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Publicly Funded R&D and Innovation

news photo

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What is the impact of publicly funded Research and Development projects on innovation? Why do companies engage in such projects and what benefits do they gain from their participation? And how should public policies evolve in order to support the desired outcomes of these projects?

These are some of the crucial questions addressed by the INNOVATION IMPACT study which was recently completed by a team of researchers from the Management Science Laboratory of the Athens University of Economics and Business in collaboration with another seven European leading universities and research institutes. Funded by the European Commission, DG Enterprise, the study has focused on the role of the collaborative R&D projects funded by the 5th and 6th European Framework Programmes. The study addressed the impact of research project management, and of firm, industry, technology and market characteristics on the effective utilization of research results for innovation.

Building on a solid theoretical platform, the study has deployed a mix of methodologies for data collection including desk research, the Community Innovation Survey (CIS) database, an extensive primary data survey among over 8.000 FP participants, and some 75 case studies of organizations participating in projects from all over Europe.

Characteristics and Objectives of participants

The Framework Programmes attracts highly innovative companies and research institutions in Europe, with R&D intensities that are above the average of their sector of principal activity. Further, and always compared to the average company in their sector of activity, FP participants are:

More networked with their customers and with universities and other research organizations;
More orientated towards international markets; and
More engaged in patenting activities.

Moreover, small and medium size companies that participated in the programmes roughly doubled their R&D intensity over a 5year period showing a significant positive effect at least at the level of their potential for innovation. The major motivators of joining the projects are technology and knowledge-related objectives including networking, development of market knowledge, and cost and risk sharing, see table 1.

Technology / Knowledge	◦ Accessing complementary resources and capabilities ◦ Developing a critical mass in a specific technological field ◦ Keeping up with state-of-the-art technological developments
Networking	◦ Exploit technological competencies ◦ Finding new partners ◦ Joint creation and promotion of technical standards
Sharing of Cost and Risk	◦ R&D cost sharing ◦ Risk sharing and reduction of uncertainty ◦ Access to funding
Market / Commercialization	◦ Access commercialisation competencies ◦ Increase the speed to market ◦ Access new markets

Table 1. Major objectives for participating in FP funded projects

An important finding is that only participants with explicit innovation goals at the start of the project are likely to achieve any successful commercialisation of the project outcomes. Among the various kinds of organizations, SMEs reported the strongest strategic alignment between FP projects and explicit goals related to innovation outputs, such as developing a prototype, developing a patentable technology, or developing a complementary technology that will enhance competitiveness. More specifically, medium-sized companies seem to have reaped the largest innovation benefits from FP project participation. This is because they can achieve critical mass for R&D in a focused area and often have explicit strategy and goals for innovation. They often take a leading role in projects, and are most frequently found as coordinators, in parallel with research organizations. A characteristic case study example is presented in Box 1.

This seven-people company, dedicated to developing advanced carbon recycling technologies, presented a particularly successful process innovation example. The outcome of the project was a full-blown industrial application of the clean process technology developed, and initiation of a licensing process among the partners.

Based on its mission "Science to Achieve Results", bridging the gap between research and innovation is key priority of this company and a main explanatory factor behind its strong innovation focus within the FP funded projects it participates in. Strategically speaking, the company sets its R&D agenda and selects projects only if they fit 100% with its mission and technology development directions. Moreover, it systematically integrates existing or potential customers in the projects, thus ensuring a potential offset market for what is being developed.

As the entrepreneurs summarized the approach: "On our narrow road, we want to be the best, the most concentrated and focused to collect and exploit all the available knowledge in the field".

Box 1. The Power of Mission, Strategy and Goals in an SME

Organisation and project-level impacts on innovation

It is important to stress that FP projects should form part of a wider portfolio of R&D projects. Hence, innovation output cannot be attributed either to the individual FP project or to the in-house R&D project alone, but to a combination of both. Indeed, the results of our research confirmed a positive association between prior innovation experience and project success in terms of innovation. Building up a broader innovation culture is an important underpinning factor behind product and process innovation success.

A key success factor for achieving project goals is played by the coordinator organization. Successful projects shared a positive assessment of the capabilities of the coordinator as a leader and initiator, as an R&D performer, and as an administrator. Three characteristics of successful coordinators are discussed in Box 2.

Coordinator power represents the advantage that coordinators have in terms of shaping the research agenda, structuring projects according to their interests and needs, and aligning the partners around a core objective that is originally theirs. In many of the successful projects studied, traces of this coordinator power could be found. It represents the 'award' that coordinators can obtain, the other side of the picture being the administrative coordination 'burden' including reporting and the challenge of keeping all partners on track both scientifically and administratively.

A related concept is that of coordinator strength. It refers to the ability of the coordinator to face and overcome different crises that might occur during the unfolding of the project. Among the cases were projects where a partner suddenly fell out, or simply failed to deliver a critical part. Coordinator strength acts in these situations at two levels. Partly, it concerns the ability of the coordinator to identify, convince and mobilize players outside the consortium to fill in the gap from the partner at fault, partly the ability of the coordinator to take on at least some of these obligations itself.

Another important factor behind successful project outcomes is the reputation of coordinator organizations as reliable, knowledgeable, cooperative and efficient. This goodwill, once achieved and as long as it can be sustained, provides a number of advantages that also spill over to the project partners and the project as such. These advantages include high probability of being granted relevant projects over time, relative easiness of attracting excellent partners to new consortiums and of making partners adhere and align to project objectives and management structures, and relatively strong dissemination impact of the project results.

Box 2. Characteristics of Successful Coordinators

Recommendations for policy and programme management

Based on the various findings from the study, a number of recommendations for public innovation policy have been proposed. In order to maximize the impact of FP projects on innovation, policy should integrate and take into account the following:

1. Even though directly commercialisable output has not been a core objective of Framework Programmes, we found significant impact on innovation. Hence, rather than a fundamental change of the Programmes, they should be fine-tuned towards an even better enhancement of direct innovation impact. Simplifying the administrative routines and maintaining instrument continuity are two important issues here.
2. Because the significant role played by SMEs, their role in the strategic development of the Programmes should be enhanced.
3. Successful projects play a complementary role to R&D an innovation activities already deployed by participating organizations. Hence, a stronger focus on integrated projects and enhanced flexibility in relating projects to already existing competencies should be promoted.
4. For successful innovation, collaborative research consortia should include a relevant mix of partners: Organizations with strong research and innovation experience, organizations with deep specialized technology expertise, organizations highly motivated to pursue commercialisation of the R&D results, and experienced coordinators who manage to align the diverse interests of the various partners.
5. Encourage commercialisation thinking at the proposal stage. Possibly provide the opportunity to innovators for a follow-up stage - or a follow-up project - where the commercialisation of the research results is the core priority.

The general conclusion of our study is that when initiated with explicit innovation goals, framed by efficient administrative rules, managed and executed by highly committed and qualified organizations, and integrated in the wider R&D and innovation activities of the participating organizations, publicly funded R&D projects can play an important role in the enhancement of technological innovation in Europe.

References

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