



Chapter VI

The Repercussions of the Adoption of Information Technology on Co-Operative Innovation

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Abstract

The aim of this chapter is to analyse what repercussion the adoption of certain types of information and communication technology (ICT), by firms, may have on collaborative innovation. It is our belief that tools such as Internet access, e-mail, and the presence of internal and inter-organisational communication networks, will promote and facilitate the signing of cooperative agreements. The empirical analysis performed on a sample of 1,649 firms partially confirms this intuition, since the existence of a network, bringing the firm into contact with its subcontractors, customers, and/or suppliers, increases the propensity of firms to cooperate in innovation.

Introduction

Far from being a recent phenomenon, the expansion of ICT goes back at least 50 years (Salas, 2001). It is only in the last 15 years, however, that ICT has acquired its current status as the focus of numerous studies. Due to the evolution of network technologies and the decrease in transaction costs¹ through ICT, (Malone, Yates, & Benjamin, 1987) new opportunities have arisen for businesses to broaden their scope and carry out exchanges worldwide (Kelly, 1998). As a result, ICT is seen as one of the main drivers of economic growth, although in this respect, Europe in general, and Spain in particular, follow the lead of the United States. In 1999, per capita ICT expenditure in Europe was 60% that of the United States (European Commission, 2001).

Collaboration in innovation between firms is also anything but a new phenomenon. The literature on innovation indicates that the last two decades have seen systematic change in the way firms undertake innovation activities (Narula, 2001). The use of external networks, in particular, has grown significantly (Hagedoorn, 1996). Indeed, Duysters, Kok, and Vaandrager (1999) report that alliances are no longer regarded as peripheral features, but as one of the mainstays of the firm's technological strategy. In addition to the declining costs of monitoring and exploiting networks, a growing need has arisen for firms to possess multiple technological competencies (Granstrand, Patel, & Pavitt, 1997). Firms have sought to utilise *non-internal* means, such as strategic alliances and outsourcing, to undertake innovation (Hagedoorn 1996; Narula & Hagedoorn 1999; Tidd & Trewhella 1997). In this respect also, Europe and Spain lag behind the United States and Japan.

This chapter aims to describe and analyse the repercussions of the adoption of ICT on collaborative innovation. Awareness of the issues surrounding ICT and collaborative innovation has led the various national administrations, and specifically the European Union, to implement a variety of instruments to foment them both. One of the priority themes of the Sixth Framework Programme is that of the information society technologies, which depend essentially on the promotion of innovation and technology transfer in Europe and the creation of technological enterprises (European Commission, 2000).

All this reinforces our belief in the relevance of this topic and in the need to explore the impact of the adoption of the new technologies on cooperation and innovation. This chapter aims to shed some light on the subject by means of an empirical analysis conducted on a sample of 1,649 Spanish manufacturing firms. These are innovating firms who replied to the questionnaires sent out by the Instituto Nacional de Estadística (National Institute of Statistics) for their surveys *Encuesta sobre Innovación Tecnológica en las Empresas* (Survey of Innovation Technology in Firms) 1998² and 1996. Given that the adoption

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