Bender, T. (ed.), (1991). *The university and the city. From medieval origins to the present*. Oxford University Press, New York – Oxford.

"*Magazyn Kariera*", www.kariera.pl – Eng.: "Magazin Career"