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The organisational-cooperation mode of innovation and its prominence amongst European service firms

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Abstract

Analysing survey data concerning the innovation orientations of 2500 European firms, this paper uses the exploratory statistical technique of multiple correspondence analysis to identify three distinct modes of innovation: a product-research mode; a process-technologies mode; and an organisational-cooperation mode. The first two of these are forms of technological innovation that are well established in the innovation studies literature. The third is a form of organisational innovation, about which much less is known. Aside from identifying statistically these three modes of innovation, we show that firms of different sizes and in different sectors have different propensities to engage in each of them. High-technology firms are, for example, the most likely of all firms to engage in the product-research mode, whilst low-technology manufacturers are the most likely to engage in the process-technologies mode. Meanwhile, the organisational-cooperation mode, which involves supply-chain rather than research-based cooperative practices, is particularly prominent in services, especially in trade and distribution services. This fits with the view that innovation in services is often 'soft', rather than primarily technological, involving organisational and relational changes within supply-chains or networks.

Keywords: Innovation measurement; Organisational change; Cooperation; Services

1. Introduction and prior literature

Innovation is increasingly seen as fundamental to the competitiveness of firms and economies. Because of this significant resources are committed to its measurement. In Europe, innovation surveys are now being conducted every second year, with survey forms sent to many thousands of firms. The UK version of the fourth European Community Innovation Survey (CIS-4), for example, was sent to 28,000 firms.[1] Other countries, such as Italy, survey even more firms, and in some countries the survey is mandatory. The primary aim of these surveys is to inform policymakers of the extent of innovation and related activities, and to provide comparative statistics over time and space on the innovative performance of different types of firms (e.g., by size and sector), in different regions and countries. Summary informa-

[1] The surveying and data collection for the UK CIS-4 cost the UK Government around £400,000 (approximately €600,000, or $750,000) to undertake. This does not include the contributions of the respondents, or of government officials responsible for the survey, nor does it include the cost of any analysis.

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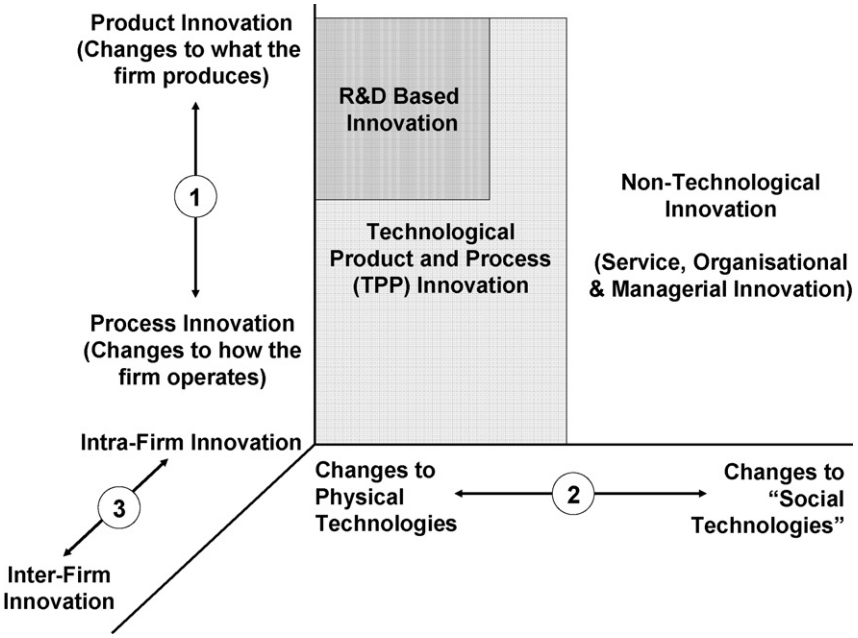

Fig. 1. A simple model of firm-based innovation and its measurement.

tion is published in the European Innovation Scoreboard and other government publications (e.g., Hollanders and Arundel, 2005).

The value of these surveys as means of benchmarking different sectors, regions or countries in terms of their innovation performance is clearly related to the effectiveness with which they capture the main innovation activities of firms. It is increasingly accepted that whilst considerable progress has been made in recent years, the instruments used to measure innovation provide an incomplete assessment of the innovative activities of firms, and by extension economies. Fig. 1 provides a simplified, first approximation model of innovation and how these activities are measured.[2] We use three dimensions. The first concerns the distinction between changes to what the firm provides or produces (generally 'product innovation') and changes to the means of production or provision (generally 'process innovation'). The second concerns what is changed—whether it is physical (or 'hard') technologies, or what Nelson and Sampat (2001) call "social technologies", which includes operating routines and intangible services. Alternatively, this dimension could follow Damanpour and Evan's (1984, p. 394) distinction between technical innovations – changes and improvements to the performance of the technical system of an organisation – and administrative innovations—changes that occur in the social system of an organisation. The third dimension concerns the locus of innovation, be that internal to the firm or inter-organisational, and distributed between firms through networks or supply-chains.

The form of innovation about which we know most is R&D-based innovation, as R&D has been extensively measured since the 1960s following the publication of the OECD's Frascati Manual (OECD, 2002). Notwithstanding the growth in recent years of R&D outsourcing and R&D focused strategic alliances, this form of innovation primarily involves intra-firm routines for technological product innovation, and is therefore predominantly in the top-left-rear of the diagram.

By the mid-1980s it was increasingly accepted that R&D efforts provide only a partial assessment of the innovative activities of firms, and efforts began to measure innovation more directly. This led to the first 'subject-based' innovation surveys, and to the development of the OECD's Oslo Manual (OECD, 1992), which provides 'proposed guidelines for collecting and interpreting technological innovation data'. Whilst the Oslo Manual extended the measurement of innovation beyond R&D, initially at least, it deliberately confined itself to technological product and process (TPP) innovation, i.e., the left side of Fig. 1.

The recommendations of the Oslo Manual were first implemented in 1993 through the first European Com-

[2] The model has been adapted and developed from Wengel et al. (2000, Figure 4).