



# Innovation in the service sector: The demand for service-specific innovation measurement concepts and typologies

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## Abstract

There is evidence that the notion of innovation, well established in the manufacturing sector, cannot simply be transposed to the service sector. This article deals critically with existing measurement concepts derived from manufacturing, and introduces a new typology with a view to obtaining a better understanding of innovation in services. Selected results from the German innovation survey are analysed in order to support the conceptual findings and to identify potential improvements. Special attention is directed towards the inclusion of knowledge-intensive business services that are of particular importance for innovation processes.

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## 1. Introduction and starting hypothesis

During the past years efforts have increasingly been made to push the service sector and its peculiarities concerning innovation into the centre of economic policy research.<sup>1</sup> The roles of innovation, technology and

know-how in the context of economic development and technological change are here – in addition to macro- and meso-economic questions on employment or external trade – of growing interest. This paper also examines the wide-ranging topic of services from the innovation research point of view.

Two reservations have to be made, however. On the one hand, this paper mainly focuses on the corporate

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<sup>1</sup> See, e.g. van Ark et al. (1997), Atella and Rosati (1995), Barras (1986), Collier (1983), Djellal and Gallouj (2001), Djellal et al.

(2003), Evangelista and Sirilli (1995), Fuchs (1968), Gershuny (1978), Hauknes (1998), Martin and Horne (1993), Miles (1994), Quinn (1986), Sundbo (1997), Tidd and Hull (2003).

level. It is assumed that business enterprises with their various combinations of abilities and strategies can be regarded as the key actors of technological change (Chandler, 1994, p. 3). This change is the result of innovation and learning within organisations as well as between the organisations and their environment. Also Dosi (1988b) describes business enterprises as the central promoters of structural change. New technologies and know-how are, therefore, generated through the interaction of companies and their environment and are developed further internally.

On the other hand, the understanding of the innovation process (according to Nelson and Winter, 1982) is focused on here rather than its formalisation, i.e. the theoretical deliberations are conceptual or scoping in nature, and not mathematical. This caveat has to be noted because there are insufficient theoretical studies in this area, with the result that formal theoretical analyses cannot be made yet.

However, from the existing, continuously growing number of available publications four starting hypotheses can be derived, which are summarised below. They reflect the current “common sense” nature of the scientific discussion.<sup>2</sup> In the course of this work they will be discussed individually and in detail, and then developed further with the help of our own conceptual thoughts and empirical methods.

- More and more service companies contribute substantially to macroeconomic and social development. The trend towards a *knowledge-intensive economy* supports structures in which human capital and knowledge-intensive business service companies, in particular, play an important role as knowledge brokers and intermediaries.
- However, the *character of innovation activities* and their organisation and implementation differ substantially from those of the industrial sector. This is valid for the type of newly developed products (incremental versus radical, product versus process), the character of services (process orientation, intangibility), the customer integration and the respective provision processes, as well as for the organisational aspects and the co-ordination of activities to develop new services.

- *Internal innovation activities* in companies are the major stimulating force of (company) growth and change also in the service sector. Service businesses, contrary to the widespread assumption, do produce innovation originally, and do not depend only on industrial innovations. However, the character of R&D activities as well as the role of technology have to be analysed in detail. Consequences for empirical research on innovation activities in the service sector are manifold, and new forms of indicators are needed.
- The heterogeneity of the economy and the lack of adequate theoretical and empirical scientific analyses require first of all a reduction of the complexity. One possibility is the creation of an *innovation typology* for services.

In the following paper, we deal with the knowledge-intensive economy in general, and the specific role of human capital and innovation in the service sector (Section 2). The empirical study of innovation activities in the German service sector is displayed in Section 3. From the empirical observations we derive a typology of services in general (Section 4), and of knowledge-intensive services, in particular (Section 5). At the end of this article, we attempt to illuminate prospects for future research (Section 6).

## 2. The knowledge-intensive economy: human capital and innovation in the service sector

Data, information, and knowledge are intangible goods that are produced and traded especially by the service sector (Miozzo and Miles, 2003). David and Foray (1995) emphasise, for example, that the efficient distribution and utilisation of knowledge is not an automatic procedure but requires supporting functions. Knowledge-intensive services,<sup>3</sup> in particular, are responsible for the combination of knowledge from different sources, and for the distribution of knowledge itself.<sup>4</sup>

<sup>3</sup> In an English-speaking environment they are also referred to as knowledge intensive business services (KIBS).

<sup>4</sup> Den Hertog and Bilderbeek (1997, p. 13) “expect these KIBS to be both highly innovative in itself and facilitating innovation in other economic sectors.”

<sup>2</sup> Cf., e.g. Coombs and Miles (2000, pp. 92–94).

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