

# Knowledge Based Approach for Lithuania: Knowledge Cluster's Origin Development and Vision

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## ABSTRACT

*The paper aims at emphasizing the importance of knowledge management as a pilot project for investment productivity and competitiveness, presenting Lithuania as knowledge management case study. To show Lithuania's move in the direction of a knowledge-based-growth via creating a network of knowledge institutions, the "Sunrise Valley" and projects, present the vision and challenges of these projects and institutions as well as roots and origin of newly-born Lithuania's knowledge cluster with its infrastructure and future prospects. The researcher also made an attempt to study broader empirical/practical processes, that took place in transition economies including that of Lithuania, since it's experience might be adapted to other emerging market economies in the nearest future*

**Keywords:** Business process outsourcing (BPO), knowledge economy (KE), knowledge management (KM), information and communication technologies (ICT), research and development (R & D), knowledge cluster (KC).

## 1. INTRODUCTION

The 21<sup>st</sup> century knowledge revolution created new opportunities and possibilities for the access and use of knowledge and information. The transition towards a knowledge-based economy requires from policy makers to understand the comparative strengths and weaknesses of their countries and then act upon them by developing appropriate short- and long- term policies and investments. In today's global economy, knowledge has become an even more decisive factor of competitiveness, productivity and growth. The global digital/knowledge economy offers unprecedented opportunities to produce and sell on a mass scale, reduce costs, and customize to the needs of consumers – all at the same time. Whether you live in a large country such as the USA or China, a medium-sized country such as India or Canada or a smaller country like Lithuania, your potential market is of the same global size. And you can source (net source) inexpensively wherever you wish.

## 2. THE SWOT ANALYSIS OF THE LITHUANIAN HIGH TECH INDUSTRIES AS STARTING POSITION FOR LITHUANIA'S MOVE IN THE DIRECTION OF A KNOWLEDGE BASED GROWTH

Every country possesses its own strengths and weaknesses, opportunities and threats. In spite of the heavy burden of the Soviet occupation legacies, after regaining its independence in 1990 Lithuania embarked on a path of determined, radical, and sustained reforms aimed at re-establishing democracy and functioning market economy. It succeeded remarkably and is now regarded Europe's transformation success story. At the same time Lithuania was in position to answer the question: what could and should a low – income country with an educated population do to exploit new opportunities associated with the knowledge revolution?

When the WTO&ITC team compared Lithuania's ICT industry with similar industries of the countries in the region, the conclusion was made that the industry was developing and expanding its activities across the region. In the EU market, activities related to sub-contracting or onshore software application were taking place.

Although the conclusion was drawn that Lithuanian ICT industry was relatively small compared to the ICT market of Poland, for example, it has good growth potential driven by niche areas and niche products.

Table 1 shows the results of the WTO & ITC team's research of Lithuania's ICT industry based on analysis of its strengths, weaknesses, opportunities and threats (SWOT).

## 3. A KNOWLEDGE MANAGEMENT APPROACH FOR LITHUANIA

In spite of the fact that knowledge industries in Lithuania are not sufficiently advanced yet as compared to global leaders, some pioneering firms that were created at research institutes do have histories going back a decade or so, especially those in biotechnology, laser research, etc. At present scientific-experimental lasers made in Lithuania can be found in 22 European Universities, 10 USA Universities, 15 Universities of Japan and 2 Australian Universities. According to Gartner Inc. expert's evaluation, the growth of the Lithuanian IT outsourcing market accounted for 40 percent in 2003 alone. Lithuania is rated as one of the most attractive providers of this type of service in Eastern Europe.

A national political consensus was reached and the national agreement was signed to encourage Lithuania to become a knowledge-based economy. The term "knowledge-based economy" has been coined to reflect an increase of importance of knowledge as a critical factor for economic performance.

The decision was made that a further development of the knowledge-based economy infrastructure (e.g. better access to high-speed Internet) was needed. That would necessitate a better public sector-private sector collaboration so as to arrive at innovative management models and strategies underpinning the knowledge economy in Lithuania.

Widening and deepening of the European integration markedly increased competitive pressures, so companies began looking for new, sustainable and dynamic advantages. Given that the continent is aging quite rapidly and immigration presents a problem for a number of reasons, a shortage of qualified work-force is developing, which can be best addressed by taking advantage of the digital/knowledge revolution and of the potential of the new EU members such as Lithuania.

Under these circumstances, a better use of the continent's resources has become critical to winning the competitive game or surviving in unified Europe and the integrated world.

Large European and multinational corporations (e.g. BT, Buckman Labs, Nokia, Siemens, etc) are the early adopters of new thinking. They first realized that high initial costs of research, human/intellectual capital costs, etc, are efficiently spread only over longer periods and larger geographical areas. The vision they have, specifically their new-frontier mentality and the ability to develop integrative thinking across functional areas of business, not only at the highest management levels but, what is even more important, at lower management levels, resulted in knowledge-sensitive enterprise cultures and the resultant organizational learning regarding new business models and strategies. Also, such issues are pretty high on the EU institutions' agenda (e.g. Lisbon Strategy). The unique European competitive advantage (e.g. as compared to that of the USA) is that the EU institutions are able to give push and pull to many continent-wide initiatives that fall within the public goods category (e.g. earlier adoption of continent-wide standards for

Table 1. The SWOT Analysis of the Lithuanian ICT and Other High Tech Industry: Summary & Outline

<p><b>Strengths</b>                  Human resources suitable for innovative activities and knowledge-based production;                  Healthy economy, growing most rapidly among the CEE (5-6% for 2001-2005);                  Well-developed high tech &amp; other universities producing over 500 specialists in ICT and other disciplines annually;                  Other well-trained &amp; low-cost human resources available;                  Modern telecom infrastructure with a digitalization ratio of 100% and mobile penetration of some 50%;                  Labor force versatile in English, German, Russian, and Polish;                  Open economy with rule-based system aligned to the EU &amp; WTO – economic stability;                  Developed financial institutions &amp; intermediaries;                  Location between the EU, Nordics, the Commonwealth of Independent States (CIS);                  Capacity to promptly adapt to rapidly changing ICT &amp; knowledge based economy;                  Full scale privatization accomplished; industry re-structured based on comparative advantages;                  Institutional support to SME development;                  Well developed IT infrastructure across the region;                  Sound linkages between academia and industry for development of applications                  The EU and NATO integration to provide large market opportunities for ICT-enabled services.</p>	<p><b>Weaknesses</b>                  Manpower adequately skilled but needs re-training on project management and quality management of ICT projects;                  Slow drafting and implementation strategies of ICT &amp; other high tech;                  Vague long-term vision for ICT development including action plans or prioritization of funds;                  Comparatively small market - small investment by MNCs;                  Foreign economic relations still to be formulated on the basis of national and EU interests;                  Capital market in the development stage;                  ICT penetration not sufficient to give a substantial boost to e-commerce and e-business development;                  Logistics management poor - railway transport system physically inadequate;                  Public-private partnerships weak &amp; cooperation among economic entities underdeveloped;                  Insufficient incentives for R&amp;D by business.</p>
<p><b>Opportunities</b>                  Development of labor-intensive sectors like computer science and knowledge-based sectors to serve a larger market of the EU and CIS;                  Availability of structural funds from the EU to provide support to business modernization, employment promotion, improvement in quality of life, etc;                  Industrialization processes based on FDI, advanced technology and international management experience to enhance competitiveness and leverage advantages to achieve export-led growth;                  EU accession to expand sales markets and provide preconditions for foreign trade;                  Globalization of financial resources will provide alternative possibilities for financing;                  Use of digital technologies will open wider markets and provide conditions for more efficient cooperation with advanced economies in ICT, BPO, R&amp;D, and other IT enabled services;                  Possibility to establish positions in the transport service markets of continental Europe, with logistic centers in Kaunas, Klaipėda and Vilnius;                  Free movement of IT and high tech personnel to provide opportunities for application development and onshore software development;</p>	<p><b>Threats</b>                  Emigration weakens the intellectual potential of Lithuania;                  Potential closures of domestic ICT companies due to fierce competition unless they develop sustainable niche markets;                  Fear of becoming a center of higher cost production because of alignment with the high-cost EU and trade distortions imposed by third countries;                  Loss of General Preference Systems discounts for exports to North America and Japan;                  International environmental obligations may lead to higher costs of production;                  Advanced ICT countries may wrongly see Lithuanians as consumers and not as developers/partners for modern products and services thereby leaving Lithuania out of BPO networks;                  Lack of coherent vision of the Lithuanian industry;                  Inconsistent policies and inadequate communications may lead to fragmented growth of IT and other high tech industry.</p>

Source: Based on the WTO&ITC research and the authors' research.

mobiles, knowledge management practices, etc).

The main criterion for becoming a full member of the EU is the capability to withstand the European competitive pressures. While in the first period lower labor costs do provide certain competitive advantages pretty much across the branches of economic activity, this factor is of rather short duration in the case of Lithuania or other transitional economies. Lithuania will need to develop higher added-value market niches that will precisely call upon the Lithuanian capabilities to create an entrepreneurial economy that is integrated continentally and globally. Knowledge-based economy provides such opportunities especially in the context of knowledge and innovation in the European and global business.

A significant challenge posed to Lithuania is how to use a considerable theoretical research (e.g. biotech, lasers, semiconductors, game theory) potential of the Lithuanian research institutes, universities, and industry. There is a need to develop a practice-oriented strategy for knowledge-based economy in Lithuania.

**4. THE KNOWLEDGE- BASED PROJECT – “SUNRISE**

**VALLEY”**

In the present-day world separate market participants are unable to achieve good results which knowledge-based economy requires.

The key for solving problems are networks, clusters and other common activities. In the network of such knowledge-based institutions there are such popular objects of knowledge-based economy as knowledge camps, houses, towers, islands, technological parks, valleys, etc. One of such innovative schema is “Sunrise valley” in Vilnius, which was deliberately modeled after the Silicon Valley, California, where “Eastman Kodak”, “General electric”, “Intel Fairchild”, “Lockheed”, “Hewlett Packard” and other companies started and developed their activities.

Knowledge-based economy clusters are successfully created near Universities in different countries. Our neighbors-the Nordic countries are successfully developing in this direction. In recent years Finland and Sweden has twinkled their resources for R&D, especially in the last decade, and that influenced the growth of a high tech level of production in exports of those countries. Technological parks “Kista” and “Technopolis” are well known knowledge-based economy clusters all over the world. The neighboring country Poland can also boast great achievements

in this field of activities. Poland is successfully developing the 45 ha square Technological Park “Technoport” near its capital Warsaw. Good conditions for successfully activities started in Vilnius “Sunrise valley” where special social enterprise “Sunrise valley” was established in May 2003.

Vilnius University and Vilnius Gediminas Technical University, as well as well known Lithuania’s corporate leaders: ALNA, SONEX, OMNITEL, BITE GSM, EKSPLA, Laser Research Institute, members of the Knowledge Economy Forum of Lithuania were founders of this public unit. In February of 2004 this project was joined by the Vilnius city municipality, which became a shareholder of this establishment. In reality “Sunrise valley” accumulated theoretical and practical potential of the best Lithuanian research Institutes, Universities, think tanks, consultants, firms and organizations and is ready to tap into the growing stock of global knowledge and adapt it to the local needs.

In the long run (till 2015) “Sunrise valley”, the largest unit of Lithuania’s knowledge cluster must be developed into the largest innovation centre in the Baltic states, where high added-value product and services will be created. Such a vision for “Sunrise valley” in the year 2005 was outlined by the International Consortium “Centre for Strategy and Evaluation Services”, famous Technological parks from Great Britain, Sweden and experienced local business partners. According to the evaluations of the year 2015 in the territory of 2,5 ha about 150 new high tech enterprises with more than 3000 employees will be created, among them: the Innovation Center for the development of laser and IT, as well as the formation of a business incubator and a scientific–technological park. They will be companies established by Universities and Research Centers, where students, professors and researchers from those institutions will work.

## 5. CONCLUSIONS

The paper concludes that a knowledge- based economy is a wave of the future:

1. The transition towards a knowledge-based economy requires that policy makers understand the comparative strengths and weaknesses of their countries and then act upon them to develop appropriate short and long term policies and investments.
2. Lithuania will need to develop higher added-value market niches that will precisely call upon the Lithuanian capabilities to create an entrepreneurial economy that is integrated continentally and globally. Knowledge-based economy provides such opportunities especially in the context of knowledge and innovation in the European and global business.
3. Knowledge management provides a compelling platform to research the issues of upgrading competitive advantage in developed countries and contract out non–core competencies to emerging markets.
4. Conclusion was drawn, that Lithuania is moving towards a knowledge- based growth via creating a network of knowledge institution and projects and Lithuania’s experience can be adapted to the former Soviet block countries. Post- communist and other emerging market countries such as Armenia, Czech Republic, Ukraine, Hungary, Poland and others are well advised to jump to these new opportunities as the latter provide the best chance to realize the “latecomer’s advantage” by leapfrogging to technologies and models of doing businesses which are new for Western countries as well.

## REFERENCES

1. Drucker, P. F. The practice of management. New York: Harper, 1954. 404 p.
2. Porter, M. E. The competitive advantage of nations. New York: The Free press, 1990. 396 p.
3. Samulevičius J., Samonis V. Business process outsourcing to emerging markets: A knowledge management approach to models and strategies // Outsourcing&Off shoring in the 21<sup>st</sup> century. A socio-economic perspective. Idea Group, Inc. USA, Kehal, H., Singh, V., editors. 2006, p. 140-164.
4. Samulevičius J., Samonis V. International business strategies: Experience of outsourcing in USA Companies // Verslas, vadyba ir studijos, 04. Vilnius, 2005, p. 186-194.
5. The strategy of knowledge management. A McKinsey Quarterly reader. 2006. www.mckinseyquarterly.com
6. Samulevičius J. Global business outsourcing: A knowledge management approach for emerging markets (Lithuania’s case study) // 4<sup>th</sup> International Scientific Conference “Business and Management”. V.: Technika, 2006, p. 226.

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