ALLIANCE PARTNER SELECTION CRITERIA IN EMERGING MARKETS: THEORETICAL FOUNDATIONS AND PROPOSITIONS FOR RESEARCH IN THE BIOTECHNOLOGY SECTOR

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ABSTRACT
Globalization, economic shifts created by the development of emerging markets, and the financial crisis of 2008 have affected a wide range of industries. In the biotechnology sector, firms must face a "new normal" where funds are shrinking, success rates to develop new molecules must be significantly increased, time-to-market must be radically shortened, and competition is global. At a time when partnerships are essential, certain emerging markets are poised to become critical partners. The objective of this paper is to present a theoretical foundation for examining the nature, the prevalence, and the location of international strategic alliances of biotechnology firms in emerging markets, with a focus on the criteria for partner selection in these markets as compared to selection criteria for developed country partners. Propositions are posed with respect to SMEs, and specifically SMEs in the biotechnology sector.

Keywords : International strategic alliance; partner selection; selection criteria; biotechnology sector; emerging markets

INTRODUCTION

Following the global economic downturn of 2008-2009, Asia is expected to represent much of the productive world growth in the near future. Indeed, the United Nations predicts 1.3% GDP growth for developed countries versus 5.3% for emerging markets, and as high as 8.8% for China's economy and 6.5% for India in 2010. While this progression is moderate compared to the unprecedented growth levels in emerging markets before 2008, it is a sign of an important structural transformation of the global economy. In the therapeutic sector, grow rates of 15% to 17% for most emerging markets (compared to 3% to 5% predicted for the U.S. market) and as

hih as 25% to 27% for China, 17 emerging markets are expected to represent as much as 50% of global therapeutic market expansion over the next three years (Berkrot and Blanchier 2010).

Emerging markets, formerly used for contract research and especially contract manufacturing, are evolving rapidly. In many sectors, propelled by local government priorities and investment in response to burgeoning populations and increasing demands, emerging markets are poised to be not only lucrative markets, but essential business partners to confront the requirements of the new global economy. Some of these countries can increasingly offer Western partners not only lower cost operations, but also skilled human resources, infrastructure, and knowledge of local cultures and evolving local regulatory environment. In addition, their markets present local health problems requiring innovative solutions.

Western biotechnology firms in developed countries, along with pharmaceutical firms, are faced with a "new normal" requiring them to reinvent their traditional business model and market strategy (Ernst and Young 2010). Government and private insurers in developed countries are placing "unprecedented pressure" on life science companies as they confront mounting healthcare costs, aging populations, shrinking tax bases, and the necessity to provide care for a larger group of citizens (Ernst &Young 2009a). To survive, they must efficiently respond to this changing reality in developed countries by supplying a stream of innovative lower-cost products to providers in the West as well as leveraging their successful products by capturing demand from fast-growing emerging markets with lower purchasing power and specific healthcare needs (Ernst&Young 2009b). The pharmaceutical industry, which along with biotech firms is a major player in the therapeutic domain, now views emerging markets as an opportunity to gain "global competitive advantage by creating local innovative precedents in how medicines are developed, distributed, promoted, and reimbursed." (Looney 2010:54).

Partner selection is one of the crucial decisions related to strategic alliances (Brouthers, et al, 2005; Ireland, et al. 2002; Hitt et al, 1995). And while international strategic alliances (ISAs) with emerging market partners are a critically important global phenomenon to successfully participate in the new global economy, knowledge is still in it infancy and more research is required (Hitt et al 2000; Lee and Beamish 1995). This study views ISAs in emerging markets from the viewpoint of the partner in the developed country.

The ultimate objective of the study is to present a portrait of these firms' alliance activities in emerging markets with a focus on the selection criteria used by western firms in choosing their foreign partners, as compared to those used for partners in developed countries. As part of a larger, ongoing study, this baseline will allow eventual assessment of the evolution of biotech industry alliances during this transition period. This paper presents the theoretical foundation and propositions for the research.

After defining "emerging markets," the following sections present the changing landscape of biotechnology in emerging markets and the contribution of the resource-based view of the firm and organisational learning perspectives on the nature of ISAs as well as the contributions of several theories of internationalization in the development of specific partner selection criteria. Propositions are posed in the context of SMEs and, more specifically, SMEs in the biotechnology industry.

EMERGING MARKETS

Evolving from "third-world countries", and "less economically developed countries," the term "emerging markets" (Antoine van Agtmael, then working for the World Bank's International Financial Corporation) is now used as a more positive label to suggest the progress, the uplift, and the dynamism of certain countries which are becoming noticed in the international trade arena (Authers, 2006). Later, the acronym "BRIC" (Brazil, Russia, India, and China) (coined by Jim O'Neill, chief economist of Goldman Sachs) regroups countries which were predicted to be the next to enter the economic big league (The Economist, 2008). It was followed by a series of other acronyms and terms englobing different countries that reflect the predictions of their authors in terms of population size, rapid economic growth, government stability, industrialization, sources of growth, and openness to foreign investments and collaboration. For instance, the acronym BRIC was enlarged to BRIICS (Brazil, Russia, India, Indonesia, China, and South Africa) by Goldman Sachs and is used by the Organization for Economic Cooperation and Development (OECD). Other groupings are CHINDIA (China and India) which combines the two largest markets, the EM-6 (Brazil, China, India, Korea, Mexico and Russia), VISTA (Vietnam, Indonesia, South Africa, Turkey, and Argentina) for the smaller emerging markets, CIVETS (Colombia, Indonesia, Vietnam, Egypt, Turkey, and South Africa) (EIU, 2010), Big Emerging Markets (BEMs) (Slough, et al., 2004), and others.

Consequently, different lists have appeared over the years, using criteria that can sometimes be quite different. As a result, the same countries have been perceived as emerging countries on one list and as developed on another (Kvint, 2008). Among the most respected sources, we have retained the Economist's list of 24 countries in order to identify emerging markets for this study. These are: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hong Kong, Hungary, India, Indonesia, Malaysia, Mexico, Morocco, Peru, Philippines, Poland, Singapore, Russia, South Africa, South Korea, Taiwan, Thailand, Turkey, and Saudi Arabia.

In the therapeutic industry, emerging markets are predicted to provide 50% of global market expansion over the next three years (Berkrot and Blanchier, 2010). They therefore represent highly significant markets for therapeutic products. This has not gone unnoticed by local governments in many emerging countries, which are pushing and/or supporting the start-up and growth of local biotechnology sectors to respond to rapidly growing local needs for therapeutic products on one hand and to develop export products on the other. The next section reviews the efforts of several of these countries to become viable players in the global biotechnology industry.

LOCAL BIOTECHNOLOGY SECTORS IN EMERGING COUNTRIES

The growth of local biotechnology centers in emerging countries is the result of several factors, including (a) reinvestment of revenues gained by contract research organizations (CRO) (that perform clinical trial related activities such as to develop protocols, recruit patients, collect and analyze data for pharmaceutical companies as service providers, but are not partners and do not develop therapeutic molecules for the contractor) and contract manufacturing organizations (CMO), (b) original research conducted by local firms to discover and develop innovative local products, (c) government participation, (d) improvement of legal and physical infrastructures,

(e) the exploitation of specialized niches, and (f) the integration of local firms into international networks. These factors may be regrouped into four strategies which will be discussed below.

Government participation: Indeed, governments of some emerging countries have identified and heavily invested in biotechnology as a driving force for their economic development and as a means to meet their needs or to solve their specific problems in agriculture, health, communication and environment (Juma et al. 2001). For some, the development of biotechnology is a result of national priorities and specific policies as well as public financial incentives for foreign investors, including tax-advantaged Special Economic Zones (Vaidyanathan 2008). They have invested massively to create science parks and public research institutes in order to attract multinationals (Hsu, Shyu, and Tzeng 2005; Vaidyanathan 2008). The Singapore government actively finances the recruiting of star scientists, while India counts on technology-transfer organizations to facilitate the licensing of technologies (Hine and Kapeleris 2006). Typically, these organizations first start as outsourcing hubs for R&D and production, especially in generic drugs (Ernst &Young 2009b). Then, with these infrastructures and new players, they develop qualified and experienced human resources (Hsu et al. 2005). They also encourage the return of their students from Western universities, particularly to develop start-up companies. China provides a relatively stable and supportive institutional environment for ISAs, allowing Chinese firms to take a longer-term view of strategic alliances than is the case, for example, in Russia (Hitt, et al. 2004).

Improvements in legal, financial, and physical infrastructures. However, improvements in their intellectual property protection and in the quality of the work undertaken are necessary in these countries if they are to become viable players in the global biotechnology industry. Some of the larger countries have initiated important changes in this sense. China is a case in point. Since its adhesion to the World Trade Organization in 2001, China has constantly improved its protection of intellectual property rights; however, it must still convince Western companies. In 2003, the Chinese government established a regulatory organization, and, since 2004, it requires all manufacturing companies to conform to the international standards in manufacturing and ingredients. In 2005, modified legislation required that innovation must not only be locally but internationally new. As a sign of the U.S. government's desire to improve the quality of food and drug products from China, in 2008 the U.S. Food and Drug Administration (FDA) announced the opening of its Chinese branch office (Ernst&Young 2009b). However, such transformations are not necessarily easy to manage; in India, for example, technology transfer policies and mechanisms are weak and need to be restructured (Agarwal, Gupta, and Dayal 2007).

*Targeting research niches***.** With better infrastructure and regulatory bases, these countries then move up the value chain by massively financing research in niches corresponding to their traditional strength, to areas abandoned by Western firms, or by aiming at local health problems. Thus, regions develop industrial applications and expertise in areas that coincide with their resources (Gouvea and Kassicieh 2005). For example, Brazil with its Amazon region has the large majority of the world's rare genes, so it is slowly developing a biotechnology industry based on that economic potential. In exchange for access to biodiversity, firms from developed countries must transfer technology and share its benefits (Artuso 2002). China has put particular emphasis on traditional Chinese medicine to generate ideas and on gene therapy. Other niches are areas where many Western countries have been unable to invest because of political or other

limitations, such as stem cell research and cloning (Adeoti and Adeoti 2005; Ernst &Young 2009b). Other developing countries have chosen to focus their innovation on their local health problems (Thorsteinsdottir 2007). For example, relying on transfer of technology from overseas, and also a combination of domestic efforts and international cooperation on R&D, Vietnamese research institutes have turned their research into business operations and transformed some scientists into businessmen and businesswomen (Ca 2007).

Integration into international networks. To help local firms develop R&D capabilities, some local government policies successfully support strategic alliances across borders with both the business and academic communities (Archibugi and Michie 1995). Such alliances improve their competitive advantage since the network factors embedded in the alliance facilitate technology diffusion among alliance members and improve firm-level technological capability (Lin 2009). Furthermore, for a small company in an emerging country, forming a strategic alliance with a foreign multinational firm is actually a superior mechanism for ensuring good corporate governance, in order to access financial and technological resources, than listing its shares on a U.S. exchange (Siegel 2009).

These kinds of opportunities for entrepreneurial firms in emerging markets may unfold because of the strategy undertaken by governments to create a pool of scientific competences and skilled human resources and plug into international biotechnology networks (Fontes 2007). The firms then have to find a position in globally coordinated "knowledge value chains" and develop their own network in order to survive (Bowonder, Thomas, Rokkam, and Rokkam 2003). The decision to implement an internationalization strategy which includes alliances with foreign partners from developed countries, in association with the production of low cost, high quality products, can drive the growth dynamics of emerging market SMEs (Malo and Norus 2009). For example, Indian pharmaceutical firms which are active in biotechnology research recognize that foreign collaborations and internal R&D may be seen as strategic substitutes (while patents and publications are seen as strategic complements). These Indian SMEs are likely to be younger and to implement more aggressive learning strategies (Ramani 2002). Furthermore, with the aim of enhancing their core biotech capabilities, Indian contract research and manufacturing providers have even acquired Western firms.

Not all emerging countries succeed in their quest of this new Eldorado. In South Africa, the poor flow of technologies from research laboratories to industry has been identified as an area of particular concern (Wolson 2007). Only a few countries are currently in a position to take advantage of opportunities provided by these science-based technologies and overcome entry barriers. This is partly due to the strong participation of their governments in the early stages of technology development, through massive investments and the development of human capital (Niosi and Reid 2007). Based on the number of biotech firms and patents, China, India, and Brazil seem to be the most successful. In addition to government strategies listed above, there appears to be a relationship between their large populations and their generalized industrialization. Niosi and Reid (2007) argue that small countries should collaborate with large countries. They put emphasis on the role of early patenting in areas with the potential to attract foreign venture capital, to create a biotech cluster, and to form strategic alliances with developed countries.

THE NATURE OF ALLIANCES IN EMERGING MARKETS

In the present article, alliance refers to an agreement based on written contracts including goals, contributions, delays, management structures, the allocation of rights and intellectual property (Bellon and Niosi 2000). Alliances can be for the purpose of research, development, production, or marketing. Among possible management structures are collaborations, which means scientists from both the biotech firm and the partner's organization are working together on a specific R&D project. Some authors argue that collaboration is the most suitable entry mode for a foreign firm to use to enter an emerging economy successfully (Pisano, Ireland, Hitt, and Webb 2007). For example, the dispersion and rapid development of scientific knowledge makes R&D an efficient way for firms to acquire scientific knowledge, skills, and resources beyond their boundaries and to enhance their productivity (Baum, J.A.C., Cowan, R., and Jonard, N., 2010; Powell et al., 2005).

The nature, or fundamental purpose, of strategic alliances, is conceptually underpinned by the resource-based view of the firm and organisational learning theory (Dong and Glaister 2006; Geringer 1991). Firms have specific resource endowments (Barney 1991) but require additional resources and skills to build a durable competitive advantage (Hitt et al,1999). Experience with partners leads to opportunities for learning, even of tacit knowledge, adding to the partner's resource endowment (March and Levitt 1999). Strategic "fit" is thus of major concern when choosing partners (Luo 1998). The search for complementary capabilities and unique competencies leads to new partners being preferred to prior ones to increase *information asymmetry* (Li, et al, 2008). The continual research for new partners for this reason is a fundamental characteristic of the therapeutic industry to which biotechnology firms belong (Roijakkers, Hagedoorn, and Van kranenburg 2005). The combination of resources and competencies that results from such a strategic alliance is difficult to imitate by competitors, thus increasing the probability of developing a durable competitive advantage. We suggest that this view may be extended to international strategic alliances, since foreign firms represent different cultures, needs, and knowledge.

Partners may be chosen for an *exploration* alliance to pursue knowledge, where partners must get close enough to share the *tacit* knowledge required for basic R&D. They may also be formed for *exploitation*, i.e., for putting into use and developing things already known (Koza and Lewin 1998; Levinthal and March 1993; March 1991; Rothaermel 2001). In an exploitation alliance, partners exchange *explicit* knowledge such as that required for production and/or marketing (Lane and Lubatkin 1998). In an uncertain environment typical of high-technology sectors, an "ambidextrous", or mixed, portfolio of exploration and exploitation alliances enhances firm performance (Lin, Yang, and Demirkan 2007; Rothaermel 2001) due to long development cycles, extremely low R&D-to-marketed- product ratios. Firms in general (Lin et al. 2007) and those in the biotechnology industry more specifically (Rothaermel and Deeds 2004), tend to form fewer exploration alliances than exploitation alliances, and they may balance their activities related to exploration and exploitation not only over time but also across domains (Lavie and Rosenkopf 2006).

Therefore, it is expected that the fundamental nature of strategic alliances signed by biotech firms, whether it be with firms from developed or in emerging countries, will be for *exploring* knowledge (R&D) and for *exploiting* that knowledge (production and marketing). For example,

contract manufacturing organizations (CMOs) in emerging countries have traditionally been recognized as a way to control or reduce budgets and eliminate the fixed costs of manufacturing. However, of greater importance is the added value that emerging market partners may bring to the firm. Those firms involved in emerging technologies such as biotechnologies are motivated to engage in alliances to gain access to human capital and scientific and technological talent and knowledge (Davenport and Miller 2000). Since critical knowledge may be located in any part of the globe, including in emerging countries, it is increasingly the driver underpinning the globalization of research. Opportunities of untapped innovations may be available in their universities and public research institutes. Moreover, different world regions develop different types of knowledge based on their biodiversity and their specific needs; this specific knowledge could be a motive for forming R&D alliances in one country versus another, including in emerging countries, as is the case of the biodiversity offered by Brazil or the knowledge of traditional medicine in China.

Exploitation partnerships open the doors for biotechnology firms to their partners' burgeoning populations, emerging and/or growing middles classes, and rapidly increasing demand for quality products. Such markets promise greater profits than would be possible in Western markets in spite of the lower purchasing power of their populations.

P1: North American biotechnology firms form both exploration (R&D), and exploitation (production, and marketing) alliances in emerging markets.

Biotech firms often develop *upstream alliances* with universities and research centers in the firm's region or country and these are sources of knowledge. It is the corporate scientists who create many research partnerships with colleagues from other organizations, particularly in universities (Liebeskind, Oliver, Zucker, and Brewer 1996). This dependence is so deep that it can explain the geographic agglomeration around star scientists (Audretsch 2001; Niosi and Bas 2001; Zucker, Darby, and Brewer 1998). The "social" networks provide scientists with a dynamic source for learning and give them flexibility that would be impossible in a larger, hierarchical organization such as a pharmaceutical company. In spite of financial constraints leading to fewer employees (Rothaermel and Thursby 2005), the diversity and quality of the connections of the firms' founders and advisors within the academic community influence their ability to identify, negotiate access to promising university science, and successfully acquire the rights to scientific discoveries when the research is at an early stage of development, before information about the value of the discovery has been widely disseminated (Stuart, Ozdemir, and Ding 2007). This constitutes a source of competitive advantage for young firms.

Li (2010) emphasizes the importance of the research function in alliances with emerging market firms and found that "the contribution of local universities and research institutes to such R&D collaborations is likely to be high when foreign investors have had abundant prior R&D experience in the host country and when the alliance has been established primarily for research rather than development purposes". Local researchers welcome research partnerships because of frustration arising from the paucity or non-availability of modern biotechnology research equipment, which is their most important constraint (Adeoti et al. 2005).

The globalisation of education and of scientific knowledge, accompanied by the rapidity of communication, contribute to the interconnectivity of scientists around the globe. We posit that North American biotechnology firms take advantage of the potential asymmetries of knowledge and emerging markets' new entry into the biotechnology research arena by entering into alliances with university partners and research centers in these markets.

P2: North American biotechnology firms enter into alliance agreements with universities and research centers in emerging markets.

PREVALENCE AND LOCATION OF ALLIANCES IN EMERGING MARKETS

The summary of research related to biotechnology in emerging countries presented previously highlighted six countries which are likely to be viable alliance partners for western firms due to the priority placed on biotechnology by their local governments, the rapid improvement of their capabilities, and their tremendous growth as markets. We expect that North American biotechnology firms have entered into many international strategic alliances in emerging countries, and it is posited that these alliances are primarily located in the emerging countries identified above: China, India, Brazil, along with Singapore, Vietnam, and *perhaps* South Africa (since some difficulties have been noted in this country).

P3: North American biotechnology firms sign more alliances in China, India, Brazil, Singpore, Vietnam, and South Africa than they do in other emerging markets.

SELECTION CRITERIA FOR ALLIANCE PARTNERS

Against this backdrop of international strategic alliance activities in the biotech sector, selection criteria are the focus of this paper: partner selection criteria used in the decision process by developed country biotech firms when choosing international alliance partners in emerging markets. In their study of partner selection criteria used in specific market contexts (emerging versus developed), with reference to Shan and Swaminathan (2008), Hitt, et al (2000) suggest that variations in partner selection criteria used by developed country and emerging market executives are likely to occur based on differences in norms, resources, and infrastructures, leading to important differences in partner preferences. Their results support their hypotheses that developed country managers, while using essentially the same partner selection criteria may, put greater, lesser, or equal priority on them as compared to emerging market executives. Their research produced a list of 14 selection criteria. Developed county managers put more emphasis on 6 factors than did emerging country managers: unique competencies of partner, market knowledge/access, previous alliance experience, cost of alternatives, industry attractiveness, special skills to learn from the partner. They emphasize the predominately intangible nature of the criteria used by developed country partners: unique competencies, market knowledge, market access and point out that several of these intangible assets are based on tacit knowledge. Such assets are difficult to imitate and may provide a basis for a competitive advantage (Barney, 1991).

In the context of the present study, conducted from the perspective of developed country managers only, the question is rather whether equivalent criteria are used by these managers during partner evaluation regardless of whether the partner is from a developed country or an emerging market.

Several theories of the internationalization of the firm suggest elements upon which developed country firms may evaluate and select partners in emerging markets. The paper will draw on three theories from economics and two from the behavioral school due to their wide use in the literature on international entrepreneurship, on management of biotechnolgy enterprises, as well as on technology agreements.

From economics, transaction cost analysis posits that partner choice in international markets is based on the *reputation of the international partner* and the *perception that an opportunity is associated with the particular partner*. Under the theory of internalisation, selection criteria include *partner reputation,* along with the *partner's experience and competence*. Evolutionist theory advocates suggest that a particular partner is selected based on *the compatibility of its routines* and the *level of confidence between partners*. Each of these theories also includes learning as an important aspect of a partnership in terms of facilitating the acquisition of information or to coordinate and communicate knowledge.

Behavioral theories tend to focus on the compatibility of new foreign partners; specifically, *complementarity of resources*, of skills, and of strategic intentions.

Tables 1 and 2 resume the theories retained in terms of selection criteria in international alliances.

Table 1
Economic theories of the internationalization of the firm

	Transaction cost analysis theory	Internalisation theory	Evolutionist theory
Partner Selection	**Reputation, perception of behavioral opportunism**	**Reputation, experience, skills**	**Compatibility of routines; level of confidence.**
Represetative authors	(Brouthers, 2002; Brouthers, Brouthers and Werner, 2003; Brouthers and Nakos, 2004; Williamson, 1981)	(Buckley, 1988; Buckley and Casson, 1976, 1996)	(Kogut and Zander, 1993); McKelvey, Hakan and Riccaboni, 2003; Zollo, Reuer and Singh, 2002)

Table 2

Behavioral theories of the internationalization of the firm

	Resources, skills and capabilities	Network Theory
Partner selection	Complementarity of resources and skills ; compatibility of strategic intentions.	Complementarity of resources ; reputation ; More central position in network.
Representative authors	(Barney, 1991, 1995; Barney, Wright and Ketchen, 2001; Hamel and Prahalad, 1995; Peng, 2001; Teece, Pisano, and Shuen, 1997; Wernerfelt, 1984)	(Coviello, 2006; Johanson and Mattson, 1988; Powell, 1998; Powell, Koput and Smith-Doerr, 1996; Powell *et al.*, 2005; Stuart, 1998)

Combining the potential selection criteria found by Hitt et al (2000) and those suggested in Tables 1 and 2, it is therefore proposed that :

P4: When elaborating strategic alliances, biotechnology firms use multiple selection criteria among the following:

from Tables 1 and 2:

reputation of the international partner
perception that an opportunity is associated with the particular partner
partner's experience
partner's competence
compatibility of partner's routines
level of confidence
complementary resources and skills
compatibility of strategic intentions.

from Hitt, et al. (2002):

unique competencies
market knowledge/access
previous alliance experience
cost of alternatives
industry attractiveness

special skills to learn from partner
complementary capabilities
managerial capabilities
financial assets
intangible assets
capability for quality
willingness to share expertise
partner's ability to acquire skills
technical capabilities

No effort has been made to consolidate the 22 potential criteria from the two lists at this point in order to retain as much detail as possible from eventual data analysis.

Further, since perceived risk may be superior when dealing with firms from other cultures, it is proposed that the criteria for selection of partners may differ based on market context (developed and emerging):

P5: Selection criteria used by biotechnology firms when evaluating potential partners from developed markets differ from those used when evaluating potential partners from emerging markets.

CONCLUSIONS

This paper has presented a theoretical basis upon which to study developing country firms' alliance activities related to emerging markets. It proposes that biotechnology firms from developed countries form both exploration and exploitation alliances in these markets, that research alliances are formed with emerging market universities and research centers, that these alliances will be concentrated in several countries which have prioritized the development of local biotechnology centers mentioned in the literature, that they use multiple selection criteria when evaluating potential partners, and that these criteria may differ according to the market context of potential partners (developed countries versus emerging markets). Investigating these propositions in future research will allow the tracing of a portrait of biotechnology firms' alliance activities in emerging markets and contribute important insights to the sparce literature on partner selection criteria in emerging markets.

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