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Innovations - The Key to Success

Challenges for the European innovation environment

Research alone is not enough to ensure competitiveness. Research results must be brought to market more quickly and more efficiently – both in industry and in public and private sector services. Globalisation and more internationalised business pose increasingly stiff challenges for European industry and the innovation system, and thus for the EU as a whole.

With the development of internationalisation, European companies have expanded their businesses into new, rapidly expanding markets. New production plants and R&D centres have been set up close to these markets. Customers and competitive production factors are located in close proximity to one another. Neither should the importance of the companies' integration into the social environment of the local market be underestimated.

Globalisation shows itself as a predisposition for more rapid change and as a stronger dependence on international economic cycles. The linkage of companies to the international economy takes place not only through new markets but also through the renewal of business models. With globalisation both production and product development are being dispersed over a wider area geographically, i.e. to places where resources and expertise are best available to companies.

Companies are focusing more sharply on their core competencies and seeking to outsource their other functions. In practice this development has led to corporate networking. Thus individual companies retain in their own hands a diminishing part of all the knowledge and production that they need. Networking is important not only in production factors but also in R&D. Networking is an essential part of the knowledge and innovation environment's development. In fact, the idea of economic growth based on knowledge and expertise is closely connected to precisely this kind of change in the economic environment. The aims of networking are mainly the improvement of productivity and competitiveness, but also the opening up of new business opportunities through the combination of different competencies.

In the rapidly developing countries of Asia, investments in research and development are growing strongly. The earlier culture of copying has already given way to a culture of innovation. Enormous reserves of talent especially in China and India, the rise in standards of education and training, and the migration of many knowledge-intensive companies to these countries has aroused fears that, in addition to production, R&D may be relocated to these lower-cost countries.

Growing research and development activity in developing countries will undoubtedly increase the birth of innovations and thus competitiveness in these countries. A key question is how well we in Europe will be able to take advantage of this development. R&D conducted elsewhere offers us an opportunity to focus on areas in which we are strongest. At the same time we must plan how technology and scientific expertise developed elsewhere will be transferred to Europe and how it can be applied as quickly as possible to generate innovations and new business.

The success of companies, networks, clusters and other larger economic and regional entities will in future be based more on new ways of working and the ability to create and apply new knowledge in an effective way. It is evident that competition is changing from inter-company to inter-network competition.

Innovation expertise combines technological and business expertise

In most cases technology is only one of several factors involved in innovation activity as a whole. All too often innovations are understood to mean new technological inventions, but they can also be services, processes, organisational structures, business models, brands, marketing channels, and so on. An application of a new technology can be an innovation, as indeed can an application of an old technology for a new purpose or in a new market. Innovations may be created anywhere and anytime. But significant innovations really demand a lot of work, and effective innovation management promotes success.

Thus, in addition to technological innovations, the emphasis will be on matters concerning business models, working methods and social innovations. The pace of technological change is rapid and often technology by itself is not a significant competitive factor, because technological differentiation is not self-evident in international competition. On the other hand, the rapid application of technology and the development of new applications is one way to gain a competitive advantage.

Innovation can be radical in nature (e.g. a totally new product or service concept) or it may be incremental (e.g. a new component for an old product). Radical innovation generally involves greater risks and it touches on a bigger proportion of a company's activities. Innovation can also disrupt traditional markets by altering the competitive status quo. For example, cheap wristwatches whose basic idea is to be a part of clothing and fashion compete on a principle other than the traditional "ever better technology" business.

The development of an innovation from idea to commercial success is a multi-staged process. The mission, vision and values of a company delineate the subject areas that its development activities can touch upon. Although history does record numerous success stories that came about entirely by accident while working on something quite different, the majority of innovations are based on a purposeful intellectual activity known as research. In spite of that, most innovations are actually based on already existing knowledge. Innovation management means the activity by which an organisation manages the generation of new ideas and the development of suitable ideas through to commercialisation.

New markets and accelerated product and service cycles require innovation activity that reacts faster to dynamic market conditions and to the application of new technologies. An exception to this general rule is perhaps the exploitation of gene technology in pharmaceutical development, where the time from idea to innovation is measured in years. In any event, the front end of the innovation process is assuming a more and more important role. It is very difficult to gain a competitive advantage by reacting to market changes when they have already taken place. The development of society, markets and technologies must be predicted so that we can prepare for the future and allocate the resources of innovation activity to those areas that are expected to grow in importance.

It is more difficult for competitors to imitate innovations created by combining different areas of expertise than those based on individual areas. The developer can then enjoy the resultant competitive advantage for longer.

Innovation expertise also essentially involves knowledge in areas other than technology and business. The introduction and exploitation of innovations are often also a social process. The adoption and application of technological innovations generally require innovations concerning other systems as well as social innovations related to them. Indeed, the biggest opportunities are not associated with new technologies, products or services, but with solving social problems, i.e. social innovation, which directly or indirectly also benefits companies. Increasing the interaction between technological and innovation expertise also opens up new opportunities for the birth of social innovations.

So what are the most important challenges facing the innovation environment in countries like Finland? Perhaps the most critical thing is the problem of our ageing population. Other threats and opportunities are the growing importance of the Pacific Rim (especially China), changes in Europe (the innovation gap between the EU and the US is growing, the future of the EU is unclear) including Russia, fast digitalisation of the whole society, ecological problems, and the revolution in biological knowledge.

In a small country like Finland the question of how limited resources are used is a crucial one. It is essential to maintain and even improve standards in education and research. We need participation in and funding for technology development both from the public sector and from the private sector. It is a real challenge for research organisations to impress the importance of this on political decision-makers and other parties influencing technology and other policies. Good interaction between the different parties of the innovation environment is essential.

Are we ready to meet these new challenges? The long-term strategic development of companies - technology development and good innovations as a part of it - is essential on the road to a better future. The basic question for us is the same as for a young athlete before the Olympics: am I going to do my very best or am I going to win?

The role of VTT Technical Research Centre of Finland in the Finnish innovation system

VTT is the biggest contract research organisation in Northern Europe. VTT provides high-end technology solutions and innovation services. From its wide knowledge base, VTT can combine different technologies, create new innovations and a substantial range of world class technologies and applied research services thus improving its clients' competitiveness and competence. Through its international scientific and technology network, VTT can produce information, upgrade technology knowledge, and create business intelligence and value added to its stakeholders.

VTT's objective is to act as partner in the most important phases of customer's innovation process. This will cover technology and market foresights, strategic research, product and service development as well as technology transfer. VTT's aim is to make use of its researchers and scientists in large and combine knowledge of different technologies and know how for the benefit of VTT's stakeholders and increase the value of our customers business. Through active patent portfolio management and venturing we will create new business concepts as well as spin off companies.

(VTT in figures 2005: turnover 225 Me, external income 147 Me, basic governmental funding 78 Me, income from abroad 31 Me, staff 2720 and 6000 customers; more info at www.vtt.fi)

Towards a European Institute of Technology

The idea of a European Institute of Technology (EIT) was first proposed by Commission President Barroso in 2005 as part of the Lisbon Agenda and the ambitious Growth and Jobs Strategy. The aim of such an institute would be to promote European innovation by strengthening the link between research, education and technology transfer. The means to this end would be the provision of critical mass and a world-class model for teaching and research through close interaction of universities, research organisations and businesses.

When considering European competitiveness it must be remembered that it is based entirely on the competitiveness of the Member States. European initiatives and actions must encourage the Member States to develop their own innovation environments – this applies to every country but it is especially relevant to the new Member States.

The outline for a European Institute of Technology proposed by the EU Commission is rather general in nature. Nonetheless, the objectives of the project and the thinking behind it can be regarded as justified. Strategically controlled networking of existing high-level knowledge centres will create the prerequisites for more effective and more productive activity. A loose network of collaborating organisations will make hardly any impact on the present situation. If, however, knowledge centres in different areas can be made to work together effectively from the strategic planning stage onward, then the creation of added value is possible.

Many interested parties have sharply criticised and even opposed the proposed creation of a European Institute of Technology. The main reason for this negative response, especially from the world of academia, stems from the fact that EIT is perceived as a competitor to the new European Research Council (ERC). It is feared that funds allocated to ERC will be diverted to EIT. Also the proposed idea of an organisational structure in which the partners would relinquish control of their best knowledge centres to EIT for several years has aroused suspicion and even outright opposition.

Personally, I think that EIT and ERC would complement each other. Bottom-up frontier research is the foundation of the entire innovation system. On the other side of the coin, applied research and innovation based on the needs of society would be emphasised in EIT's activities.

The Commission proposes that undergraduate and post-graduate teaching should be linked with EIT's activities. In my opinion there is no justification for this. The emphasis within EIT should be on innovation and innovation management. Of course, post-graduate studies should be possible within the framework of EIT's projects, but these should be handled in partnership with some university.

I must say that the EIT initiative is very valuable and worthwhile. For understandable reasons many things, such as funding and juridical details, are still open. The proposal should be developed so that EIT creates added value specifically in the area of innovation activity. The various research-related instruments that have been outlined in the Seventh R&D Framework Programme should not be duplicated. It is crucial that innovation is encouraged in the Member States with minimal bureaucracy by linking teaching and basic research in universities with the knowledge of research and innovation organizations for the benefit of the economy and society as a whole.

The Council of the European Union is going to discuss the Commission's proposal at its meeting on 7th June 2006. So wait and see what is going to happen.