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Organising R&D Projects to Profit From Innovation: Insights From Co-opetition

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Increasingly, technological innovation results from the joint creation effort of different players in the value chain, such as suppliers, customers, research centres and universities. Balancing co-operative and competitive forces in the innovation process to co-create value and to capture part of this value has become crucial to profit from innovation. In this article, we show that this tension between value creation and value capture is present in each R&D project. Drawing on the case of STMicroelectronics, we show that the balance of co-operative and competitive forces in R&D projects is made through the careful alignment of three variables: project knowledge attributes, project governance structure (internal development, co-operation or contracting), and project partner selection (firm or university). The capability to match these three elements explains the success of the innovation process of STMicroelectronics. Building on the experience of this firm, we provide some practical guidance on how managers should trade off these co-operative and competitive forces in organising their R&D projects.

Introduction

A recent McKinsey Global Survey of top executives found that 70 per cent of respondents considered innovation one of their companies' top three strategic priorities for driving growth.[1] The same survey found that fewer than half of the executives were satisfied with the financial returns on their investments in innovation. While innovation is now considered key for creating a sustainable

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competitive advantage, many firms struggle with its successful organisation. In this paper we show why balancing the concerns of creating value through innovation on the one hand, and capturing returns from innovation on the other is such a complicated task. This task requires aligning different elements at the R&D project level, i.e. each R&D project and activity needs its particular organisation, complicating the innovation management task considerably.

Successful innovation depends on the development and integration of new knowledge in the innovation process. Some have argued that technological knowledge is typically broadly distributed, so that no single firm has all the internal capabilities and resources needed for success. In such an environment, the locus of innovation is found in a network of inter-organisational relationships. However, managing these inter-organisational relationships requires skilful selection of *which* external agents to involve in the innovation process and *when* to involve them.

The choice of opening the firm's innovation process assures some gains through accessing complementary knowledge sources, but at the same time exposes the firm to the risk of opportunistic behaviour from external partners. Inter-organisational R&D agreements are, therefore, characterised by a combination of competitive and collaborative actions.[2] In previous literature, the nature of the interfirm interdependences where both competitive and collaborative issues co-exist is called co-opetition.[3] Co-opetition is a synthesis between two opposite paradigms: the competitive paradigm, postulating that firms interact on the basis of a fully *divergent* interest structure, and the co-operative paradigm, assuming that firms interact on the basis of a completely *convergent* interest structure.

Co-opetition provides a powerful framework to better understand how firms combine — or should combine — internal and external innovation activities in their R&D process. Firms may display co-operative interest structures at the time of co-creating value through an R&D project, but they may also undergo competitive pressures at the time of capturing the value created. Received theory provides some interesting results on the factors that explain the establishment and management of co-opetitive relationships at the firm level.[4] However, most innovation managers will be confronted with a varying degree of these issues at the R&D project level. We believe it is important to understand which factors are relevant at the project level when different projects within the same firm will line the spectrum from highly co-operative to highly competitive pressures, trading off value creation for value capture elements to a different extent.

As literature has made only small inroads into understanding the co-opetition strategy at this level of disaggregation, we base our analysis on a quantitative case study. We adopt the R&D project as the key level of analysis, and explore the organisation of 52 projects carried out in one of the most important research centres of STMicroelectronics (ST) — the largest microelectronics company in Europe — between 1998 and 2003. ST is a successful and innovative firm that has made the co-opetitive approach a cornerstone of its innovation strategy. We build on the findings from this case study to discuss the relevant variables an innovation manager should take into account when designing a suitable organisation of an R&D project.

Our analysis establishes three key findings. First, the balance of co-operative and competitive forces in the organisation of R&D projects is made through the careful alignment of three variables at the project level: project knowledge attributes, project governance structure (i.e., co-operation vs contracting), and project partner selection (firm, university or research institute). Depending on the nature of the project, the firm decides on the suitable governance form and the partner with the appropriate resources and incentive structure in order to balance the value creation and value capture forces at stake. In essence, with whom the firms establish a link depends on co-operation issues — linked with the capabilities and skills it potentially needs — and competitive pressures related to the risks and the opportunities involved in the specific activity. Second, the complex relationship between value creation and value capture considerations is relevant for the organisation also *within* a single project: different partners and different capabilities, along with different organisational structures, are sought in different phases of an R&D project. Finally, through the analysis of the firm's balancing of co-operative and competitive forces at the project level, this paper also sheds new light on the important question of how