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The role of suppliers in enabling differing innovation strategies of competing multinationals from emerging and advanced economies: German and Chinese automotive firms compared

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ABSTRACT

This paper examines how different supplier relationships enable multinationals from emerging and advanced economies to pursue different product innovation strategies and the implications for international research and development (R&D) configuration and competition in mid-market automobiles. We use a pair-wise comparison of case research on German and Chinese firms, including two assembly groups (Volkswagen and SAIC) and two tier-1 suppliers (Bosch and Hasco). We find that the German firms adopt a closely integrated and in-house driven approach to vehicle development enabled by close, two-interaction with suppliers over a long cycle. The Chinese firms, by contrast, base their development largely on assembling externally available technologies drawn from around the world to create products that are improved through rapid design iterations drawing on market feedback. This is enabled by a different relationship with suppliers that involves providing innovation embodied in modular components and sub-assemblies to Chinese vehicle makers. Exploring the implications for existing theory we conclude that: (1) different supplier relationships play an important role in enabling competitors from advanced and emerging economies to adopt different innovation processes; and (2) these differences in nature of the innovation process need to be explicitly incorporated into models explaining the international configuration of R&D. The role of local R&D centres is not necessarily to internalize local knowledge. Instead, it may be to facilitate the integration of knowledge provided by local suppliers, necessitating the nature and role of absorptive capacity to be re-thought. Finally, we explore the implications for future competition in the global automobile industry, limitations and future research avenues.

1. Introduction

Over the past two decades the Chinese automotive industry has grown at a staggering pace. Since 2013, China has overtaken the US to become the largest automotive market in the world, while maintaining its growth trajectory. The rapid growth in domestic production capacity was underpinned both by the investments of foreign multinationals from the advanced multinational economies (AMNEs) as well as the creation of indigenous Chinese car producers. Leveraging the growth of its domestic market, China aimed to establish her own 'national champions' and ultimately Chinese emerging market multinationals (EMNEs) through explicit policy intervention (Nolan, 2001; Sutherland, 2003; Thun, 2006). However, leading global firms have also deeply penetrated the Chinese market to compete with the domestic entrants, localizing most of their entire value chains in China.

Although AMNEs and Chinese EMNEs operate side by side in China, there is growing evidence both anecdotal and from empirical studies

that each of these groups of firms make very different strategic choices about how they innovate. Awate et al. (2015), for example, found that AMNEs tend to internationalize their research and development (R&D) activities to source local market knowledge, while EMNEs internationalize their R&D activities to explore external knowledge, and feed it back into the product development process. The role of suppliers in enabling these different innovation strategies and the resulting implications for the local R&D activities of vehicle makers, however, is incompletely understood. In this paper, we focus on how the willingness of suppliers to adjust their roles underpins the viability of the different innovation strategies pursued by AMNEs versus EMNEs. We also show how, because of these different supplier roles, AMNEs and EMNEs can configure their R&D differently and to set different objectives for their local R&D subsidiaries. This, in turn, has implications for the absorptive capacity EMNEs require to successfully pursue innovation that is competitively relevant.

Until recently, these differences had little impact on competition

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because the Chinese automotive market, along with many other emerging markets, was strongly divided into two segments: the premium segment of expensive, technologically sophisticated and highly appointed cars, and the lower segment of affordable, but relatively functional, vehicles (Brandt and Thun, 2010). The premium segment was occupied by AMNEs (sometimes in partnership with local companies) while the indigenous Chinese firms occupied the lower segment and so competed primarily against other Chinese assembly groups. With the introduction of affordable sport utility vehicles (SUVs) and the increasing sophistication of Chinese automotive consumers, however, demand has shifted significantly, opening up a large and under-served mid-market segment. In response, both AMNEs and Chinese EMNEs are now trying to enter that mid-segment, resulting in a ‘fight for the middle’ so that for the first time, Chinese automotive firms are directly competing with their AMNE cousins in China.

Faced with this new competitive landscape, AMNEs have attempted to lower their costs by localizing some of their R&D activities in China. In parallel, Chinese firms have been developing their R&D and supplier networks both domestically and internationally. At the same time, R&D processes have undergone deep structural changes, as firms have restructured their global activities during the ‘global business revolution’ (Nolan, 2001; Nolan et al., 2007). During this restructuring phase, most firms have fine-sliced their value chains (Kaplinsky, 2004; OECD, 2013; WTO, 2013), outsourced many of their activities previously done in-house (Chandler, 1977; Milberg and Winkler, 2013), and restructured to focus on their ‘core business’ (Chandler, 1994; Ruigrok and van Tulder, 1995). In addition to outsourcing some of their administrative and production activities, they have also begun to outsource some of their R&D (Contractor et al., 2010; Bertrand and Mol, 2013). This is especially true for sub-components and modules, where the responsibility for future innovations has been handed over to the suppliers (Nolan et al., 2007). This has led to more intimate assembly–supplier relationships (Humphrey and Memedovic, 2003; Birkinshaw and Fey, 2005; Gereffi et al., 2005; Frederick and Gereffi, 2009), and new forms of ‘project network organizations’ for innovation and development (Manning, 2017). These developments have converged, resulting in fundamental changes in the R&D value chain of the industry and also altering the role suppliers are called upon to play in innovation and product development.

The fact that suppliers have been willing to adjust their roles depending on the different innovation and competitive strategies of AMNE and EMNE vehicle makers has enabled a divergence between these groups. This divergence is of growing interest for two reasons. First, because AMNEs and EMNEs are competing head-to-head in the Chinese market. Second, because the divergence in innovation strategies opens up the possibility of disruption of established players (in the sense of Christensen, 2006). Beginning with the Chinese market, this may have far-reaching implications for future competition in global automotive industry.

To better understand these ongoing changes in the automotive industry and the role of suppliers in enabling them, we focus on the following research questions:

RQ1: How have suppliers enabled EMNEs and AMNEs to pursue divergent innovation strategies?

RQ2: What are the implications of this supplier-enabled divergence in innovation strategies for differences in the international R&D configurations of EMNEs and AMNEs and, in particular, the absorptive capacity required to be competitive?

RQ3: What are the implications of these different supplier roles and innovation strategies for the competition between AMNEs and EMNEs in different market segments?

In investigating these questions, we start by describing the paired sample of AMNEs and Chinese EMNEs for which we collected case study data on and the role of suppliers in their product development processes

and the configuration of their international R&D activities. We then explain our research methodology. We then detail the differences we observed between choices made by the AMNEs and Chinese EMNEs in our sample. Having characterized these key differences, we then examine how well theories drawn from the extant literature explain the reasons for the differences we observe. This analysis leads us to propose a number of extensions to existing theory that might better explain our results. Finally, we explore the potential implications for future competition between AMNEs and EMNEs, concluding with some limitations of the study and suggestions for future research.

2. Research methods

For the purposes of this study, an inductive approach seemed most appropriate, to explore the relatively new phenomenon of supply-based integration in the R&D process (Gibbert et al., 2008). We designed the study to include multiple case studies, because multiple cases ‘yield more robust, generalizable’ findings than single case studies (Eisenhardt and Graebner, 2007). Using multiple case studies also enhances external validity and provides a good basis for analytically generalizable findings (Eisenhardt, 1989; Gibbert et al., 2008).

2.1. Sample selection and industry context

We limited our sample selection to a single industry, to gain comparable results for a better understanding of the different product development processes. The automotive industry gave rise to the concepts of Fordism and lean production and is an influential trend-setting industry (Womack et al., 1990). The global auto industry epitomizes modern networked business relations as orchestrated by multinational enterprises (MNEs) (Dicken, 2010; Hertenstein et al., 2017). It may therefore provide insights into how supply firms are involved in the product development processes within these business networks and the resulting implications for EMNEs’ R&D configurations. The structure of business networks differ somewhat from industry to industry. In the automotive industry, product development is of a highly “integral nature, leading to thick ‘relational’ linkages between lead firms and first-tier suppliers” (Van Biesenbroeck and Sturgeon, 2010: 209). Insights gleaned from the automotive industry may therefore be relevant to other industries, particularly in manufacturing, that involve complex supply chains entailing numerous discrete inputs.

To analyse the R&D configuration of an EMNE and AMNE, we selected two case studies for a pair-wise comparison: one assembly firm from China, and one from Germany. For triangulation purposes, and to gain insights from multiple vantage points of the firms involved in the R&D process, we selected two large tier-1 supply firms that are deeply involved in the original equipment manufacturers’ (OEMs’) vehicle development process as additional supporting case studies (Jick, 1979; Gibbert et al., 2008). Including these suppliers promises deeper insights and additional information regarding the R&D and simultaneous engineering process for vehicles. We further selected a number of additional supply firms to cross-validate information and thereby increase generalizability and enhance internal validity (Gibbert et al., 2008). The firms were selected to increase heterogeneity by including technology service providers involved in the vehicle development process (Ricardo and MBtech), additional large systems suppliers (Continental) as well as component suppliers (Marquardt) involved in development process (see Table 2).

We selected China as an emerging economy because China has pursued policies designed to encourage its own indigenous “national champions” in this strategically important industry (Sutherland, 2001; Thun, 2006). Germany was chosen for its leading position in the global automotive industry, with three of the largest ten assembly firms (BMW, Daimler and Volkswagen) and the largest suppliers coming from Germany (BOSCH and Continental). Table 1 provides an overview of our case-study sample.

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