Antecedents of strategic alliances performance in biopharmaceutical industry: A comprehensive model

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A B S T R A C T

We examine which factors determine the performance of strategic alliances as most common strategy for technology commercialization in Iran biopharmaceutical industry. We develop a theoretical framework to performance measurement of strategic alliances between traditional pharmaceutical and new biotechnology firms (NBFs). Our empirical data are derived from a detailed survey held among established alliances by member companies of Iranian Society of Manufacturers and Exporters of Medical Biotech Products in the period 2000–2012. Findings show that partner fit, alliance capabilities, social capital, and learning are determinant constructs of strategic alliance performance. Furthermore, opportunistic behavior was negatively related to alliance performance, as hypothesized. The partner fit, conflict management, trust, and social capital were positively related to learning construct. Trust, and social capital, negatively affected opportunistic behavior. This study finds that alliance capabilities partially mediate between alliance experience and alliance performance. Also, specific partner experience and conflict management were positively related to trust. The social capital positively, affected alliance capabilities. These findings provide a deeper understanding into the strategic alliance performance, and offer executives in biopharmaceutical industry some practical ideas for assuring favorable strategic alliance outcomes.

1 Introduction

Successful commercialization of technology is crucial for survival in today’s competitive markets (Zahra & Nielsen, 2002). Commercialization activities begin once a business recognizes a way to utilize scientific advances to meet market needs. Commercialization process comprises of engineering design, expanding, manufacturing, and marketing, and improving as well as altering the product (Nevens et al., 1990). Commercialization is a process to deliver the technical inventions to the market to gain profit (Heinonen & Sandberg, 2008). Commercialization is the structural trade of innovation and job creation, and it involves processes and activities filling the gap between the actual realization of the economic value and the economic value creation (Prewitt et al., 2008). Commercializing activities play an important role in bringing new technology to the market place especially in the high-tech enterprises (Lo et al., 2012).

Biotech industry is known as one of the high technological industries worldwide. Biotechnology is the process of utilizing scientific biology and techniques to create products and services with methods applying living organisms to develop products, to improve and alter plants or animals, or to make microorganisms for a specific use (Ahn et al., 2010). This article deals with the “biopharmaceutical” industry – which uses biological discoveries and inventions to develop drugs. Origins of biopharmaceutical industry are in the advancement and improvement in biological science, most considerably the discovery of DNA structure, and the later establishment of Genentech in 1976 to utilize these techniques emerged as a new industry (Ernst & Young, 2006).

The pharmaceutical and biotechnology industries are basically creating and developing innovative drugs and exclusively making advantages of the finite period of intellectual property (Ahn et al., 2010). The biopharmaceutical industry has several characteristics such as huge R&D costs ($125–250 million per drug), long commercialization periods, and very complex and lengthy regulatory (IRIFD) approval procedures. It should be noted that the empirical setting for this research is Iranian's biopharmaceutical industry.

The first pharmaceutical factory (Dr abidi) in Iran was established in 1946, employing pharmacists from German, Austrian, and French years starting with the first modern pharmacy. According to the Herfindahl–Hirschman Index (HHI), the domestic production firms were 295.11 indicating low market power. Total health expenditure is rising in Iran, while the share of public sector is decreasing. The expenditure of private sector as out-of-pocket payment (it counts for more than 50% of the total expenditure) is significantly high. Data displays an additive rate of privatization in pharmaceutical section. An increasing number of firms are engaged in the development of Active
Pharmaceutical Ingredient (API). Each holding firm has its own API-producing branch, and there are more than 30 firms engaged in the development of APIs. Firms which are active in the area of API development are mainly owned by the private sector, in contrast to the distribution and finished product firms. Current issues for the Iranian pharmaceutical market involve an increasing growth of imports and decrease in domestic production simultaneously (Kebriaeezadeh et al., 2010).

Biotechnology is an important and growing part of the economy in Iran's business. Pharmaceutical, bio-materials, diagnostics, and industrial enzymes are most important areas of the biotechnology sector. The total amount of the drug's annual sales is about 2.5 billion dollars estimated as 65% of the domestic production of drugs in general. Analysis of the pharmaceutical market in a 13-years period from 1997 to 2010 shows a growth rate of 28.38% in annual sales. A survey on domestic production and imports estimates import rate and annual growth rate as 95.2% and 42.3% respectively (Kebriaeezadeh et al., 2010). Iran has already started drugs export business to nearby countries in the region anticipated to reach $ 6–10 million by now. 85% of American and European countries, and 5% of Asian countries, Japan is at the top of the list, are manufacturing the biotechnology drugs. Iran is the fifth country gaining success in producing biotech drugs. 16 out of 140 biotechnology drugs produced in the world are considered as the most widely used drugs. Nowadays, 9 biotechnology drugs and vaccines like hepatitis B drugs, and various interferons (alpha, gamma and beta) are produced in Iran, saving 250 million dollars of foreign exchange for the country. Although, Iran imports eight bio-pharmaceutical drugs costing 150 million dollars yearly, which is anticipated to rise to 800–900 million dollars because of global increasing prices of medicines.

The biotechnology industry in Iran has been planned and determined to produce 40 biotechnology drugs and, biotechnology drug production should share 2% of the world market according to Iran’s the Fifth Five Year Plan of development as one of the strategic plans of government. Governments still have roles but they must play soft roles and emphasis on the technological capabilities and competencies. The start-up firms have assigned a lot of consideration to studying alliance formation and advantages. But the small number of studies on determinant factors of alliance performance can be partially attributed to the crucial challenges that academic researchers face in evaluating alliance performance. Iranian pharmaceutical market has undertaken great growth in comparison with other developing countries, and the market is expanding rapidly while a major contribution goes to biotechnology drugs imposing requirement to commercialization strategies, especially cooperative activities such as strategic alliance formation between traditional pharmaceutical companies and biotechnology companies in Iran’s industry (Kebriaeezadeh et al., 2010). Owing to strategic alliance importance to the biopharmaceutical industry, identifying the antecedents of the strategic alliances performance between biotechnology and pharmaceutical firms is of interest for researchers. This study identifies and examines the determinant factors of strategic alliance’s performance in Iran’s biopharmaceutical industry.

The paper structure is organized as follows: the next section titled ‘strategic alliances’ the concept of alliances in biopharmaceutical industry is defined, as well as the reasons and benefits of strategic alliance formation between firms. Then, in section three, ‘Background and hypotheses,’ we first briefly review prior research that has examined factors influencing alliance success. We then conceptualize the determinant factors of alliance performance and develop hypotheses regarding their relationships with alliance success. The relationships between the determinant factors, and how they explain evaluating of alliance success is also discussed. In the following sections information about the data used to test our hypotheses is provided, and analyses are presented. The elaboration on the results is offered in the section titled ‘Discussion and conclusion’.

2. Strategic alliances

Kozyra Quoted from Cygler states “strategic alliances are long-term and intentional agreements between business partners concluded on the basis of the principles of partnership and adequacy of benefits derived from the union all the while maintaining the parties’ organizational independence”. According to Kale et al., “Strategic alliances can be defined as purposive strategic relationships between independent firms that share compatible goals, strive for mutual benefits, and acknowledge a high level of mutual dependence” (2000: 218). Alliances are defined as a lasting, voluntary business arrangement between two firms including interchange, sharing, or cooperative development of products, technologies, and services (Gulati, 1998). Since accessing each other’s assets and capabilities is crucial to the successful performance, alliance establishment between biotechnology firms and
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