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Low-risk opportunity recognition from mature technologies for SMEs

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ABSTRACT

It is common that SMEs recognize low-risk technological arbitrage opportunities in mature technologies, enter the global market, and occupy significant market shares. This opportunity is characterized by imitable technology complexity, market insignificance for oligopoly companies, and technology maturity. We propose a new and systematic method to recognize the most appropriate low-risk technological arbitrage opportunities for SMEs. The four-phase opportunity recognition procedure consists of technology complexity analysis, market appropriateness analysis, technology maturity analysis, and organizational fit analysis using empirical measures and analytic tools. An illustrative example of a company searching for technological arbitrage opportunities in semiconductor equipment is provided.

Introduction

Globalization and technological change have brought new opportunities for small and medium enterprises (SMEs), but they have also created risks. Thus, SMEs have made efforts to seize opportunities under accelerating competition. However, compared to large firms, SMEs have disadvantages, including weaker R&D capability and fewer resources. Nevertheless, some SMEs can combine the advantages of their small scale and great adaptability with the economies of scale and

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scope provided by networks of SMEs (Davidsson et al., 2010; Jennings and Beaver, 1997; Thorgren et al., 2012). Some SMEs also collaborate with multinational giants and enjoy the benefits of joining their global networks (Sawers et al., 2008). SMEs have developed several ways to survive today's hypercompetition.

For this purpose, one of the most important initiatives for SMEs is to recognize the most appropriate business opportunities for them. Once an inappropriate business opportunity is regarded as being appropriate due to bounded rationality and thus is chosen, it is difficult to make profits, even if SMEs put forth a strong effort. Also, SMEs are less able to recognize opportunities on a global scale due to their limited access to global information and knowledge. Thus, opportunity recognition has been regarded as the central function not only of international entrepreneurship, but of international business development (Eckhardt and Shane, 2003; Mainella et al., 2013). We argue that an effective opportunity recognition method should be addressed and further developed for SMEs.

According to the current literature, opportunities can be divided into innovative and arbitrage opportunities. Whereas innovative opportunities are created by the introduction of new means, ends, or means-ends relationships, arbitrage opportunities are opened by market inefficiencies (Eckhardt and Shane, 2003; Kirzner, 1997; Schumpeter, 1934). Arbitrage opportunities can be classified as either market or technological.

If a market-altering change causes a particular resource to be heterogeneously priced in several markets, some alert entrepreneurs may quickly recognize this phenomenon and profit by buying low and selling high (Kirzner, 1973). This situation is a typical market arbitrage opportunity. Somewhat differently, technological arbitrage opportunities are directly linked to innovation. Often, new innovation enables innovators to make a higher profit (Anokhin et al., 2011). It also creates technological arbitrage opportunities for alert entrepreneurs to benefit from imitating the advanced technologies in pursuit of temporary cost advantages.

Overall, previous studies have been lopsided, focusing on innovative opportunities. Entrepreneurial strategies have been characterized by either early recognition or creation of innovative opportunities (Marcati et al., 2008; Morone, 1993). The adoption of emerging technologies has been a primary focus of attention (Newbert et al., 2006). Many scholars have investigated innovative opportunities in emerging technologies, emphasizing the role of entrepreneurs to identify them and use them effectively (Baron and Ensley, 2006; Gruber et al., 2008).

In contrast, research practice has ignored arbitrage opportunities. Since Kirzner (1973) suggested the entrepreneurial process of discovering de facto arbitrage opportunities, there have been few attempts to deepen our understanding of market arbitrage opportunities, except for the following works: Eckhardt and Shane (2003), Kirzner (1997), and Kirzner (2009). Not so differently, although Aldrich (1999) and Ghemawat (2003) suggested that a significant number of new firms have been started not by innovators, but by imitators using technological arbitrage opportunities, researchers have made little effort to offer an acceptable operationalization.

Recently, Anokhin et al. (2010) tackled this issue and suggested a way of identifying and measuring technological arbitrage opportunities by employing the minimum performance inefficiency. A company can identify the presence of arbitrage opportunities through the comparison of its own inefficiency score with the scores of other companies. Using data envelopment analysis (DEA) and Malmquist productivity index, they attempted to quantify the amount of both innovative and technological arbitrage opportunities in national economies (Anokhin et al., 2011). However, although technological arbitrage opportunities can be identified, some companies cannot capitalize on these opportunities because of various reasons, including weak R&D capability and strong competitors (Su et al., 2013; Teece, 1986, 2006). Even worse, there is no established way to identify appropriate technological arbitrage opportunities for a specific company.

Some recent cases and reports have suggested that the globally successful SMEs recognize and utilize a specific technological arbitrage opportunity (Lee et al., 2012; STEPI, 2009). These SMEs enter a global market characterized by oligopoly and mature technology, develop the same or slightly better products at lower price, encroach upon the market share gradually, and become global dominant players (STEPI, 2009). This is regarded as a new type of international arbitrage opportunities in global markets. Thus, it holds some common characteristics with previous international opportunity studies,