

Relationship Strength And The Performance Of Business-To-Business Partnerships In Emerging Biotechnology Clusters

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Abstract

In a knowledge-intensive high technology field like biotechnology, where sources of expertise are widely dispersed, the ability of the entrepreneur to manage a variety of formal and informal inter-organizational partnerships can be regarded as a core capability of the firm. In the present study of partnerships in biotechnology clusters in Munich, Germany and Montreal, Canada, it was found that, a) managers of biotechnology companies feel that they have a stronger relationship with their most important non-financial partners than they do with their venture capitalists and b) compared to the managers of biotechnology companies, venture capitalists have a significantly higher assessment of the strength of their mutual relationship. Also, assessed by relational norms, relationship strength was found to be a significant predictor of the performance of partnerships in biotechnology clusters. The individual norm of communication in the relationship was the strongest predictor of performance followed by the norm of fairness. The results are consistent with the relatively short-term or “interimistic” nature of these types of partnerships. Non-economic variables are also important determinants of successful partnerships.

Keywords:

Relational norms, management in technology, venture capitalist

INTRODUCTION

Business-to business exchanges can be viewed as simply dyadic relationships or as a cluster of relationships imbedded in a network. Relationships are valuable resources, which, although they do not appear on the balance sheet, provide considerable returns on the investment of time and money devoted to their development. Therefore, relationships can also be the source of value creation for the firm, its shareholders, employees, customers, partners and suppliers. The nature or the atmosphere of the relationship is important for value creation (Lambe et al., 2000; Håkanson and Snehota, 1995). Relationship strength as assessed by relational norms such as flexibility, communication and solidarity (Paulin et al. 1997; 1999) has been shown to be an important factor in determining the effectiveness of business-to-business relationships.

In the context of the US biotechnology industry of thirteen years ago, Pisano, et al., (1988) remarked that “The locus of innovative activity is no longer the firm, but a network of inter-organizational relationships. According to the Boston Consulting Group (2001), approximately 40 biotech-clusters, in different developmental stages, have emerged worldwide. Clusters can be defined as “thematically focused collections of scientific institutes and companies of different size on a limited space with high attractiveness to third parties”. In addition, the convergence of modern biotechnology with information and communication technology and the application of robotics and automation techniques catalyze these developments even more. The cluster speeds up the firms capability to innovate. This rapid growth of knowledge and the dispersion of expertise opens up new business. The highly specific knowledge and skills fosters the formation of yet more specialized companies and value creation.

PURPOSE OF THE STUDY

This research studied two types of partnerships within clusters of emerging biotechnology companies: firstly, between emerging biotech companies and their most important non-financial business partner and secondly between emerging biotech companies and their lead investor. The purposes of the research were to evaluate the strength of the relationship in the two types of

partnerships and to determine if there was a link between relationship strength and measures of business performance in these partnerships.

Partnerships between emerging biotechnology companies and their lead venture capitalist were studied from the perspective of both parties (BT-VC and VC-BT). Partnerships between the emerging biotechnology companies and their most important non-investor partner were studied from the emerging biotechnology companies' perspective only (BT-MIP). The study was conducted in two biotechnology clusters, Munich Germany and Montreal Canada. However, the cross-national comparison is not the focus of the present paper.

Biotechnology companies and inter-organizational linkages

Pharmaceutical biotechnology is the most important branch of this multidisciplinary sector with a wide range of application fields. The biopharmaceutical sector is characterized by an environment of high risk and uncertainty and extremely high costs for research and product development before the product is viable on the market. To compete in this global “learning race”, companies have to form a variety of inter-organizational linkages that can be formal, in the form of contractual agreements like strategic alliances, research, licensing, co-production or co-marketing agreements or they can be informal, like the participation in research networks. Powell (1998) sees it as a key challenge and success factor for emerging biotechnology firms to establish a broad portfolio of cooperation partners. He views the effective management of these distinct partnerships as “key drivers of a new logic of organizing”. Besides offering access to resources, speeding up innovation, raising entry barriers to competitors and distributing risk, they can also send positive signals to other parties such as potential business partners or investors.

Biotech companies and Venture Capitalist Partnerships

One important success factor for biotechnology clusters is the availability of venture capital, important source for financing start-up companies. Venture capitalists can provide additional value besides financing. The lead investor usually gives management support and access to his network contacts, a crucial element because the founders or managers of these emerging companies often come from academia and lack a long track record of business experience.

It should be in the interest of start-up companies to establish effective relationships with their lead investors in order to profit from value-added services and also because companies will usually be in need of additional rounds of financing. Very often the venture capitalists of the current financing round will be the source of additional funds. In addition, it is much more difficult to find new investors, when the initial source of money is not willing to invest more.

For the venture capitalist, the development of effective relationships is equally important, as it is much easier for the venture capitalist to have a positive influence on the development of a company, if the relationship to its management is strong. In this respect Fried and Hisrich (1995) underline the importance of personal relationships between venture capitalists and managers. It seems that a strong and effective relationship can be built, when the venture capitalist can add real value through his expertise to the company and is respected by the managers because of that. An additional factor that seems to influence the quality of the relationship is a strong commitment to the success of the company and a very open and clear communication.

CONCEPTUAL BACKGROUND AND MEASURES

Relationship Strength (Relational Norms)

Business-to-business exchanges can be viewed as simple dyadic relationships or as a cluster of relationships imbedded in a network. Relationships are valuable resources, which, although they do not appear on the balance sheet, provide considerable returns on the investment of time and money devoted to their development. Therefore, relationships can also be the source of value creation for the firm, its stakeholders, employees, customers, partners and suppliers (Morgan and Hunt, 1994). The nature of the atmosphere of the relationship is important for value creation (Lamb et al., 2000; Håkanson and Snehota, 1995). Relational attributes such as the strength of relational norms (Paulin et al., 1997; 1999) and the level of commitment and trust (Morgan and Hunt, 1994) are important for exchange relationships to create value for the parties involved in the process.

The transactional-relational continuum is a useful construct for assessing business-to-business exchanges. In Macneil's (1974; 1978; 1980) relational contract theory, the strength of a

business-to-business exchange can be measured along a continuum from the transactional (Williamson, 1975) to the relational pole or axis. Dwyer et al. (1997) introduced the transactional-relational continuum into the marketing literature using Macneil's 12 behavioural concepts. Understanding relationship marketing requires distinguishing between discrete transactional exchanges having short duration with a sharp ending and relational exchange of longer duration within an ongoing process (Dwyer et al., 1997).

A thorough review of the theory and operationalization of relational norms as a measure of relationship strength can be found in Paulin et al. (1997; 1999). In their studies, the first four of Macneil relational contracting were operationalized as role integrity, communication, flexibility and solidarity. The supra contract norms were overlooked. However, in the present study, the supra-contract norms gave rise to the norm of fairness.

The relationship strength for each of the three assessed relationships was determined using a 12-item-index (Cronbach alpha values ranged from .85 to .93 for the three different types of relationships) made up of three questions pertaining to each of the relational norms: Communication, Flexibility, Solidarity and Fairness. *Communication* reflects the accuracy and timeliness of the information that is provided by the business partner, the availability of the partner and the degree to which the partner offers open access to additional contacts in the network. *Flexibility* refers to the perception that the business partner is able to adapt to changing circumstances that might lead to changes in formal or informal agreements, or the willingness of the partner to find solutions to relationship problems where both parties can be satisfied. *Solidarity* is concerned with the degree of mutual trust, commitment and benefit and is reflected through a cooperative relationship in which each partner sees problems as joint responsibilities and the perception that the respective partner would not take undue advantage from a strong bargaining position. The *norm of fairness* refers to the fair behavior of the partner and the willingness of the partner to distribute benefits and costs between the parties in a fair manner and the adherence of the business partner to certain norms or principles of the industry. Each question was scored using a seven-point Likert scale.

Performance of the partnership

The present study of partnerships of biotechnology companies fits most closely with the term “interimistic” relational exchange, defined as close, collaborative, fast developing and short-lived relationships. In these relationships, companies pool their resources in order to address transient, albeit important, business opportunities or threats (Lambe et al., 2000). A retrospective evaluation of these partnerships can be done once they have been concluded. However, the question is, how to evaluate the performance of these partnerships while they are ongoing. Obviously, it has to be done from the perspective of both partners. In the present study, both parties were asked a general question which is to evaluate the overall effectiveness of the relationships. The perspectives on the relationship benefits to both the biotechnology company and the venture capitalist were developed based on the concepts described by Fried and Hisrich (1995), Powell (1998) and David and Grindley (2000).

Perceived relationship benefits were measured with eight questions for the respondents from the biotechnology companies and with five items regarding the venture capitalist perspective on a specific relationship to a biotech company. In both cases the items were scored on a seven-point Likert scale. The Cronbach alpha values ranged from .70 to .88 for the three different types of relationships. In both cases, the relationship benefits concerned the gain of valuable experience from a specific relationship that would help the respondents to attract and develop other partners in the network and the contribution of the relationship concerning the achievement of financial or creative goals. A second overlapping aspect as well for the biotech companies as well as for the venture capitalists was, to what degree have the original expectations of a particular partnership been fulfilled.

From the biotechnology company perspective, the evaluation included the degree to which the collaboration with a certain partner improved the effectiveness of the company’s management, enhanced discipline with regards to the achievement of financial goals, and reduced much of the risk and uncertainty that is pertinent in the industry. In addition, other aspects of relationship benefits were the influence of the cooperation on attracting human capital and if the partnership had a positive influence on the reputation of the biotechnology company.

With regards to the venture capitalist perspective, specific aspects of relationship benefits were, if the relationship to a portfolio company would attract other investors and if the respondent had the perception that his work as venture capitalist is made relatively easy in a certain relationship. The perceived overall relationship effectiveness of the three different partnership perspectives was measured using a five-point Likert scale ranging from “very poor” to “excellent”.

Data collection

Two different questionnaires with overlapping parts were developed for biotech companies as well as investors. The questionnaires were translated from English to German for the interviews in Germany. The questionnaires were translated back to English for the interviews in Canada. This double translation was undertaken to make sure the content reflects what was intended to be measured. Interviews combined quantitative data and qualitative information. All interviews were confidential and it was made clear to all respondents that at no time would their individual responses be made known to their partner in the dyadic relationships or made public. In addition, every participant was assured that all collected data would be anonymous and reported in aggregate without mentioning the name of the company or the name of the interview partner.

Overall sample size

A total of 81 interviews were completed in Germany and Canada, 51 interviews were conducted in the Munich biotechnology region (biotech companies $n = 29$ and investors $n = 22$). In Canada, a total of 31 interviews were completed (biotech companies $n = 24$ and investors $n = 7$). Some investors were the lead investors of more than one company in our biotech sample and evaluated more than one relationship. From the total of 81 interviews, 30 (Germany $n = 20$ and Canada $n = 10$) were completed matched dyads between a biotech company and their corresponding lead investor in their actual or just finished financing round.

Type of respondents

In both countries, interviews were in most cases conducted with the CEO or president of the companies (27 interviews), COO (7 respondents) or CFO (6 respondents). In two cases the interview partners were the assistant of the CEO or CFO. Other interview partners included two vice presidents, one general manager, one CBO, one CTO and in four cases the respondents were

managers from the business development department. The important criteria for the selection of the interview partners in the biotech companies were a strong involvement in external business partnerships and a strong participation in the interaction with the lead investor. The respondents on the investor side were in most cases the investment managers for the respective portfolio company (26 respondents), in one case the president of the investor firm and in two cases independent angels.

Response rates

In Germany, 49 biotech companies were contacted by phone in combination with e-mail on the base of a list of VC-financed companies of the Munich biotech region. Four companies were not at all reachable, one company had moved away from the region and one company was not financed through venture capital, the response rate for the biotech companies in Germany was 67 % (n = 29/49).

In Canada, 70 companies were classified as active in the human health sector in a Quebec biotechnology directory. Companies were chosen from the health branch of a biotechnology directory in Canada to achieve a sample that is comparable to that collected in the Munich area. Canadian companies were contacted by phone, e-mail and through personal contact at biotechnology conferences and meetings. The response rate was 34 % (n = 24/70). Two potential reasons explaining the differences in response rates are a) the shorter period for data collection in Canada and b) the initial sample of contacted companies had a range of non-VC financed firms that were not eligible in this study.

When biotechnology companies agreed to participate, they were asked for their lead investors, which were subsequently contacted. In Germany, to increase the probability of achieving matched dyadic interviews in a limited time period for data collection, some additional investors that invested in companies of the Munich biotech cluster, but did not directly correspond to the biotech sample, were chosen from a range of different directories and were contacted in parallel. For the investors, the response rate was 92 % in Germany (n = 22/24) and 54 % in Canada (n = 7/13). Again, the time period for collecting the data in Canada was significantly shorter than in Germany. Thus, may explain the differences in response rates.

RESULTS

Compared to the managers of biotechnology companies, venture capitalists make significantly higher assessments of the strength of their mutual relationship (Table 1). Similarly, the managers of biotechnology companies feel that they have a stronger relationship with their most important non-financial partners than they do with their venture capitalists. With regards to the single relational norms, the venture capitalists have a higher perception of fairness, solidarity and flexibility. On the other hand, although less significant, biotech-companies relations with their most important non-financial partners are based on solidarity and fairness.

Table 1 Relationship Strength in biotechnology partnerships¹

(BT-MIP) Biotech Company & Most Important Partner
 (BT-VC) Biotech Company & Venture Capital Partner
 (VC-BT) Venture Capital Partner & Biotech Company

	BT-MIP (n=49)		BT-VC (n=49)		VC-BT (n=44)	F	p
Communication	5.0 (1.3)		4.9 (1.6)		5.4 (1.0)	1.6	NS
Flexibility	5.5 (1.0)		5.3 (1.2)	**	5.9 (0.8)	3.2	.05
Solidarity	5.4 (1.2)	**	4.8 (1.5)	***	5.8 (.8)	7.4	.001
Fairness	5.6 (.9)	**	5.1 (1.5)	***	6.0 (.8)	7.1	.001
Relationship Strength	5.4 (.9)	*	5.0 (1.3)	***	5.7 (.7)	5.6	.01

¹ Values are means (standard deviation), F statistic and p for one-way ANOVA

Probability for Duncan post hoc comparison of means are * p < 0.05; ** p < 0.01; *** p < 0.001

Multiple regression equations were calculated to determine the predictive value of the four relational norms with regards to the perceived overall relationship benefits and the overall relationship effectiveness (standardized beta, adjusted R², F, and p values) (Table 2). Overall, relationship strength was found to be a significant predictor of the benefits and effectiveness of

partnerships in biotechnology clusters. The prediction tended to be stronger for the assessment of overall effectiveness compared to the relationship benefits.

With regards to the individual relational norms, communication was the best predictor of the two dependent variables for all three types of relationships, although less significant for the overall effectiveness and not significant for the relationship benefit with regards to the perspective of the biotech company and their most important business partner. The norm of fairness and perceived overall relationship benefits, as viewed from the venture capitalist, was highly significant while biotech companies indicated that fairness was a significant relational norm in evaluating their most important partnership.

Table 2 Relationship benefits and overall effectiveness of partnerships as a function of relationship strength (relational norms) among three partnerships ¹

	(BT-MIP) Biotech Company & Most Important Partner (n=49) (BT-VC) Biotech Company & Venture Capital Partner (n=49) (VC-BT) Venture Capital Partner & Biotech Company (n=43)						
	Communication	Flexibility	Solidarity	Fairness	Adj. R ²	F	p
BT-MIP							
Benefits	.010	.330	-.390	.181	.07	.9	NS
Effectiveness	.264*	.197	.098	.354*	.57	16.7	.0001
BT-VC							
Benefits	.699***	-.056	-.200	.087	.32	6.6	.001
Effectiveness	.539***	.072	-.170	.364	.55	15.6	.0001
VC-BT							
Benefits	.462**	-.297	-.251	.547**	.21	3.8	.01
Effectiveness	.658****	-.136	-.149	.291	.36	6.9	.001

¹ Values are standardized beta coefficients from multiple regression analyses
Significance of coefficients are: * p < 0.05; ** p < 0.01; *** p < 0.001; ****p < 0.0001

DISCUSSION

Relationship Strength (Relational Norms)

Emerging biotechnology companies perceive their relationships with their lead investors to be weaker than those with their non-financial partners, especially with regard to the norms of fairness and solidarity. Relationship strength was found to be lower for the venture capitalists partnership than for their non-financial partnership. The investors were perceived as demonstrating more often unfair behaviour, to take undue advantage of a strong bargaining position or to work less cooperatively than the non-financial partners. Venture capitalists usually have more formal power which might be perceived as unfair, whereas the power distribution among other partnerships is more evenly distributed.

The more the biotechnology companies perceive good communication, the more they feel that their venture capitalist partnership brings benefits and effectiveness to the business relationship. The relational norm of communication was found to be the crucial element with regard to predicting benefits and perceived overall effectiveness of the biotechnology companies' relationships with their lead investors. Good communication means accurate and timely information, availability of the partners and provision of an open access to the partner's network of contacts. In the dynamic and competitive context of biotechnology, communication is therefore, crucial for the survival and growth of all partners involved in the network relationship.

The more the biotechnology companies perceive good communication and fairness in their non-financial partnership, the more they feel that the partnership is effective. Fairness is reflected in behaviour, distribution of benefits and costs in the relationship and a certain adherence of the partner to industry-specific norms and guidelines. The importance of regular and open communication founded on ethical behaviour is crucial for the survival of the biotech and its potential connection with other biotechnology firms and pharmaceutical companies.

Performance of the partnership (Relationship effectiveness and relationship benefits)

Venture capitalists feel that they gain more valuable experience from a relationship with a portfolio company than their respective biotech partners. The differences in results may be

partly related to different questions asked to both groups. However, venture capitalists are under the assumption that biotech companies gain valuable experience from their mutual relationships. This may be due to the fact that venture capitalists have one important type of relationship, that is, with their portfolio companies, and they can apply their experiences to other similar partnerships. On the other hand, for the biotechnology companies, the investor is only one of a range of different business partners and the gained experience from the relationship with the lead investor cannot be easily applied to other types of partnerships.

SUMMARY AND CONCLUSION

The context of biotechnology is highly dynamic and complex as knowledge is growing exponentially and is widely dispersed. To compete on a global level, biotechnology companies must engage in a variety of organizational linkages that provide complementary resources. The ability to manage this range of different partnerships varies widely among companies, in particular, with regards to the relational aspect. One important partner for emerging biotechnology companies is the venture capitalist since this partner provides financial and additional support for managers often lacking business experience. Thus, this study aimed at investigated from the perspective of the biotechnology, the relationship effectiveness and relationship benefits with its most important business partner and with its lead investor. In addition, the study assessed the investor perspective on the relationship with the biotech company.

The present results demonstrate that the performance of partnerships in biotechnology clusters depends on how strong the parties see the relationship. Also, compared to long lasting exchanges described in the relationship marketing literature, where flexibility and solidarity play an important role, “interimistic” biotechnology partnerships are more dependent on the perception of effective communication and fairness.

In particular, the findings demonstrated for the first time the importance of relational contracting in the context of emerging biotechnology clusters and they indicate that effective management of requires different skills for each type of partnership. The results revealed different perceptions

between biotechnology managers and their lead investors, independently of national cultural factors, and suggest changes in the management of this type of relationships.

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