

During the past decade, the terms of trade, i.e. the price ratio between purchased and sold items has continuously weakened in Finland: we buy expensive items but sell cheap ones. The same thing is seen when we look at the contribution of high technology to total exports; from being one of the leaders amongst the OECD countries, we now rank below the average. The proportion of high technology among 2011 exports was less than 10 percent. These figures reveal that our competitiveness is crumbling and our innovation system is ineffective. Our innovation system does not produce the new innovations, technologies, products, or companies that will be needed to maintain exports or create new value-added jobs. When it comes to universities, Aalto University, for example, is ranked lower on various lists than Helsinki University of Technology was, in its day.

New innovations creating sustainable competitiveness are based on new information that is created with state-of-the-art research. In Finland, research is mostly carried out at universities. The reason is not in the volume of investments, because we still invest close to 4 percent of the national product in research and development activities. Furthermore, I do not believe the present generation to be less intelligent than the post-war baby boomers that raised Finland to become a high technology country. Hence we must look for a solution elsewhere.

Could the reason be found in the management throughout the innovation sector? Let us think how researchers are encouraged to innovate and produce know-how. The Ministry of Education and Culture has been building a new model of allocating funds between different universities. In this model, one third of the money would be allocated to the universities based on research indicators. However, the indicators do not reflect the promotion of innovation or the societal impact of the research. Indicators can be made to show good figures by successfully attracting young talents to do not-too-necessary but "sexy" things, by conducting academically high-level research on the topic, and by publishing a great number of scientific articles and doctoral theses. A not-too-necessary field guarantees that after having completed their studies, the talents stay at the university to continue their research since they cannot practice their profession elsewhere. Looking at the problem in more detail, there is a lot to improve also in the proportional funding per student in the different disciplines. For example, the funding granted for a student of engineering sciences is clearly behind compared with the most important competitor countries.

But how do the other research financiers perform, especially the Finnish Funding Agency for Technology and Innovation Tekes and the EU? They both aim their research funding mainly to serve the needs of large enterprises. Small and medium-sized enterprises seldom have time or money to participate in university projects and the condition for funding is that the companies are involved. New jobs mainly emerge in small and medium sized enterprises. Both financiers typically focus on short-term project funding: first the program is announced, then project applications are requested, the applicants must then wait for funding decisions, and it can take a year, or even two to three years, before the researcher can start the work. This method makes it difficult to compete with researchers who can afford to start research on a novel idea as soon as a suitable researcher or post-graduate student is found. The method is also ineffective, as I have previously written on this column.

These examples show that there really is something to be improved in the management of science and research, originating from the Council of State and penetrating through all levels of organization. But how can we address this problem? Martti Tiuri has proposed that a Science and Research Minister be appointed to the government. I find it easy to support this. Currently, science and research or research-based innovation activities do not get sufficient specialist attention at the government level. The Ministry of Education and Culture focuses mostly on education policy and the Ministry of Employment and the Economy on the interests of its major lobbyists. No-one has prime responsibility for advancing the research needed to lay the foundation for new business, new technologies, or new products. The Minister for Science would be responsible for the funding directed through the Academy of Finland and the part of TEKES funding directed at the universities. The TEKES funding aimed at companies would remain at the Ministry of Employment and the Economy. The main purpose of the Minister for Science would be to raise the international level of academic research and develop means for measuring how science serves to create new high-end jobs; he or she should also build a self-supporting innovation pathway from research through to earnings from applications of the research. All these should, of course, be realized so that basic research is not forgotten. Since the law obligates universities, as their prime task, to do research, the university sector as a whole could belong to the new minister's responsibility area.

Raimo Kantola

Nosto

*"No-one has prime responsibility for advancing the research needed to lay the foundation for new business, new technologies and new products"*

*Or High value jobs?*