Chapter 57
Knowledge Integration through Strategic Alliances and Virtual Networks

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INTRODUCTION

According to the Knowledge-Based View, knowledge integration is one of the main capabilities that organizations must possess in today's markets. In some high-tech industries, especially science-based industries such as biotechnology that need to integrate different bases of specialized expertise, the sources of knowledge are spread across a great variety of organizations. Strategic alliances are an option that may solve problems of speed or cost in these cases. Hence, in this chapter we identify advantages that inter-organizational cooperative agreements may have in the creation of knowledge, with a special emphasis on the case of strategic alliances in which the main aim is the joint creation of knowledge between partners and not simply the appropriation of this knowledge by one of the members of the agreement.

In a second phase, we argue that virtual networks add more advantages to this type of alliance because of their special features. We define the virtual network as a strategic, temporary agreement between organizations that collaborate and coordinate their work through information technologies. This dimension adds greater flexibility to strategic alliances. We identify a virtual network typology by analyzing their properties and their value for the integration of knowledge.

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Third, we highlight the importance of embeddedness in a virtual network to efficiently take advantage of integration in a strategic alliance. Fourth, we analyze the most important future trends of our research objective. Finally, we present the conclusions and the general implications of the study.

STRATEGIC ALLIANCES AS ENABLERS OF KNOWLEDGE INTEGRATION

In the current business environment, characterized by intense global competition, rapid technological advancements, innovative managerial practices and increased pressure in demand, the importance of knowledge as a critical resource for a firm's competitive advantage is widely recognized (Teece, 1998).

Firms can generate knowledge internally by investing in the development of distinctive competencies related, for instance, to R&D activities. However, because of their limited size, some firms can barely sustain all the structural costs involved in developing the necessary knowledge and technologies internally to innovate. In addition, authors such as Phene, Fladmoe-Linquist and Marsh (2006) find that firms operating in turbulent and unstable environments cannot be self-sufficient in creating knowledge, due to the fact that the locus of proprietary knowledge is dispersed and shifts quickly over time.

According to the Knowledge-Based View, in a changing operating environment, superior performance depends on the ability to recognize critical changes and knowledge and on the processes of renewing the firm's knowledge base. In this scenario, the mechanism for the creation and development of internal knowledge must be combined with the mechanism for the acquisition and integration of external sources of knowledge (Caloghirou et al., 2004).

Despite the importance that external knowledge and technologies have for firms, its identification, assimilation, integration, transformation, and application is a far from simple process. Consequently, organizations need to invest time and effort in developing their absorptive capacities (Cohen & Levinthal, 1990). An increasing number of companies recognize that their competitive advantages are derived from knowledge resources that are deeply rooted in social relationships with other companies (Uzzi and Lancaster, 2003).

The number of inter-firm alliances, especially those aimed at technological learning and new knowledge creation, has grown rapidly since the mid 1980s. Resource interdependence and complementarities yield the most common explanation for the strong upsurge in the use of such inter-organizational ties (Nooteboom, et al., 2007). Specifically, firms use strategic alliances to absorb new knowledge and technologies (Dyer & Nobeoka, 2000), to pool complementary knowledge and technologies (Grant & Baden-Fuller, 2004), to share the costs and risks of exploiting certain forms of technology (Kim & Song, 2007) or to access new marketplaces.

Dussage et al. (2000) captures perfectly the essence of an alliance: "an arrangement between two or more independent companies that choose to carry out a project or operate in a specific business area by coordinating the necessary skills and resources jointly rather than either operating alone or merging their operations". In this form of cooperation, parties exercise limited control.

However, the cost of pooling and managing knowledge brought into a firm by alliance partners may be too high to bear unless the partners share or create some common ground of knowledge (Kim & Song, 2007). Firms sharing similar knowledge and experience will have an easier time working together (de Man & Duysters, 2005). Furthermore, alliances usually involve significant uncertainty about future costs and benefits due to the possibility of opportunistic behavior and a lack of a clear control.