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Dynamic capabilities of biologics firms in the emerging business market: Perspective of dynamic capabilities evident

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ABSTRACT

The biologics industry constitutes an emerging business market, and the innovative and complex tacit knowledge of this market is understood by very few networked actors. In particular, information related to the resources and capabilities of biologics firms is considered highly confidential and is not accessible to the public. This study investigated five of the top ten biologics firms in the Asia–Pacific region. The firms were examined from the `perspective of dynamic capabilities. More specifically, the dynamic capabilities of the firms were explored using a four-stage coding analysis based on grounded theory. A theoretical framework and relevant concepts and theoretical propositions were developed in this study. Thus, this study proposes a conceptual framework that consists of uncommon knowledge, knowledge network, interaction factors, and mobility capability and describes five theoretical propositions and their influence on market competitiveness. This study found that the complex and dynamic market environment in question is driven by dynamic relations among various interaction factors.

1. Introduction

The discussion of the rise of dynamic capabilities begins with the evolutionary theory of firms (Nelson & Winter, 1982). “Dynamic capabilities” refers to a firm's ability to alter its own resources to achieve self-renewal(Eisenhardt & Martin, 2000) in response to environmental changes (Teece, Pisano, & Schuen, 1997). Möller (2010) indicated that sensemaking and agenda construction are the key dynamic capabilities in the field of emerging business. For example, sensemaking is a fundamental capability that is useful for understanding emerging firms. Firms with advanced sensemaking capabilities can anticipate potential development paths in their fields (Normann, 2001); this capacity, in turn, provides them with strategic advantages when responding to other firms. Alliance capability is another example of a dynamic capability. Sluyts, Matthyssens, Martens, and Streukens (2011) indicated that alliance capability is an organizational resource that is difficult to obtain or emulate. Alliance capability exerts a latent positive influence on the performance of alliances and effectively incorporates other resources into these alliances. Using alliance capability, firms can leverage knowledge through the alliance management process, which can not only promote their ability to manage single relationships but can also provide them with the ability to manage various combinations of relationships (Gemünden & Ritter, 1997).

Teece et al. (1997) indicated that dynamic capabilities consist of the abilities to manage organizational skills, resources, and functionality. Eisenhardt and Martin (2000) stated that dynamic capabilities change a firm's resource base, including its physical, human, and organizational assets, whereas Zollo and Winter (2002) indicated that dynamic capabilities influence ordinary (i.e.,operational) capabilities. These three definitions have consistently been the most influential (Helfat & Peteraf, 2009). However, the critical theory and practice of dynamic capabilities provide a direct indication of firms' competitive advantages, particularly in complex, volatile, and uncertain external environments. Thus, numerous scholars have focused on firms' dynamic capabilities (Möller, 2010; Sluyts et al., 2011; Teece et al., 1997; Wang, 2016).

Zollo and Winter (2002) suggested that the survival and effectiveness of organizations depend on the right match between organizational capabilities and environmental characteristics. This hypothesis may be particularly true in the context of the Asia–Pacific market, including markets in China and India, because the aforementioned market effectively consists of a network environment of emerging business fields. The complexity of the biotechnology industry may provide the most obviously relevant example in this context (Möller, 2010). Taken together, various trends can produce a complex and dynamic environment characterized by opacity, with the influences of both dynamics

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and ambiguity being the strongest in the business fields (Sluyts et al., 2011). Such an environment involves the factors of industry competition, mergers, alliances, and licensing and technical cooperation. For example, to arrange their Asia–Pacific manufacturing bases more rapidly, Sinopharm Group and Dr. Reddy's Laboratories often establish alliances with Firm A while simultaneously merging with Firm B and authorizing technical cooperation with Firm C. Because the biologics industry constitutes a complex and dynamic environment, industrial structures are opaque and ambiguous. Dynamic capabilities can be duplicated and developed rapidly, forming resource bases for firms and achieving and establishing related synergies (Wang, 2016).

Eisenhardt and Martin (2000) proposed that because the functionality of dynamic capabilities can be duplicated across firms, the resource configurations created by dynamic capabilities confer a competitive advantage, rather than the capabilities themselves. Some dynamic capabilities integrate resources. For example, product development routines, by which managers combine their varied skills and functional backgrounds to create revenue-producing products and services (e.g.,Helfat & Raubitschek, 2000), are such a dynamic capability. Other dynamic capabilities focus on the reconfiguration of resources within firms. Transfer processes including the routines for replication and brokering (e.g.,Hansen, 1999) are used by managers to duplicate, transfer, and recombine resources, particularly knowledge-basedresources, within firms. For example, at the premier product design firm, IDEO, managers routinely create new products by knowledge brokering from various previous design projects involving numerous industries and clients (Hargadon & Sutton, 1997). Other dynamic capabilities are related to the gain and release of resources. These capabilities include knowledge creation routines, whereby managers and others build new thinking within firms; this dynamic capability is crucial in industries such as biotechnology and pharmaceuticals, in which cutting-edge knowledge is essential for effective strategy development and performance (e.g.,Henderson & Cockburn, 1994). These capabilities also include alliance and acquisition routines, which bring new resources obtained from external sources into firms (e.g.,Zollo & Singh, 1998).

Eisenhardt and Martin (2000) suggested that theoretical dynamic capabilities demonstrate “commonalities” across firms. Wang and Ahmed (2007)stated that commonalities are the “components” of dynamic capabilities. First, commonalities (components) imply equifinality. That is, an effective dynamic capability, such as patching, knowledge creation, or alliancing processes, is most probably developed by the managers of firms from different starting points and is developed through unique paths. Moreover, because firms finally attain capabilities with similar key attributes, the same dynamic capabilities can be attained through multiple paths (equifinality). Second, commonalities (components) inthe key features of effective dynamic capabilities imply that these routines are more substitutable and fungible across different contexts than suggested by current theory. In the case of substitutability, as suggested by our example of knowledge creation processes, effective dynamic capabilities can differ in form and detail as long as the important commonalities (components) are present. In the case of fungibility, commonalities (components) imply the efficacy of particular dynamic capabilities across a range of industries. Third, according to the logic of RBV, a sustained competitive advantage occurs when the components of the capabilities are not only valuable and rare but also inimitable, immobile, and nonsubstitutable. The components of the capabilities are typically valuable. They may be rare or at least not possessed by all competitors equally, as is apparent in much of empirical research. The components of the capabilities are substitutable because they need to have key features in common to be effective, but they can essentially exhibit differences in many details. However, theAsia–Pacific biologics industry. components of dynamic capabilities have yet to be systematically identified and illustrated with empirical evidence in the literature. Nonetheless, the conceptual framework of dynamic capabilities in the biologics industry needs to be comprehensively understood, particularly given that the industry is participating in a highly uncertain, complex, and rapidly changing market. Previous studies have not proposed the components of dynamic capabilities based on empirical research and evidence, and the components of dynamic capabilities have not been captured in the literature, consequently leading to the formation of a research gap. The components are identifiable (Eisenhardt & Martin, 2000) and are critical for the development of the dynamic capability concept. The reasons are that first, the components of the dynamic capability construct identified by this study can be adopted by future studies to examine the relationships of dynamic capabilities with other organizational parameters. Second, the components of dynamic capabilities can guide the development of actionable prescriptions or practical tools and techniques that can be used by managers to improve performance.

Because no study has explained the dynamic environment of the biologics industry, the components of dynamic capabilities in this industry have yet to be identified, and a systematically integrated framework that fully explains such components is yet to be developed. Consequently, this study attempted to develop a new perspective regarding the relevant components. The purposes of this study are a)to provide a new perspective regarding the components of dynamic capabilities across firms and b)to summarize various relevant propositions and thereby construct a conceptual framework of the dynamic capabilities of biologics firms.

2. Literature orientation

2.1. Dynamic capabilities and emerging business networks

Several authors have discussed the specific qualities of dynamic capabilities and the internal and external antecedents of their formation processes (Eisenhardt & Martin, 2000; Möller, 2010; Teece et al., 1997; Zollo & Winter, 2002). Similar to Winter (2003), we defined the characteristic of “ordinary” (substantive) capabilities as an organization's ability to produce a required output (tangible or intangible), and we defined dynamic capabilities as the high-level capabilities involved in the processing of substantive capabilities. We believe that dynamic capabilities can be used to reconfigure firm resources and routines through the methods envisioned and considered appropriate by key decision makers (Zahra, Sapienza, & Davidsson, 2006). Relatedly, a comparison of the differences between ordinary and dynamic capabilities was compiled to clarify several critical concepts (Table 1).

Table 1 distinguishes ordinary (substantive) capabilities from the dynamic ability to change or reconfigure existing ordinary capabilities, which we describe as the firm's dynamic capabilities. Thus, the qualifier “dynamic” distinguishes one type of ability (e.g.,the ordinary ability to develop new products) from another type of ability (e.g.,the ability to reform the method used by the firm to develop new products) (Zahra et al., 2006). For example, a new routine for product development is a new ordinary capability, but the ability to change such a capability is a dynamic capability. A firm has numerous ordinary capabilities of varying strengths; similarly, it has numerous dynamic capabilities of varying strengths. For example, a firm may have a strong dynamic capability to change its product development routine while simultaneously having a weak ability to reconfigure its accounting systems (Zahra et al., 2006).

In addition, taken together, the trends produce a complex and dynamic business network. The aspects of opacity, dynamics, and ambiguity are the strongest in the business networks based on radical, discontinuous innovations (Håkansson & Waluszewski, 2002). The business network framework consists of three interrelated layers (Möller, 2010). These layers suggest strategies through which established sociotechnological structures and institutionalized meanings and recipes condition the emergence of innovations. First, the macro layer consists of slowly evolving sociotechnical landscapes, comprising a set of deep structural configurations. Second, the landscapes are