

## Chapter 18

# Environmental Turbulence and Complexity and the Optimal Degree of Internal Open Innovation for MNCs

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### ABSTRACT

*In today's knowledge economy, it is vital for Multi-National Corporations (MNCs) to leverage all their globally dispersed knowledge resources. Extant literature argues that MNCs can be viewed as knowledge sharing networks and that knowledge exchange within the group enhances performance. This exploration of new knowledge through search among peer subsidiaries of the parent MNC can be regarded as Internal Open Innovation (IOI). However, literature on Open Innovation is largely focused on the external boundary of the firm, so that little can be said on whether openness towards corporate group internal knowledge sources is either or both, beneficial and/or detrimental, and how this depends on the difference of national industries and on the correct communication of these before the final transfer of knowledge. The principal research question thus is: To what degree should MNC subsidiaries be open to their intra-MNC peers given a common, evolving technological environment but different local market contexts? In this paper, the authors contribute with new propositions regarding this issue developed based on results from an agent-based model that is analyzed through computer simulation. The authors explore the degree of openness of MNC subsidiaries together with their communication competence in different organizational structures and environments, based on previous developments in theory of knowledge transfer and complexity as well as international business.*

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## 1. INTRODUCTION

The concept of knowledge transfer within the MNC and its impediments have received increasing attention in the international business literature since the seminal work of Dunning (1981). In fact, the MNC can be considered as a “knowledge based entity,” where different units seek to transmit, transfer, integrate and leverage knowledge across national boundaries (Foss & Pedersen, 2004) and its *raison-d'être* has been claimed to lie exactly in its superior capacity to transfer knowledge across national boundaries (Kogut & Zander, 1993). It has been suggested that knowledge transfers within the MNC take place within the context of an inter-organizational “network” of differentiated units (subsidiaries) (Bartlett & Ghoshal, 1990; Gupta & Govindarajan, 2000; Hendlund, 1986). MNC subsidiaries have been recognized not only as mere exploiters of knowledge that is centrally held by the MNC, but also as generators of knowledge in their own right (Za & Spagnoletti, 2013) and a way to tap locally the internationally distributed knowledge (Kuemmerle, 1997). Increasingly, also the lateral knowledge exchange, i.e. that directly among the subsidiaries, is focus of studies of intra-MNC knowledge transfer (e.g. Gupta & Govindarajan, 2000). This follows in analogy to the development of the concept of Open Innovation on the overall firm level (Chesbrough, 2003). Chesbrough – and large part of the literature following him – argues that knowledge has become too complex and the environment too turbulent as to continue to manage the innovation process in a closed, stand-alone manner.

We assume that also subsidiaries that aim at knowledge and innovation generation have to open their search process to the expertise of the very peer subsidiaries with which they compete on resources, charter amplification, and headquarters' attention. MNCs that incentivize or else foster the opening of the innovation process of their subsidiaries in this direction, i.e. towards their intra-MNC peers, can be thus said to apply

“internal open innovation” (IOI). But necessarily the questions arise whether this IOI is always beneficial for the MNC and which factors could constitute important contingencies.

As far as regards innovation as an adaptive process, environmental uncertainty has been found to be a major contingency co-determining the efficacy of various approaches to innovation (Eisenhardt & Tabrizi, 1995). Environmental uncertainty is usually regarded as determined mainly by the two factors “environmental complexity” and “environmental dynamism” (Duncan, 1972). The impact of environmental uncertainty on innovation is in large part the result of the potential for erosion or depreciation of the value of existing knowledge in that becomes outdated. In so far, environmental uncertainty, or concretely its dynamism and complexity, can be deemed to be major contingencies of the effectiveness of IOI as well.

On the one extreme, there are low complexity, low dynamic industries and on the other one, there are highly dynamic high-tech industries. In between there are industries that are very dynamic but not very complex, as for example a large part of the so-called “fast moving consumer goods,” which exhibit a large amount of fast fading trends without being actually high-tech products in most cases. Other industries present a considerable degree of complexity, but exhibit—at least periodically—little dynamism, as for example some electronics industries. However, while environmental uncertainty has been studied broadly with regard to its impact on both innovation and firm performance, it remains unclear how its two major constituencies—complexity and dynamism—do individually affect the appropriateness of intra-MNC IOI in terms of innovativeness, particularly considering that subsidiaries of an MNC might be exposed to different market contexts even if the technological environment with which they deal is the same. This casts doubt on a simple linear, positive relationship between knowledge integration and innovation performance.

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