

Innovation in a Knowledge-Intensive Service: The Case of Engineering Consultancy

Abstract

By

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There has been a recent upsurge in academic interest related to innovation in service industries (e.g., Sundbo, 1998; Metcalfe and Miles, 2000). This concern is motivated in part by the growing economic significance of services in advanced industrialized countries, and partly by a theoretical concern with the distinctive features of innovation in services as opposed to innovation in manufacturing – which has hitherto attracted the lion's share of scholarly interest. Although the contribution of innovation in many service sectors has been underscored by recent statistical data (OECD, 2000), the nature of innovation processes, their driving forces, and effects for those services has tended to remain elusive. In particular, it is becoming increasingly evident that the diversity of services, ranging from labour-intensive products such as a hair-cut to knowledge-intensive products like the design of telecommunications routing systems, represents a spectrum of “innovation modes” at least as complex as the taxonomy proposed by Pavitt (1984).

Knowledge-intensive business services have generally been regarded as innovative, exhibiting growing technological intensity of production and higher R&D expenditure and patenting activity. Engineering consultancy has historically played a key role in the supply of innovative solutions in the design and construction of infrastructure, buildings, petrochemical processes, environmental technologies, etc. The competitive assets of engineering consultancy firms rest firmly on the skills accumulated by their professionals as individuals and in project groups. Internationalization of engineering consultancy services has also followed the growth of transnational enterprises in energy exploitation, manufacturing, and construction in newly industrialized economies. Moreover, an increased utilization of advanced information technology (such as CAD systems) and communication systems has created important opportunities for innovation in the global production and delivery of engineering services (Baark, 1999).

Nevertheless, innovation in engineering consulting services has not been the subject of academic research to any significant extent. From one perspective, engineers will claim that every new design or construction project involves innovative elements such as the adaptation of existing technology to local conditions, or unique combinations of technical components. From another perspective, (the same) engineers will emphasize the importance of application of available know-how and standards, a requirement that will often preclude the pursuit of entirely new and revolutionary design. The accumulation and use of knowledge in engineering consultancy is thus a process that is deeply embedded in the historical and national characteristics of the sector, together with the complex institutional framework of the production and delivery of engineering services. Innovation in the sector appears to follow patterns of development of routines, search heuristics, and trajectories conceptualized in the evolutionary theory proposed by Nelson and Winter (1982).

The paper will explore the characteristics of innovation in engineering consultancy, using a conceptual framework inspired by Nelson & Winter's work. It will discuss the patterns of knowledge accumulation and use at the project group level, and relate these patterns to the competitive environment and institutional features of the professional consulting firm. The discussion will be illustrated with data collected in research projects examining the globalization of engineering services and innovation in engineering consulting firms in Hong Kong.

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