BINATIONAL INDUSTRIAL PARTNERSHIPS: A U.S. - ISRAEL MODEL AND ITS KEY SUCCESS FACTORS

Eitan Yudilevich, Ph.D.
Senior Member, IEEE
BIRD Foundation
P.O. Box 58054, Tel-Aviv 61580, Israel
eitan@birdf.com

***Abstract*- This paper presents the Key Success Factors (KSFs) of a "BIRD partnership", as identified following many years of experience. The BIRD Foundation is the Israel-U.S. Binational Industrial Research and Development Foundation, established 1977 by both governments. The KSFs were identified in a recently performed retrospective study of the last 10 years of projects. An Evaluation Scheme based on the KSFs is presented and applied to a project example.**

I. INTRODUCTION

In a global, networked economy, businesses are dependent on cooperation as a competitive strategy [1], [2]. Specifically, international "cross-border" cooperation has become increasingly important. For a company hailing from a relatively small country, the motivation for international cooperation comes from the local market being too small, and as a result it must rely on exports in order to achieve its goals. One strategy used to penetrate a non-local market is to form an industrial partnership with a firm in the target market.

Technological innovation is recognized as a main factor in the growth and success of many firms [3], [4]. In certain fields, such as in the telecommunications or software industries, a company has little chance of survival without innovation. Firms have discovered that cooperation can greatly enhance their innovative capabilities. In this context, international cooperation has become an important part of doing business for companies constantly seeking novel approaches for overcoming their competition. Increasingly, U.S. companies look for innovation opportunities abroad, in Australia, Canada, China, Europe, India, Israel, Singapore and in other countries.

Although international cooperation may be a necessity, this does not make it an easy avenue to follow. As these joint activities may include R&D cooperation, they carry significant risks, which can often jeopardize the achievement of the expected objectives of performance and profitability [5],[6]. Today the obstacles are better understood [7], and yet time and again companies express disappointment in not achieving the business goals set at the launching stages of the collaboration.

The obstacles partnerships face are often labeled "cultural", referring mainly to cultural differences between organizations. The organizational chasm is significantly enlarged when dealing with cross-border cooperation. National cultural differences then become dominant and must be taken into account in managing such collaborations [8].

As far back as the mid-70s, Israeli and American officials and businesspeople recognized the importance of government encouragement of bi-national industrial cooperation for technological innovation, and created the BIRD Foundation (BIRD= Binational Industrial Research and Development) [9]. They found that Israeli entrepreneurs offered significant innovation advantages, while at the same time lacked sophisticated management skills and marketing clout, the very same qualities that could be found with their potential American partners. The U.S. companies found that co-developing a product with Israeli counterparts could enhance their in-house innovative capabilities.

In this paper we discuss the Key Success Factors (KSFs) [12] of a BIRD partnership, as identified as a result of many years of experience and a recently performed retrospective study of the last 10 years of projects. This study provided a better understanding of the factors to be observed and compared when choosing joint projects for funding. An Evaluation Scheme is described, including an example project.

II. THE BIRD FOUNDATION

The BIRD Foundation (the Israel-U.S. Binational Industrial Research and Development Foundation), established 30 years ago, applies a unique model for encouraging cooperation between U.S. and Israeli companies [10]. In essence, BIRD shares the risk with two companies, one from each country, which plan to develop a joint product and *commer-*

978-1-4244-2146-6/08/$25.00 ©2008 IEEE

cialize it. BIRD funds up to 50% of a project. If the project is commercially successful, the "conditional grant" is repaid via a royalty mechanism. If the project is commercially unsuccessful, the BIRD investment becomes a grant (see Fig. 1).

Over the course of 30 years of activity BIRD has approved funding for more than 700 joint projects and invested close to $250M. Projects are refereed and selected through an orderly, well structured process. Many successful Israeli companies have enjoyed BIRD grants and many U.S. companies have taken advantage of this technology sharing mechanism. The BIRD Foundation is considered an important factor in the rise of the Israeli hi-tech industry since the early 70s [11].

III. Cross-Border Partneships

For many years, collaboration between companies has been recognized and adopted as a competitive strategy [1]. Cooperative agreements and joint ventures are two well known ways of formally establishing such an alliance. These agreements are generally specific and narrow in scope, although successful collaborations often lead to additional agreements, broadening the scope of the partnership.

There are many hurdles to achieving successful partnerships between different organizations [5]. Concerns of intellectual property rights, protection of competitive advantages, cultural differences between the companies and even personality issues between senior managers are some of the factors that need be taken into account.

Companies look to collaboration to compliment capabilities and to reduce risk in a competitive environment. A firm may look outside its own divisions or departments in order to enhance innovation opportunities. Another very important motive for cooperation is penetrating a foreign market. Enhancing innovation opportunities and penetration of foreign markets are two motivations that lead naturally to cross-border, international partnerships [8].

Making a company-to-company collaboration work requires much managerial attention. As a result of many lessons learned, managers have become more experienced in handling partnerships, and today it is hard to find a company not involved in some kind of alliance. However, managers still find that succeeding in cross-border alliances is a much harder, even elusive endeavor.

IV. Key Success Factors Methodology

Apparently, the methodology of Key Success Factors (KSFs) (also known as Critical Success Factors) was first introduced in the context of Information Systems [14]. A thorough presentation of the methodology can be found at [12]. Applications of the methodology can be found at [8], [15], and [16].

In the context of this study, Key Success Factors are those attributes of a joint R&D project that should receive special attention in order to increase the probability of achieving revenues during the commercialization phase, at the end of the development.

V. A Retrospective Study of BIRD Projects

We performed a retrospective analysis of all the 273 projects covering a time span of nearly 10 years (1996 – 2006). A project that achieved commercialization and revenues is considered *successful*. In this study, special attention was given to the analysis of projects yielding no revenues (named "*No Revenue Projects*"). According to the BIRD model (Fig. 1), if there are no revenues from a project, the "conditional grant" becomes a grant.

The analysis of the *No Revenue Projects* consisted in classifying 118 projects, which did not yield any revenues. Each project was classified according to the perceived reason for not achieving revenues, based on the reports of the companies and the judgment of the BIRD team. The categories used are the following:

- Partnership/Company problems
- Market change in direction or cheaper competition
- Technical failure in development

The *No Revenue Project* analysis (Fig.2) shows that the Partnership/Company factor is the primary reason in failing to achieve revenues, reaching 47% of the total number of *No Revenue Projects*. In only 17% of these projects, the reason for not achieving revenues was lack of technical success. The remaining 36% of the *No Revenue Projects* did not achieve revenues due to market reasons, e.g., changes in market preferences, emergence of a cheaper competitive product, etc.

The fact that a major contributing factor to a project's success is connected to the companies themselves and to the quality of their partnerships is a prominent result of this retrospective analysis. However, this result was not at all surprising to the experienced BIRD team. It only confirmed and reinforced a well known fact by providing quantifica-

tion and a solid basis for improving the existing evaluations scheme.

Based on this analysis and on 30 years of accumulated experience, we have derived the Key Success Factors of a BIRD project.

VI. KSFs of a BIRD Project

The retrospective study described above allowed the explicit identification and articulation of the Key Success Factors of a BIRD project. The KSFs identified are as following:

- Partnership Quality
- Market State and Size
- Technology Maturity

The Partnership Quality KSF is further subdivided into:

- U.S. company strength
- Israeli company strength
- Synergy between the two companies

VII. KSF Based Project Evaluation

BIRD has, for many years, been using an evaluation system that implicitly took the KSFs into account. The retrospective study described above shed light on the main factors, which allowed the explicit identification of the KSFs.

Once the KSFs were identified, refining the evaluation system, while taking these dominant factors into account, was the natural next step. Figure 3 is a description of the KSF based evaluation process (following the model described in [15]). The basic assumption being that for a project to be successful, i.e., produce revenues following development, there should be a "match" between the joint project's strengths and the KSFs (see Fig. 3).

The Evaluation Scheme is presented in Figure 4. Four parameters, directly derived from the KSFs, are represented graphically in a concise manner:

- Technology Maturity (**vertical axis**).
- Partnership Quality (**horizontal axis**).
- Market Size/Revenue Forecast for three to five years after development (**circle size**).
- Market State (**circle color**).

This Evaluation Scheme now serves the BIRD team in its initial assessment of the project. A member of the team, responsible for the project (PBC = "Primary BIRD Contact") presents the project in a joint meeting. The project is analyzed for each of the KSFs described above. The team then grades each one of the factors (Partnership Quality, Market State and Size and Technology Maturity), resulting in the graphical representation, as presented in Figure 4.

In parallel the projects undergo a **thorough technical review** carried out by external experts. The project ranking is presented to the Board of Governors of BIRD (twice a year) for final discussion and decision.

Table 1 shows a hypothetical BIRD project in the healthcare technology sector (the example is based on realistic data). The graphic representation of the project parameters is shown in Figure 4. One can see that this is a low risk project from a technological point of view, and that the partnership is fairly robust. However, the market is in its education stage and the three-year revenue stream presented by the companies is not very high. Therefore, the principal risk of this project is associated with the market. The complete evaluation picture includes the detailed review and ranking provided by the external technical evaluators.

VIII. Conclusion

We presented a successful U.S.-Israeli model of industrial R&D cooperation, with the goal of commercialization, and its Key Success Factors. The author believes that sharing this experience may help U.S. companies looking to expand their businesses abroad by carrying out joint development with companies on other countries. Doing so allows them to take advantage of a huge potential for innovation. The accompanied increase in risk can be tempered by understanding the KSFs and by using funding mechanisms such as the one provided by BIRD.

Acknowledgments

The author wants to express his appreciation to the members of the BIRD team for their great contributions to BIRD's success. Special thanks to Mr. Shlomo Cohen, BIRD's Chief Financial Officer, for making possible the retrospective study mentioned in this paper. Thanks also to Ms. Maha Mansour, BIRD's Information System Manager, for her work on the retrospective study and on the evaluation scheme.

REFERENCES

[1] K.R. Harrigan, "Joint ventures and competitive strategy," S*trategic Management Journal*, pp. 141-158, March-April 1989.

[2] D.B. Merrifield, "Strategic collaborations – essence of survival," *Research • Technology Management*, pp.10-14, March-April 2007.

[3] R.S. Jonash, T. Sommerlatte (Arthur D. Little, Inc.), *The Innovation Premium*, Reading, MA: Perseus, 1999.

[4] R. Bean, R. Radford, *The Business of Innovation*, New York, NY: AMACOM, 2002.

[5] A. Leslie, "Why do so many collaborations fail", *Engineering Management Journal*, pp. 40-42, April-May 2006.

[6] D.C. Mowery, "Collaborative R&D: how effective is it?," *Issues in Science and Technology*, pp. 37-44, Fall 1998.

[7] D.W. Birchall, G. Tovstiga, "Getting birds of different feather to flock together: achieving integration of capabilities in strategic alliances," *Managing Technology for the New Economy*, IEMC'02 Proceedings, 2002, pp. 397-402.

[8] N. Erez-Rein, M. Erez, S. Maital, "Mind the gap: key success factors in cross-border acquisitions," in *Mergers and Acquisitions: Creating Integrated Knowledge*, Blackwell Publishers: Oxford: 2004, pp. 20-42.

[9] W.C. Boesman, "The Israel-U.S. Binational Industrial Research and Development Foundation (BIRD)," CRS Report, March 26, 1992.

[10] Updated information on the BIRD Foundation can be found on **www.birdf.com**

[11] The Economist, Business: "Punching above its weight: Israel's technology industry," London: Nov 12, 2005, p.84.

[12] K.G. Grunert, C. Ellegaard, "The concept of key success factors: theory and method," MAPP working paper no. 4, October 1992.

[13] R. Katz, E.S. Rebentisch, T. J. Allen, "A study of technology transfer in a multinational cooperative joint venture," IEEE Trans. on Engineering Management, pp. 97-105, February 1996.

[14] A.C. Boynton, R.W. Zmud, "An assessment of critical success factors," *Sloan Management Review*, pp. 17-27, Summer 1984.

[15] J.A. Sousa de Vasconcellos, D.C. Hambrick, "Key success factors: test of a general theory in the mature industrial-product sector," S*trategic Management Journal*, pp. 367-382, July-August 1989.

[16] T. Astebro, "Key success factors for technological entrepreneurs' R&D projects," IEEE Trans. on Engineering Management, pp. 314-321, August 2004.

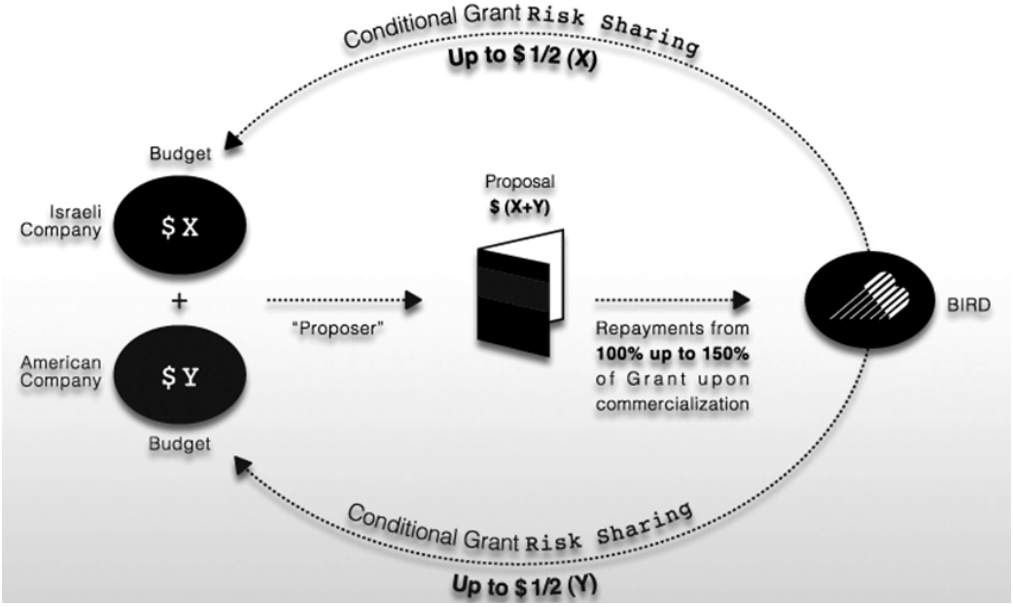

Fig. 1: The BIRD Model

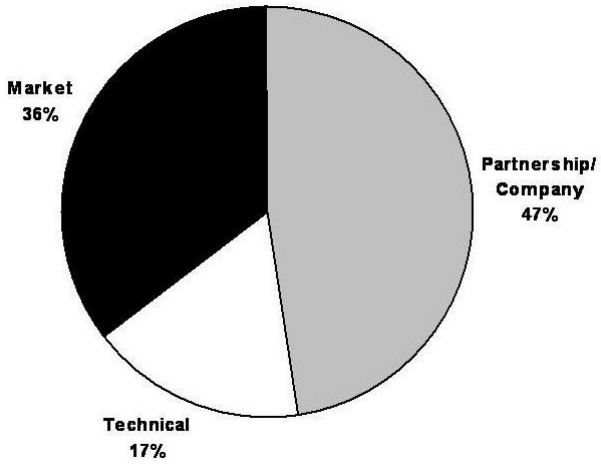

Fig. 2: Distribution of Factors for "No Revenue" Projects

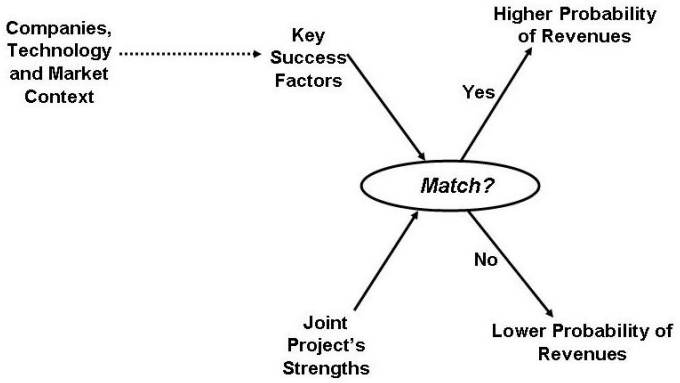

Fig. 3: KSFs Based Project Evaluation

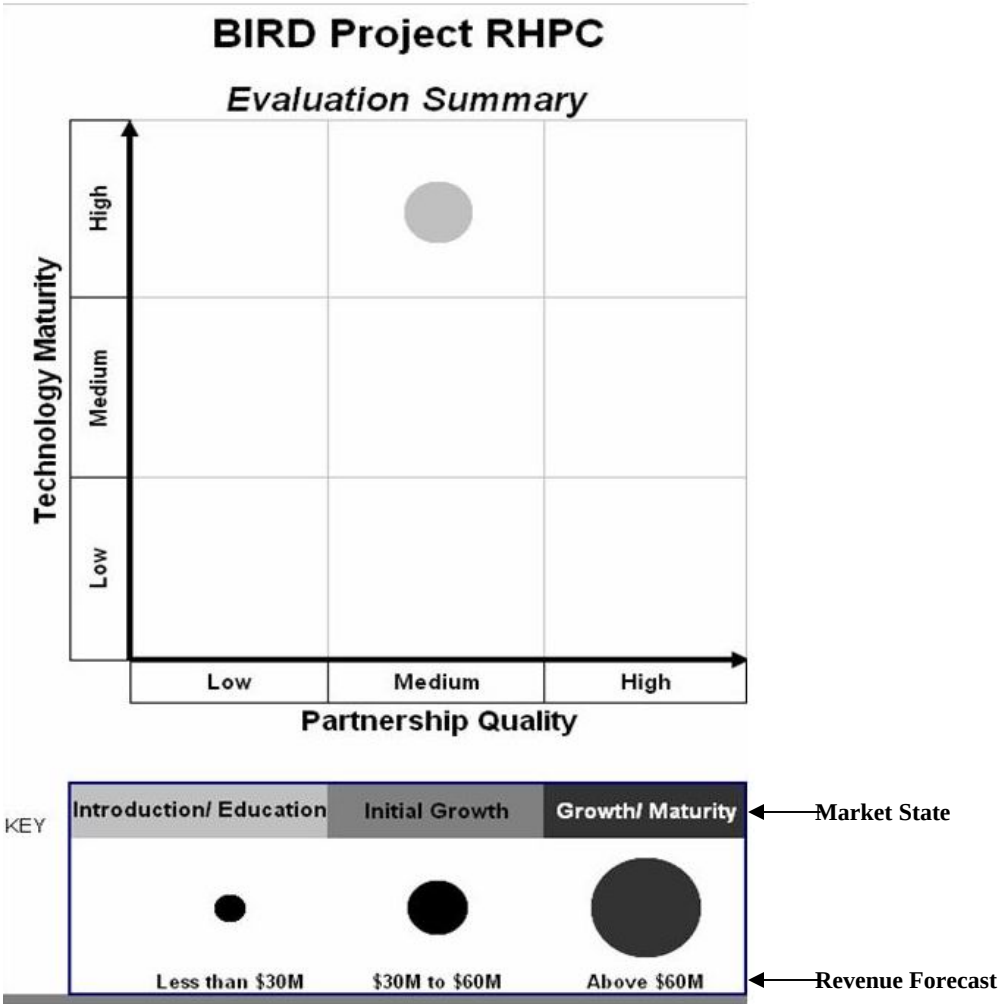

Fig. 4: BIRD Project KSF Based Evaluation Model

TABLE I
EXAMPLE OF A BIRD PROJECT

Project Name	Israeli Company	U.S. Company	Total Budget	Expected Duration	Conditional Grant Requested	Project Description
RHPC	NG Olive Technologies Ltd.	Believe Systems, Inc.	$2,500K	24 Months	$1,000K	Remote monitoring system for home patient care