

There has been a considerable gap between efforts to understand innovation and other change processes and ongoing structural changes in national economies. The SI4S project has aimed at developing concepts, empirical evidence, and proposals for practical action concerning the role of services in European innovation systems. The general objectives were

- to map, understand and analyse the changing role of services and service innovations as users, carriers, shapers and sources of innovations in European innovation systems,
- to design, formulate and integrate options for innovation and technology policies and business strategies that take into account the role of services in innovation and innovation in services.

The project was approached the issues from three perspectives:

- statistical description and analysis of services development at a macro level,
- studies of innovation and the shaping of innovation processes in services at both the macro and micro-level,
- studies of services in innovation services, i.e. the development of a specific group of services (KIBS) and especially their contribution to innovation processes in a range of service and manufacturing industries.

We list here the main conclusions that have been drawn from the SI4S project.

Service growth and innovation

There is *no general pattern of growth of service sectors* across the European economies. But we may identify underlying general aspects of the growth process. Service employment shows two opposing trends: New service activities and a generally increasing demand for producer oriented services create new employment. On the other hand, rationalisation processes are leading to new labour-saving processes of service provision. Ongoing development of service sectors reflects three phenomena,

- a *reorganisation* of the division of labour between manufacturing and service sectors in national economies,
- the *internationalisation* of service activities, supported by the creation of a Single European Market and by deregulation in many service markets,
- the introduction of *technical progress*, mainly due to the widespread use of information and communication technologies.

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Innovation is shaped by general characteristics of the competitive environment. This reinforces the dimension of *innovation as essentially market phenomena*, while opening up for a wider understanding of interactive innovation in European economies.

Understanding the challenges for industrial innovation policies in a integrated 'knowledge-intensive' economy, leads to needs of *understanding innovation on service markets* and what the role of service functions are in systemic innovation. A fundamental aspect of this understanding is the necessity of venturing *beyond technological innovation* approaches, to encompass the plurality of business strategies and functional characteristic across the industrial landscape,

Innovation in services

Innovation is widespread in services. Service firms and sectors are increasingly becoming the sites of deliberate attempts to innovate; to improve the cost efficiency and quality of service production and products and to develop new service concepts. This also reflects changes in the nature and structure of competition in various service markets.

A significant part of innovation patterns in services is ‘soft’, or *non-technological*, even when restricted to product and process innovations. Soft product innovations are frequent. However, for some categories of services, primarily information, technologies play an important role in shaping services, in particular process innovations are inclined to be more technologically oriented than process innovations.

Characteristics of service innovation still allow the use of the traditional taxonomy into product, process, organisational and market innovations. However, such *innovation attitudes* may be enriched by consideration of *modes of innovation*.

On the basis of a general model of service innovation, three categories of emerging innovation trajectories are identified, service professional and *professionalising trajectories*, *strategic management based trajectories* and *technological trajectories*. The trends associated with these involves an increasing *formalisation of innovation* activities in service sectors, typically developing along either a service professional pattern or a pattern of organised strategic innovation.

Services in innovation

With emergence of knowledge markets and distributed knowledge generation, *knowledge intensive services* appear as *bridging institutions* in national innovation systems. Such service firms supplements and broadens the generative and distributive functions that traditionally have been the responsibility of the public technological infrastructures, R&D institutions, advisory and extension services etc. Rather than envisaging it as flows of knowledge, a fundamental aspect of KIBS interaction is that it is an essentially bilateral learning process; a *co-production of capabilities*. As to their role towards innovation KIBS acts as facilitators, carriers or sources of innovation. **Johan Hauknes**

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Centres of service innovation might be established in EU countries as observatories and communication centres generating, compiling and disseminating knowledge about the trajectories of service innovation, the best practice ways of organising innovation activities, etc. Service innovation centres would probably be the best way for the public sector to facilitate the growth of a European innovation system within the service sector.

A major impediment to service innovation is a lack of sufficient *management capability* to induce and carry through innovation processes in the single service firms and a lack of a learning system through which experiences in single firms could be transmitted to other firms so they could learn from them.

KIBS services are increasingly a key for industrial competitiveness. The innovation policy challenges this raises is that *policy objectives* will be more *open-ended and framework enabling* than oriented towards specific technological or economic objectives.

Public policy should ensure the *distributive capacities of broader innovation systems*. Furthermore, a central objective will be to build up systematic *absorption capacities* in business firms, of particular importance for SMEs.

Ensuring *flexible interaction* of the distributed system of knowledge producers *with* the public system of *universities and other scientific institutions*, institutions of higher education and so on, to allow appropriate divisions of labour and incentives is an important issue.

Public policy and agencies may play an important role as *market makers and mediators* on the emerging knowledge markets.