STRATEGIC ALLIANCES VS. MERGERS & ACQUISITIONS IN CENTRAL AND EASTERN EUROPE - ALTERNATIVE SOURCES OF INNOVATION

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Abstract

Strategic alliances and mergers and acquisitions (M&As) became well-known organizational instruments through which companies could increase their market power, enter into new markets or enhance their capabilities. In the same time, R&D expenditures rose three times as fast as spending on fixed assets. This is why companies can no longer, on their own, meet all the costs or develop all the different capabilities required for a totally independent strategy.

This paper explores the strategic choices that companies make when using strategic alliances, mergers and acquisitions, or a mix of these as alternative sources of innovation. The importance of these choices is that they could explain the main reason why alliances and M&As fail: the failure in aligning these transactions with a company's strategic goals.

I have analyzed a group of 74 large US, Asian and European companies operating in Central and Eastern Europe that formed here at least five alliances and/or M&As, and we have also analyzed which factors determine the preferences of companies for one of these strategies.

The results indicate a strong correlation between both their external and internal environment and their preferences, as companies that prefer strategic technology alliances over M&As are primarily active in high-tech sectors and companies that prefer M&As over alliances are mostly found in the low-tech sectors. On the other hand, we could not establish a correlation between the patent intensity of a company and its preference for a certain strategy.

Keywords: *competition, innovation, strategic alliances, M&As*

1. INTRODUCTION

1.1 Purpose

This paper focuses on the basic research question:

Under which conditions do companies prefer strategic technology alliances, M&As, or a combination of these, as alternative external sources of innovation and technology?

According to several studies by Harvard Business School and surveys of CFOs by Bain & Company consulting group one-half to three-quarters of all alliances and M&AS fail to create shareholder value. One of the main reasons, according to the same studies, is a failure to align strategic goals with the process of generating and executing transactions.

Thus, our research question is important because we will explain the mechanisms behind the strategies of the companies, when engaging in either strategic alliances or M&As.

Contributions that pay attention to the preferences of companies with regard to strategic alliances and M&As usually analyze the conditions that affect the preference for either alliances (joint ventures in most contributions) or M&As (Ingham and Thompson, 1994, Hagedoorn, 1996, Hagedoorn and Duysters, 2002).

Our paper complements the current understanding in several ways. We examine non-equity based alliances, which have becoming more and more important as it is estimated that in the late 1980s and first half of the 1990s, nearly 80 % of all strategic technology alliances were of a non-equity nature (Hagedoorn, 1996). Our analysis also considers the preferences for alliances or M&As for companies from different countries, whereas most studies concentrate on companies from one or two countries. Furthermore, our analysis focuses on 'technology' alliances which, according to the literature, form an important class of alliances.

1.2 Research hypotheses

To understand the particular properties of the preferences for strategic technology alliances and M&As, we have tested a number of hypotheses which are based on previous research.

This first hypothesis is based on previous research conducted by Ciborra (1991) and Oster (1992) which suggest that strategic alliances are dominant in the environments that induce or require a large degree of learning and flexibility, such as high-tech industries; whereas M&As are dominant in the low-tech sectors of industry, where learning and flexibility is less important than in high-tech industries.

The first hypothesis is formulated as follows:

Hypothesis 1a: *For companies operating in high-tech sectors, strategic technology alliances are preferred as a main mechanism for acquiring external innovative capabilities.*

Hypothesis 1b: *For companies operating in low-tech sectors, M&As are preferred as a main mechanism for acquiring external innovative capabilities.*

Hypothesis 1c: *For companies operating in medium-tech sectors, the portfolio of external sources for acquiring innovative capabilities is of a mixed character of both strategic technology alliances and M&As.*

The second hypothesis is based on Chi's work (1994). Chi stated that it is crucial for a company that considers a strategic technology alliance or an M&A, to know whether this refers to a core business activity or not. If the innovative capabilities of the other party involved and the joint effort itself are not critical to a company because they do not affect a core business, an alliance is the preferred option. M&As are suggested in case the activities of (potential) partners are more important to the core business of the company and when increasing contracting costs and risks are involved. Then, the need for control over innovative capabilities related to core businesses suggests a formal mode of economic organization such as an M&A as the most appropriate form for getting access to external sources of innovation.

This hypothesis is formulated as follows:

Hypothesis 2: *External sources of innovative capabilities of companies related to core businesses will take the form of M&As; for non-core businesses they will take the form of strategic alliances.*

The third hypothesis follows Teece (1986, 1987), where a strong regime of appropriability, that protects companies from quick imitation, leads to a preference for strategic alliances because companies are safeguarded against opportunistic behavior of partners. Little or no protection through a weak regime of appropriability suggests that M&As are a better mechanism for appropriating sources of innovation because partners can be controlled through ownership. Intermediate levels of protection will be related to mixed strategies with both strategic technology alliances and M&As.

The third hypothesis is formulated as follows:
Hypothesis 3a: *External sources of innovative capabilities of companies related to their core businesses will take the form of strategic technology alliances if their particular regime of appropriability in these core activities is above the industry average.*
Hypothesis 3b: *External sources of innovative capabilities of companies related to their core businesses will take the form of M&As if their particular regime of appropriability in these core activities is below the industry average.*
Hypothesis 3c: *External sources of innovative capabilities of companies related to their core businesses will take the form of a mix of alliances and M&As if their particular regime of appropriability in these core activities is at the industry average.*

The fourth hypothesis follows a study made by Powell et al. (1996) who suggests that experience with strategic alliances have a positive effect on the choice for alliances as a mechanism for the external appropriation of innovative capabilities. The same can be expected for the history that firms have with regard to M&As.

This hypothesis is formulated as follows:
Hypothesis 4: *The history of companies, in terms of routines with a preference for M&As, strategic technology alliances, or a mix, determines their current preference for each of these modes or a combination of them, as a main strategic mechanism for acquiring innovative capabilities.*

3. METHODOLOGY

3.1 Event Study Methodology

Since the purpose of this article is to test the preferences of companies for strategic alliances or mergers and acquisitions in Central and Eastern Europe, the most frequently used methodology is an event study. For the purpose of our paper, the event study methodology used by Hagedoorn and Duysters (2002) is most suitable.

3.2 Analysis

As most of our research questions imply that we have a dependent variable with three categories, we apply multinomial logit analysis[1]. This analysis was used before by Duysters and Hagedoorn (1995). As mentioned above, the period that we analyze refers to the period 2004 and 2005 for the independent variables, with the exception of the routines of firms with respect to alliances and M&As, for which the period 1997-2004 was chosen. The short period of two years for all but one variable was taken because with longer periods the choice companies made with respect to M&As could affect the measurement of independent variables, such as those related to innovative capabilities and core businesses, because these very companies would change due to their M&As. For the dependent variable (the preference for strategic technology alliances, M&As or a mix) we took the period 2005-2006 to allow for a short time-lag with the independent variables.

We will test *Hypothesis 2* separately with a *t-test* for paired samples to compare differences between two groups. This separate test is necessary because Hypothesis 2 refers to the preference for either strategic technology alliances or M&As. This paired *t-test* allows us to test the hypothesis that the average number of M&As (as a percentage of the total number of M&As) that is found in the core business of companies is significantly higher than the average number of strategic technology alliances (as a percentage of the total number of alliances) in the core business of companies.

[1] During our research we also applied discriminant analysis and standard regression analysis as additional methods.

3.3 The model

Here, the multinomial logit model and the test statistics are specified for the event study at hand. Multinomial logit regression is used when the dependent variable in question is nominal and consists of more than two categories. Nominal variables are variables which consist of a set of categories which cannot be ordered in any meaningful way.

3.3.1 Assumptions of the model

The multinomial logit model assumes that data is case specific; that is, each independent variable has a single value for each case. The multinomial logit model also assumes that the dependent variable cannot be perfectly predicted from the independent variables for any case. Collinearity is assumed to be relatively low, as it becomes difficult to differentiate between the impacts of several variables if they are highly correlated. The independence of irrelevant alternatives is another assumption which the multinomial logit model makes. This assumption states that the odds do not depend on other alternatives that are available (i.e., that including additional alternatives or deleting alternatives will not affect the odds on the dependent variable among the alternatives that were included originally).

3.3.2 Using Multinomial Logit Regression

When using multinomial logistic regression, one category of the dependent variable is chosen as the comparison category (the reference). Separate relative risk ratios are determined for all independent variables for each category of the independent variable with the exception of the comparison category of the dependent variable, which is omitted from the analysis. The relative risk ratios represent the change in the odds of being in the dependent variable category versus the comparison category associated with a one unit change on the independent variable.

The results will tell us how the independent variables affect the likelihood of being in each category vs. the reference. Formally, we will have a set of estimates for every combination.(M&As vs. Alliances , Mix vs. Alliances, Mix vs. M&As)

4. EMPIRICAL STUDY

4.1 Data

We will first, briefly, present some descriptive data on the population. As mentioned above, there are 74 companies in the final analysis; 67 percent of these are non-US companies, the others are US firms. 34 percent of the companies are found in high-tech sectors, 38 percent are mainly active in medium-tech sectors and 28 percent are categorized as low tech companies. 37 percent of the companies in this population follow an alliance strategy, 37 percent concentrate their external activities on M&As and about 26 percent follow a mixed strategy.

4.2 Discussion

A summary of the support for the hypotheses tested in this paper is given in table I. This study demonstrates that the industrial and technological environment in which companies operate plays a role in explaining why companies have a certain preference for more flexible forms of organization such as strategic technology alliances, a mix of these alliances and integration, or straightforward integration by means of M&As. The more companies operate in high-tech sectors, such as pharmaceuticals, information technology and

aerospace/defense, the more they have a disproportionate preference for strategic technology alliances. With low levels of the technology intensity of sectors, such as in food and beverages, metals and oil and gas, M&As become the main mechanism for the integration of external sources of innovation. In medium-tech industries, such as the automotive, instruments and chemical industries, mixed strategies are preferred.

Table I. Overview of support for the hypotheses

Hypotheses	***Support***
1a High-tech sectors preference for alliances	Yes
1b Low-tech sectors preference for M&A	Yes
1c Medium-tech sectors preference for mix	Partial
2 Core business - M&A; none core - alliances	Yes
3a Strong regime of appropriability - alliances	No
3b Weak regime of appropriability - M&As	No
3c Average regime of appropriability - mix	No
4 Routines drive choice	Yes

Against this background we can also consider the question whether companies prefer the option of integration through M&As, if external sources of innovative capabilities affect their core businesses, or whether they choose strategic technology alliances for their core businesses. The literature, both from an analytical and a prescriptive perspective, seems to suggest that companies should play it safe and use M&As for core businesses in order to avoid uncontrolled technology transfer. Strategic technology alliances should be applied for other activities, which can, of course, eventually become core businesses. Our analysis suggests that most companies operate rationally, that is, conform to what theory would expect. They prefer M&As as external sources of innovation for their core businesses and they demonstrate a higher preference for strategic technology alliances in their other businesses.

This issue of the relationship between the degree to which companies are able to protect their internal innovative capabilities through a particular regime of appropriability, on the one hand, and their preference for each of the three options with regard to the use of external sources of innovative capabilities, on the other hand, is more problematic. As far as our analysis is concerned there seems to be no relationship between the degree to which companies are able to protect their innovations and their preferences for strategic technology alliances, M&As or a mix. We still think that the regime of appropriability is an important strategic factor that will enter into the equation if companies decide what precise form of external relationships they prefer. However, it seems that a somewhat aggregated level of analysis, as in this study, using only patenting data is probably less appropriate for an analysis that includes the regime of appropriability In-depth studies of particular cases with different case-specific indicators, as found in Teece (1987), are in all likelihood more adequate to illustrate the strategic importance of the regime of appropriability in the context of attempts to augment a firm's innovative capabilities through different external sources.

However, the importance of firm specific capabilities, but not in terms of routinized behavior that has become institutionalized within the firm, is found by Ingham and Thompson (1994) to have a very significant effect with regard to organizational preferences of companies. Our analysis indicates that, as with so many other aspects of their behavior, companies seem to stay with certain routines. Companies that have a relatively long history of systematic preference for one of the options for the external appropriation of innovative capabilities seem to stick to their preference. We think this indicates that companies are quite satisfied with their past preferences and that these preferences for particular modes of external appropriation of innovative capabilities fit quite well with their overall innovation strategy. It seems unlikely that companies simply maintain their routines without considering alternatives. This group of large companies in particular can be expected to be aware of the alternative options.

5. CONCLUSION

5.1 Inference

As far as questions about the industry (environment) versus company (strategy) effects are concerned, our study supports those approaches that stress the relevance of both company-specific and environmental factors (Eisenhardt and Schoonhoven, 1996). Our findings also support contributions from a variety of theoretical approaches, such as those that combine elements of evolutionary economic theory with an understanding of the effects of strategic behavior, theories developed from an organizational learning and technology perspective, and work done in the context of institutional organization theory that pays attention to the impact of environmental conditions on alternative forms of organization.

What we witness in the present analysis is, on the one hand, environmental conditions that influence the general preferences of companies, and, on the other hand, firm specific conditions that lead to a particular group of relationships. Although firms could use a 'random' portfolio of options, in terms of any mix of strategic technology alliances and M&As, there is a clear pattern for the group of large companies that we investigated. There are distinct environmental contingencies in terms of the level of technology intensity of sectors in which companies operate. With increasing technology intensity of sectors of industry, the flexibility found in alliances, with the opportunity this provides to learn through loosely structured agreements, appears to have become very important. Formal control through M&As is very important in low-tech sectors[2]. However, these routinized preferences are influenced by the degree to which strategic technology alliances and M&As are related to the core businesses of companies. If the external sourcing of innovative capabilities comes closer to the core business of companies, the role of integration becomes more important because in that case M&As provide greater control than strategic technology alliances. This does not imply that companies completely reverse the distribution of alliances and M&As. However, increased control through a greater input from integrative modes still appears useful if companies want to protect their interests in external relationships affecting their core business that will constitute their competitive strength for some time to come.

The above also clarifies how one can explain the many examples of well-known high-tech companies that are engaged in a relatively large number of M&As. Our analysis demonstrates that in general companies in high-tech industries have, compared to companies in other sectors, a disproportionate preference for strategic alliances. This does not imply that they are not engaged in M&As activities, however; more than in other industries their many

[2] The preeminence of strategic alliances or M&As might be caused by herd behavior in certain industries. Once the industry leaders demonstrate a certain preference, others will gradually follow.

alliances outnumber their many M&As. Moreover, our analysis indicates that in high-tech industries companies also seem to prefer M&As if the external appropriation of innovative capabilities is related to their core business.

5.2 Recommendation for Further Research

It is obvious that all of this has to be seen in the light of certain limitations of this study. A brief discussion of these limitations enables us to introduce some interesting topics for further study. First, our study refers mostly to the last half of the 1990s and first half of the 2000s. Recent developments in the growth of M&As in high-tech industries (Shapiro and Varian, 1999) might indicate certain changes in the behavior of companies in these industries that are worth studying in future research. Second, subsequent work could study the role of M&As and strategic alliances in a larger model than the one applied in this study, where the interacting effects of both internal and external innovation and governance mechanisms on company performance are examined. Recent contributions such as Hitt et al. (1996) seem an interesting starting point for such a broader setting. Third, more in-depth analysis of different forms of M&As and alliances in terms of their relatedness to different businesses at a dis-aggregated level within the company could provide more in-depth understanding of the effect of M&As and alliances on innovation and company performance. Such detailed studies would probably require survey research of companies to replace or complement database research such as undertaken in the current study. However, the results of our research present the broader picture regarding alternative organizational strategies and different industrial settings against which this subsequent research can be placed.

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