

THE PROSPECTS
OF ENTREPRENEURSHIP
IN THE FORMATION
OF NEW HI-TECH
MARKETS IN THE BALTIC
SEA REGION

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The article offers an analytical review of the prospects for the formation of new hi-tech markets in the Baltic Sea region with the participation of small and medium businesses. In view of the essential features of entrepreneurship, its prospects in the development and implementation of innovations seem to be quite attractive. However, in the current economic context, growth requires special measures. The authors analyse the measures taken by the European Union and individual countries in order to strengthen the participation of small and medium business in R&D and innovation, describe conditions which are necessary for unlocking innovative potential, identify new industries that might become drivers of innovative economy in Europe. The authors also offer a country-specific list of basic markets, which can be developed by small and medium enterprises in a short-term perspective. In the structure of the Baltic Sea region a special position is held by the Nordic countries — Sweden, Norway, Denmark, and Finland — major regional innovators, as well as a group of South-eastern regions that serve as innovation consumers. Best hopes rest with information and communications technologies and biotechnologies, which are expected to become the centre of major clusters of small and medium enterprises.

Key words: small and medium businesses, new markets, hi-tech products, Baltic Sea region

Small and medium business is granted an important role in the formation of new markets and the development of innovative potential both in the Baltic Sea region, and the EU in general. The European Commission emphasises that 99 % of all European enterprises are classed as small and medium businesses. In 2002—2010, approximately 85 % of all new jobs in the EU were created by small and medium enterprises [1]. Moreover, small business demonstrates a remarkable ability to adapt and explore new market opportunities bringing innovative ideas to the market.

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It is evident that the actual situation, in which this development is to unfold, is quite complicated. As to the formation of new markets in the countries of the Baltic Sea region, first of all, one should describe the general socioeconomic context of the functioning of these markets. It is important to mention that, as of today, it cannot be considered favourable. So, the AT Kearney management consulting firm emphasises that the European hi-tech industry suffers downturn in all its key segments. Even the information and communications industry, which regularly serves as the “driving force” of the innovative segment is faced with crisis today — European firms account for only 10 % of the total sales of 100 largest ICT companies. The leading players on this market are American companies, whose innovative potential is at a higher level, as well as Asian firms, which enjoy the benefits of low-cost production areas. Hi-tech industry jobs also “drift” to non-European countries in such a situation.

How will small and medium business participate in the “introduction” of innovative technologies and research results into the market? What forms and models will be used to attain this objective? What are the principal conditions for developing the innovative potential of the Baltic Sea regions and what sectors will form new markets in the near future? Are there country-wise differences and how will they affect the process of formation of new hi-tech markets in the Baltic Sea region? We will attempt to answer this question in the present work.

According to the European Union R&D and innovation development programmes, the participation of small and medium businesses will take the following forms:

- participation of small and medium enterprises in joint R&D and innovative projects;
- acting as a customised tool or supporting businesses (financing form the funds intended for adaptation to new social challenges, as well as the Industrial Technology Leadership Programme);
- providing support for innovations at start-ups, spin-offs, and young companies (Eurostars and other initiatives);
- providing access to risk financing (debt exemption and other financial benefits);
- developing exchange and mobility of scholars involved in the activities of small and medium businesses (Marie Curie programme);
- providing information and mediation in search for sources of financing.

These initiatives lead to an increase in the innovative and knowledge-intensive component in the activity of small and medium enterprises, grant access to international networks, new markets and clients, and qualified staff, improve the reputation and contribute to the acknowledgement of enterprises at the European level.

Today high expectations relating to a more intensive participation of small and medium business in innovative activity are associated with the following three-phase model:

1. An assessment of the concept and feasibility (business plan, feasibility, risk assessment, search for partners, project calculations, field of application, business plan II). At this stage, 50 thousand euros will be allocated for the period of 6 months.

2. R&D, demonstration, manufacturing of an industrial prototype (development, testing; testing of innovative processes, products, and services, manufacturing of the pilot sample, planning and market scaling (the identification of the market segment, market size, processes, etc.); market replication; business plan III). At this stage, the costs are covered by the European Commission (3 mln euros for the period of 1—2 years).

3. Commercialisation (granting successful projects the quality status; provision of access to private financing; support through inclusion into networks, training and information and knowledge dissemination; provision of access to EU financing tools). At this stage, financing is not provided.

It is important to emphasise that the formation of new markets is not a priority for regional stakeholders. A survey carried out by Technopolis and presented by the ERAWATCH information system shows that such initiative as “support for new market creation” was not mentioned by any of the experts surveyed [2, p. 34].

Global turnover in the IT services and equipment, personal computers and laptops, software, telecommunication equipment, telephones, household appliances, semiconductors, and electronic component sectors amounted to \$2.8 trillion; IT services accounted for \$851 bln, household electronics for \$378 bln, semiconductors for \$317 bln, software for 297 bln. The European IT market slumped in terms of its turnover in comparison with the Asian and North American ones (European IT companies account 24 % of the world IT market, 45 % of their product is sold in the domestic market) [3].

Thus, Europe is losing its position on the global hi-tech market, which, however, is not indicative of the macroeconomic insignificance of the European hi-tech sector — the motor and mechanical engineering industry still largely depends on the European innovative sectors. Moreover, this crisis can be overcome. Experts place high expectations on the adoption of a common European strategy for hi-tech industry, which pays special attention to the segments that look promising in a long-term perspective. The strategy identifies new hi-tech sectors and is aimed at better coordination in the field of European investment and more efficient use of the strengths of hi-tech clusters. As to the initiatives undertaken at a national level, they are considered to be insufficient.

Although, in the household appliances sector Europe can hardly compete with Asian companies, its prospects in the hi-tech market are still good. Moreover, experts have formulated a number of key conditions for increasing European hi-tech-potential at the global level.

1. **Focus on the market development in the B2B sector.** The strengths of the European market are more likely to be untapped in the complex B2B rather than B2C sectors. Europe can find hidden potential in complex programme solutions, embedded systems (a computer system designed for specific control functions within a larger system, often with real-time computing constraints), or intellectual networks. The application of information and communications technologies in the development of unique trade offers for industrial usage (for example, motor and mechanical engineering) seems to be especially promising.

2. ***Integrated efficiency and innovative clustering.*** In order to avoid the scattering of limited financial resources, clusters connecting individual enterprises into value adding chains should be formed throughout Europe. Such cooperation will help individual companies increase their productivity, as well as the efficiency and innovative potential of the European hi-tech industry in general. A good example of such cooperation is EADS — the European Aeronautic Defence and Space Company — and the Airbus Corporation.

3. ***Long-term financing and trainings for those willing to launch a start-up.*** One of the key objectives of European governments and EU institutions must be to provide sufficient financing for hi-tech start-ups — for example, through offering venture capital for a long-term period and attracting investment to start-ups. Such help, however, should not be reduced to one-off assistance at the first stage, but rather include financing the growth and globalisation of such companies so that they reach the critical mass.

4. ***Education in the field of engineering and migration of qualified personnel.*** The education system should ensure a growing number of qualified graduates of the so called MINT (mathematics, informatics, natural sciences, and technology) disciplines. The Nordic countries have already increased the number of universities for technology and engineering and offer related courses as early as primary school. In order to compensate for the lack of specialists in Western Europe, the governments have to ensure strategic employment schemes for qualified professionals from non-European countries.

5. ***Supply of key raw materials.*** Further growth in hi-tech industries depends on the availability of necessary raw materials. The European governments have to conclude additional agreements, in particular with China and other sources of raw materials (Mongolia, Greenland, and Australia) in order to ensure a stable supply of rare earth metals. Moreover, to win the global “race” for precious metals, one should organise large-scale extraction of such metals from outdated electronic appliances. It is worth noting that Germany has established itself as a leader in all areas mentioned.

In these conditions, some states of the Baltic Sea region take significant efforts to create new hi-tech markets.

In particular, the Baltic States (Lithuania, Latvia, and Estonia) take steps towards the development of a cluster of innovative enterprises in biotechnologies and life sciences. The groundwork carried out at the Institute of Applied Enzymology, which has functioned in Lithuania since the Soviet times, as well as public support, thanks to which a number of pharmaceutical enterprises were created, made a significant contribution to these processes. As of today, Baltic hi-tech companies engaged in pharmaceuticals and medicine (the leading biotechnology sectors) cooperate with Dutch, American, Israeli, Russian, and Polish partners and explore new markets [5].

One can expect the development of computer technologies market in Poland as a result of IBM’s activity in the country; the corporation opens new offices not only in Warsaw and Katowice, but also Krakow and Poznan. IBM’s interest is kindled not only by the growing national market, but also the opportunities opened by a strong presence in Eastern Europe in general. IBM’s developments are in demand both in the public and private Polish sectors; they will be used at the Krakow city hall, City Hall, the University

of Science and Technology, the Management of Municipal Infrastructure and Transport to help develop an intelligent solution to support waste management and manage road system, contribute to the development of cloud computing technologies and training students in the field of information and computer technologies [4].

For small and medium enterprises, the micro- and nano-optics, information technologies, and media and biotechnologies seem to be promising areas.

In general, the main driving force of growth in the hi-tech sector will be, as usual, the information and communications technology industry. There is an expectation of an intensive growth on markets relating to the industrial application of information and communications technologies (electronics and trade in electronics), public administration (e-Government), healthcare, transport, and private life.

Growth is expected, in particular, in the following sectors:

1. **Intellectual products:** the development of the next generation of mobile, integral, and radio elements for Internet communications between everyday objects and their environment. The development of such technologies will make a significant contribution to the development of the Internet of Things.

2. **Virtual and augmented reality:** the development of efficient technologies in the context of virtual and augmented reality. These technologies can be applied to the development and production of equipment and mechanisms and to the spheres of services, education, and training.

3. **Internet services:** the development of knowledge infrastructure on the basis of the Internet, which make it possible to gain access to global knowledge and will ensure the availability of the rapidly growing volume of information from different fields to everyone.

4. **Data transfer:** the establishment of all-European basic technological standards will result in an increase in the volume of data transfer and thus in the demand for technologies ensuring faster and more efficient data transfer.

5. **Resource conservation in production:** the growing number of industrial clusters, universities, research institutions, and investors join the efforts to broaden the application of biotechnologies for the purpose of resource conservation, in particular, within the chemical and pharmaceutical industries.

Special attention is paid to the field of communications and information technologies. It is expected that further development will depend, first of all, on technological innovations, whereas the information and communications industries will remain the driving force of the development and introduction of technologies.

The formation of new markets in the Baltic region states can be expected in the following sectors [2, p. 17—24]:

1. **Estonia:** information and communications technologies, biotechnology, material science. The necessary conditions, such as developed transport and logistics, energy, construction, food processing, and B2B industries, have already been created in the country.

2. **Finland:** information and communications technologies, business services, innovative services, healthcare and healthy lifestyle, environmental protection technologies, optical and sensor technologies, measuring technol-

ogy, biotechnology and medical technologies, optoelectronics and laser technologies, automatics, mechanical engineering, nanotechnology and material science.

3. **Denmark:** processing, renewable energy (wind, solar, biomass, hydropower industry, bio fuel), information technologies, green transport, life science and biotechnology, robotics.

4. **Latvia:** energy and environment, innovative materials and technologies, healthcare.

5. **Lithuania:** biotech ecosystems, biomedical technologies, laser technologies and material science, chemistry and mechatronics, agriculture and mariculture.

6. **Germany:** healthcare, biomedicine, plasma technologies.

7. **Sweden:** technical chemistry, biotreatment technologies, fiberoptic technologies, metal processing, electronics, information and communications technologies, biotechnology, creative industries, e-healthcare.

8. **Poland:** information and communications technologies, green energy, chemical industry.

Thus, the Baltic Sea region is not a homogenous innovative system either in economic, demographical, or social and institutional terms, which affects the process of the formation of new market and sectors. Summarising, one can make the following conclusions regarding the potential of new market formation in the countries of the Baltic Sea region:

1. Although the regions of the “south-eastern coast” fall behind in technological innovative capacities and potential, they can still be called “regions of knowledge consumption” in the sense that their priorities lie in increasing the productivity of business sector through “implanting innovations” (the purchase of equipment, re-training, etc.). However, the formation of clusters in German and Polish regions, as well as in the Baltic States, create a certain foundation for developing the policy of innovative specialisation and formation of corresponding market sectors.

2. A considerable part of the current activity in the business sector is closely connected to the natural specialisation of traditional industries, which simultaneously serve as principal employers. The innovative development of these industries is one of central priorities. Such industries include the wood processing and the pulp and paper producing industry, mineral extraction and metal processing, as well as food processing. These sectors must be taken into account when developing an innovative policy and identifying priorities for investment in the innovative infrastructure, for it is the innovative development of these industries that can have enormous influence on the formation and development of hi-tech markets. Other focal points are transport (in particular, marine transport) and financial and business services.

3. All countries of the Baltic Sea region actively specialise in information and communications technologies and biotechnology, which, on the one hand leads to an assumption that the key market sectors are still forming and developing within those segments and, on the other hand, opens up ample opportunities for research and technological cooperation in the region and the development of its potential at the global level.

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