



Subsidiary exploration and the innovative performance of large multinational corporations



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ABSTRACT

This study identifies two categories of exploration for competence-creating subsidiaries of contemporary multinational corporations (MNCs) by taking both the subsidiary's and the MNC's existing knowledge into consideration. While subsidiary exploration not new to the MNC (SE1) brings in knowledge that is only new to the focal subsidiary but not new to the rest of the MNC, subsidiary exploration new to the MNC (SE2) experiments knowledge that is new to both the subsidiary and the rest of the MNC. The combination of SE1 and SE2 reconciles the MNC's and the subsidiary's interests by balancing exploration and exploitation at the MNC-level and by balancing exploration and integration at the subsidiary-level. Our empirical test of 53 world's largest firms in Electrical Equipment industry shows that SE1 and SE2 are complementary in improving both the subsidiary's and the MNC's innovative performance. This study contributes to the organizational learning and MNC literature. Managerial implications are also discussed.

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1. Introduction

Firms need to balance exploitation and exploration to sustain performance (He & Wong, 2004; Lavie, Kang, & Rosenkopf, 2011; Lee & Huang, 2012; March, 1991). Since inter-firm sources offer significant amount of new knowledge to a firm, much extant literature has focused on exploration across organizational-boundary; the intra-firm recombination is treated as exploitation (Beckman, Haunschild, & Phillips, 2004; Fang, Lee, & Schilling, 2010; Lee & Huang, 2012; Rosenkopf & Almeida, 2003; Rosenkopf & Nerkar, 2001; Stuart & Podolny, 1996). This approach is appropriate when the unit of analysis is the firm. However, when we move the level of analysis from the firm to the subsidiary, new knowledge to a subsidiary is not necessarily from inter-firm sources; i.e. it may come from peer subsidiaries or the parent (Miller, Fern, & Cardinal, 2007). This is particularly true

for contemporary multinational corporations (MNCs) with geographically dispersed competence-creating subsidiaries located in different host environment (Frost, Birkinshaw, & Ensign, 2002). Yet, the taxonomy of subsidiary exploration has received little attention partly because exploration has always been defined by whether a piece of knowledge is new to the whole firm instead of a subsidiary.

This study aims to address the afore-mentioned issues in three ways. First, unlike much previous organizational learning literature, we move the level of analysis from the firm to the subsidiary. Second, this study acknowledges that a subsidiary's exploration may involve existing knowledge of the MNC. Third, by moving away from a parent-driven approach, we incorporate a subsidiary's knowledge as a benchmark to define the subsidiary's exploration. In particular, we divide subsidiary exploration into two distinctive types, namely subsidiary exploration not new to the MNC (hereafter SE1) and subsidiary exploration new to the MNC (hereafter SE2). The former refers to subsidiary technological knowledge search drawing upon knowledge that is new to the focal subsidiary but not new to the MNC as a whole. The latter represents subsidiary technological knowledge search drawing upon knowledge that is new to both the subsidiary and the rest of the MNC (see Appendix A for examples of SE1 and SE2). Based on this classification, this study then seeks the answer to the question

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of how SE1 and SE2 may influence the subsidiary's and the MNC's innovative performance respectively. We are aware that in high-tech industries, subsidiaries perform diversified roles (Ambos & Schlegelmilch, 2007). To operationalize, we focus on the technological knowledge exploration of competence-creating subsidiaries, and the corresponding innovative performance³ at both the subsidiary- and the MNC-level. Knowledge in this study refers to technological knowledge only.

Whereas an MNC must balance exploitation with exploration to sustain its performance (March, 1991), a competence-creating subsidiary is less concerned about the balance as such. Instead, the subsidiary has to experiment new knowledge from its host environment while avoiding isolation from the rest of the MNC that jeopardizes subsidiary performance (Birkinshaw & Hood, 1998; Solvell & Zander, 1998; Zander & Solvell, 2002). Our classification of SE1 and SE2 reconciles the MNC's and subsidiary's interests. In particular, SE1 is exploitation from the MNC's perspective. Meanwhile, it helps a subsidiary remain integrated by increasing knowledge overlaps between the focal subsidiary and the rest of the MNC. While SE2 represents exploration at both the subsidiary- and MNC-level, the combination of SE1 and SE2 addresses the concern of balancing exploration and exploitation at the MNC-level and the need of exploration and integration at the subsidiary-level. Consequently, they are complementary in improving both subsidiary- and MNC-level innovative performance.

We use patents granted by the US Patent and Trademark Office (USPTO) to 53 large MNCs in the Electrical Equipment (EE) industry. The results confirm our prediction. EE industry is our focus because it offers a dynamic and fast changing environment, which provides an ideal background to study exploration (Katila & Ahuja, 2002; March, 1991; Phene & Almeida, 2003). Furthermore, firms in EE industry have high patenting propensity so that the use of patent data is justified (Cantwell, 2006).

This study has three major contributions. First, the classification of SE1 and SE2 moves away from a parent-driven approach and thus contributes to the MNC literature by offering a more fine-grained lens to understand MNCs and their competence-creating subsidiaries. Second, whereas exploration and exploitation were treated as mutually exclusive activities in extant organizational learning literature, an ambidextrous activity was identified in our study, namely SE1. The combination of SE1 and SE2 offers a strategic option to achieve the balance in large organizations without the struggle of resource allocation trade-offs and inconsistent organizational routines. Third, SE1 and SE2 are interdependent in improving the subsidiary- and the MNC-level innovative performance because they offer the benefits of balancing exploration and exploitation at the MNC-level and meeting the needs of exploration and integration at the subsidiary-level. The findings contribute to organizational integration literature by offering a more organic method to align corporate and subsidiary interests. This study also has practical implications for MNC managers to formulate organizational learning strategies and coordinate geographically dispersed competence-creation activities.

The next two sections discuss our conceptual background and develop hypotheses. Data and methods are described in the fourth section, followed by the empirical results. The last section discusses implications and concludes.

³ Since exploration requires the search of new knowledge and often generates radical innovations (Cohen & Levinthal, 1990; Kogut & Zander, 1992; Nelson & Winter, 1982), the results of exploration are more likely to have significant impact on the trajectory of following innovations (March, 1991). Given our focus on exploration, innovative performance in this study therefore refers to the degree of impact on future innovations, which is measured by patent forward citations (Rosenkopf & Nerkar, 2001).

2. Conceptual background

2.1. Subsidiary exploration and parent-driven view

As competence creation has increasingly dispersed to overseas subsidiaries, recent MNC literature has largely abandoned a parent-driven view of the MNC, and focused on subsidiary initiatives in generating competence (Andersson, Bjorkman, & Forsgren, 2005; Andersson, Forsgren, & Holm, 2007; Birkinshaw, 1997; Birkinshaw & Hood, 1998; Birkinshaw, Hood, & Jonsson, 1998; Figueiredo, 2011; Pearce, 1999). It is widely agreed in the literature that subsidiary activities can be broadly classified into two rather different categories,⁴ namely competence-creating and competence-exploiting, which are analogous to exploration and exploitation in organizational learning theory, respectively (Cantwell & Mudambi, 2005).

Organizational learning theory defines exploration and exploitation from the entire organization's perspective (Greve, 2007; March, 1991; Rosenkopf & Nerkar, 2001). By the same token, subsidiary competence-creating and competence-exploiting activities are defined from the view of the entire MNC (Cantwell & Mudambi, 2005). In particular, a subsidiary's experiment with knowledge that is new to the MNC is classified as competence-creating activities; working on existing knowledge of the MNC is viewed as competence-exploiting activities. While new knowledge to the MNC is definitely new to the subsidiary, some existing knowledge of the MNC may be still new to a particular subsidiary due to intra-firm knowledge asymmetry. For instance, IBM's Chinese subsidiary may not have full understanding of all the knowledge possessed by the US subsidiary. However, the subsidiary's experiment with new knowledge from intra-firm sources has been viewed as subsidiary competence-exploiting activities because the MNC's existing knowledge is the only benchmark used to classify exploration and exploitation. Thus, the subsidiary's interests are largely ignored. In this sense, a parent-driven view toward the MNC still hides behind the scene although the MNC literature has long claimed to move away from it.

To address this issue, this study divides subsidiary competence-creating activities into two categories by taking both the MNC's and the subsidiary's existing knowledge into consideration, namely subsidiary exploration not new to the MNC (SE1) and subsidiary exploration new to the MNC (SE2). The former refers to the technological knowledge search of a subsidiary drawing upon knowledge that is only new to the subsidiary but not new to the MNC as a whole. The latter represents the technological knowledge search of a subsidiary drawing upon knowledge that is new to both the subsidiary and the rest of MNC. It is worth noting that SE2 is the exact equivalent of subsidiary competence-creating activities or subsidiary exploration while SE1 is equivalent to a subset of subsidiary competence-exploiting activities or subsidiary exploitation in previous literature. By using a subsidiary's existing knowledge as a benchmark, we distinguish SE1 from the subsidiary's other exploitation activities (i.e. recombining knowledge not new to the subsidiary and the MNC). Since SE1 draws upon knowledge that is new to the focal subsidiary, it is actually exploration from the subsidiary's perspective.

⁴ Indeed, there are multiple ways to differentiate subsidiary activities or strategic roles. For instance, Rugman and Verbeke (2001) identified 10 competence-creating methods of the MNC that involve subsidiaries. Yet, given our focus on balancing between exploration and exploitation in the MNC, the broad classification of competence-creating vs. competence-exploiting is sufficient for the purpose of this study.

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