Acquisitions: Poison Pill for Innovation?

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Abstract

Nowadays, many firms are or have already been engaged in an acquisition process, either as target or acquirer. While these companies seem confident in the potential returns of such endeavors, the positive aspect of those acquisitions has yet to be proven. There is indeed a vivid discussion among scholars, which are divided into two categories. On the one hand, there are those considering acquisitions as a source of additional knowledge that will in turn increase the innovation within the company; and on the other hand, those denigrating acquisitions, assimilating them to a “poison pill” for innovation.

The purpose of this research is therefore to investigate whether the acquisitions will influence positively or negatively the innovative performance of companies involved in such processes. Using a quantitative approach, this research analyzed the R&D investments made by those companies and the issued patents gained in return. The research provides mixed results. While acquisitions seem to have a positive impact on the companies’ innovative performance during the two years following the acquisition, this positive impact does not last and even becomes negative during the third year.

Keywords

Acquisition, merger, innovation, poison pill, knowledge, innovative performance, innovativeness, patent

INTRODUCTION

More than twenty years ago, Tushman and Nader (1986) predicted that the most important organizational task of the future would be the management of innovation. As a matter of fact, nowadays innovation has become the mainstay for the majority of companies. The higher innovative level organizations possess, the more opportunities they get to develop their business faster and better than their competitors, or even to make an impact on the direction of their industry (Davila et al., 2006). Additionally, the change of global economic growth is also related to the speed of innovations. These will shorten products lifecycles and increase the rate of new product development through rapidly evolving technologies (Plessis, 2007).

Several years ago, the innovation efforts and new product ideas of most companies were coming from their in-house scientists. However, nowadays many excellent innovative products and services come from new and various sources (Fowles and Clark, 2005). In other words, this means that the origin of research and development (R&D) in some companies is external. In today’s world, the nature of the technical innovations is pushing companies to work with external sources of knowledge. And in order to obtain these external sources of knowledge, the company network can be regarded as an effective approach. Strategic network can successfully bring companies fast growth, innovations and leading position (Arias, 1995). This notably happened in high-technology industry such as computers and mobile phones. Companies
gradually started to realize the importance of networks, which were used to share the increasing risks, both technical and commercial, of innovations (Fowles and Clark, 2005). As a consequence, firms are therefore more and more often becoming parts of extended networks.

Indeed, in addition to the traditional network (suppliers and buyers), firms tend to involve other external actors in their business process, especially when it comes to the innovation development (Chiesa et al., 2000). Furthermore, with the development of globalization, firms need to develop, capture and apply new sources of knowledge to broaden and refresh their capabilities (Argote and Ingram, 2000; Tsang, 2002, cited by Casal and Fontela, 2007). By using an external networking activity, companies can become aware of new technologies that may be relevant to their research and development (Swan et al., 1999). In order to effectively gain and use this knowledge from new sources, firms adopt different kinds of tactics. Among those, outsourcing, partnerships, acquisitions and mergers can be regarded as several common strategies.

If many various collaborative strategies between firms or other actors can be identified there is however not any commonly accepted classification of those collaborations. The usual and more popular approach is, according to Chiesa et al. (2000), to examine the “level of integration” of each form of collaboration. It goes from high (e.g. acquisitions/mergers) to low (e.g. outsourcing, research contracts).

<table>
<thead>
<tr>
<th>Level of integration</th>
<th>Acquisitions</th>
<th>Alliances</th>
<th>Outsourcing</th>
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<td></td>
<td>High</td>
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Figure 1: Classification of the collaborative strategies (Chiesa et al. 2000, p1020)

Acquisitions and mergers are strategies that have become more and more common in the business world over the last decades. According to Andrade et al. (2001), some motivations can be advanced: companies want to increase their efficiency (e.g. economies of scale…), create market power and market discipline, improve the management within the organization, diversify their activities, etc. (Andrade et al., 2001). By using those strategies, companies can also reinforce existing competences and access new series of valuable capabilities (Ranft, 1997; Karim and Mitchell, 2000; Ahuja and Katila, 2001; Ranft and Lord, 2002, cited by Casal and Fontela, 2007). Compared with the development of those capabilities internally, mergers and acquisitions can usually bring the same knowledge in a shorter time through the gain of the previously existing knowledge of the other organization (Karim and Mitchell, 2000).

If acquisitions will have various effects on the companies involved (e.g. financial, logistic…), one may wonder what will be the impact on the companies’ innovative performances (i.e. innovativeness). Many scholars previously discussed this ambiguous relation between acquisition and innovation (Puranam, 2001; Chen et al., 2005), but they do not seem to agree on the real effect an acquisition will have on innovation. While some authors (Prabhu et al., 2005; Vermeulen, 2005) seem to consider that an acquisition will have a positive effect on the innovation within the company, others disagree and claim that acquisitions are killing
innovation, calling the acquisition process nothing less than a “poison pill” for innovation (Hitt et al., 1991; Skovvang Christensen, 2006).

Throughout this paper, the authors will aim to give some leads that would indicate who is closer to the truth in this discussion. The purpose of this paper is therefore to answer to the question: to what extent do acquisitions affect the companies’ innovative effort and performance?

The authors will attempt to answer that question through a quantitative study based on companies that were involved in an acquisition process. The authors will seek to determine whether the acquisitions made have had an impact on the innovative performance within these companies, by analyzing the evolution of the research and development investments, issued patents, and the innovative performance itself. This three-step analysis will allow an understanding of not only the intensity of the firms’ innovation, but also how efficient they are at it after the acquisition.

LIMITATIONS

The authors would like to stress that the purpose of this study is not to provide statistical evidence that would undeniably prove that acquisitions have either a positive or a negative impact on innovation. The goal is rather to give some trends, some patterns that would indicate towards which side is leaning the current tendency.

Another important aspect that needs to be taken into consideration is that there are many ways to evaluate the innovation within a company. However, there are arguably two techniques that could be considered as the main ones: the analysis of the products and the patents. In this research, the latter was chosen. The authors indeed considered this choice to be more accurate since a product will be a combination of many technologies.

LITERATURE REVIEW

Before going in depth in this research, it is important to clearly resituationg the two main concepts that are analyzed throughout this paper: acquisition and innovation, and to present the exact definition of those terms this research will use..

Innovation

Many authors have tried to define innovation over the years. Nonaka (1994) and Nonaka and Takeuchi (1995) consider that the notion of innovation should be closely related to “knowledge creation”.

According to Morden (1989), innovation is “an essential input to the development of distinctive competence within the enterprise, and to maintaining competitive advantage” (Morden, 1989, p. 46).

One of the major contributors to the literature on innovation is Schumpeter (1934, cited by Windrum and García-Goñi, 2008). Even though Schumpeter’s contribution is almost one century old, his major ideas remain relevant. He proposed a classification of innovation in five types:
- Product innovation is the introduction and diffusion of a new product or service. It can also be a new quality in an existing product. This innovation can be either radical (a totally new product or service) or incremental (an evolution of a previously existing product). (Windrum and García-Goni, 2008)

- Process innovation is the introduction of a new method of production. It can also be a new way to deliver a product or service. (ibid.)

- Market innovation is the opening of a new market. This market can either be a totally new market, or a market in which the company had not previously entered. (ibid.)

- Organizational innovation is “the carrying out of a new organization of industry” (Schumpeter, 1934, cited by Drejer, 2003, p. 556). It can for instance be the creation of a monopoly position.

- Input innovation is the conquest of a new source of supply of raw material or intermediate input (Schumpeter, 1934, cited by Drejer, 2003, p. 556). These new resources to exploit can also be human capital.

A few years later, Tidd et al. (2005) refined this categorization and proposed four kinds of innovations, which they considered as being more accurate to the current economy:

- Product: changes in the products or services proposed by the firm
- Process: changes in the ways the firm produces or delivers
- Position: changes in the context in which the firm introduces the products or services
- Paradigm: changes in the mental models framing what the firm does

According to Hitt et al. (1991), many researchers consider that an efficient way to evaluate the innovation within a company is to use the R&D expenses (i.e. input) as primary measure, while keeping in mind the R&D expenses in the industry. However, he also argues that during the R&D process, many resources can be lost, invalidating the accuracy of the results. It is therefore also important to take into consideration the outcomes of these spending, and this output can be evaluated through the patents (Hitt et al., 1991). Patents are a very effective way to measure inventive output and can also be used to measure innovation itself (Oltra, Kemp and de Vries, 2008)

The same conclusion was drawn by Armour and Treece (1980, cited by Lindholm, 1994). They furthermore argued that innovative performance, or innovativeness, should be calculated by normalizing the output of the R&D investments with the level of those R&D expenses (Output/Input). This innovative performance is a good indicator of the intensity but also, and this is more important, of the quality and efficiency of innovation within a company.

**Acquisitions**

Acquisitions and mergers are strategies that have become more and more common in the business world over the last decades. As a consequence, those have attracted a lot of attention from the researchers and loads of literature can be found on the subject nowadays.

According to Chiesa et al. (2000), an acquisition occurs when “a company acquires another company in order to access a technology (or technological competence) of interest” (Chiesa et al., 2000, p. 1020). This means that this company will purchase another firm either through the...
purchase of its shares, or the purchase of its assets.

Even though acquisitions and mergers are relatively distinct ways of integration, they are very often studied alongside in many researches. This will not be different in this work. If it could undeniably be very instructive to analyze the differences between those two strategies, it did not seem relevant for this study. Indeed, if the journey taken is different, the result of both methods is the same: a single company emerges where two companies used to be.

From a legal point of view, the main difference is that when an acquisition occurs, the main company absorbs the other and therefore continues to exist while the acquired firm completely ceases its independent activity, or even completely disappears. On the other hand, when a merger occurs, two companies agree to carry on their activities as a single entity. However, most of the time, one of the two companies, either the target or the acquirer, remains as this entity. A merger which results in the creation of a totally new firm rarely occurs. Indeed, this would require that both companies can be considered as equal, which is rather unlikely. (DePamphilis, 2009)

In practical, the main difference between a merger and an acquisition is in fact the degree of hostility of the integration. A merger will be more considered as friendly while an acquisition is more hostile. This is the reason why most of the time, mergers are referred as such to avoid the negative connotation that an acquisition implies, even when they are technically acquisitions. As said by Zhao (2006), “by using the term “merger”, dealmakers and top managers try to make the takeover more palatable” (Zhao, 2006, p. 10).

In order to simplify things, the term acquisition will be used throughout this work since many mergers can actually be considered as “friendly acquisitions”.

So far, few researches have been successful while trying to investigate the reasons behind acquisitions, why those occur. However, according to Andrade et al. (2001), some motivations can be advanced: improving the company efficiency (e.g. economies of scale…), creating market power and market discipline, improving management within the company, diversification of activities, etc. (Andrade et al., 2001). Puranam (2001) also argues that acquisition is a “response to inadequacies in internal development” (Puranam, 2001, p. 36).

It also appears that “some of these reasons are more relevant in certain time periods” (Andrade et al., 2001, p. 103). Depending on the evolution of laws or trends, these explanations have noticeably had a different impact over time. Indeed, while studying the dynamics of the acquisitions activity, many researchers have noticed that acquisitions do not occur evenly over time, but rather in waves. Each wave differs from one to another mainly by the companies’ needs and motivations and therefore also by the way those acquisitions are taking place. According to Mitchell and Mulherin (1996), each wave could be given its own “label”: monopolies in the 1890s, oligopolies in the 1920s, conglomerate takeovers in the 1960s and finally, hostile takeovers in the 1980s.

In fact, Mitchell and Mulherin (1996) argue that these waves of acquisitions are a reaction to an unexpected shock to a whole industry, such as technological innovation, supply shocks, deregulation, etc. The fourth wave of acquisitions of the century, that has been taking place
during the nineties, is, according to Andrade *et al.* (2001), a response to the deregulation. This wave is therefore driven by strategic and synergetic factors (Mitchell and Mulherin, 1996).

If we look closer however, we will notice that this last wave of acquisitions is very different from the others. While the first waves were involving many firms, the value of those acquisitions remained low. Later on, fewer firms were involved, but multi-billion deals became commonplace. Nowadays, the acquisitions are combining those two attributes: many firms are involved, and acquired for a high value. Acquisitions are now frequently considered as a way to reallocate assets. (Andrade *et al.*, 2001)

Another noticeable difference is the method of payment that is used. Stocks have become the usual way to finance an acquisition: 70 percent of the deals during the nineties involved stocks, which is 50 percent more than during the 1980s. Moreover, those acquisitions are becoming less hostile. The majority of those acquisitions are now the result of a mutual agreement. Finally, we can notice an increasing number of acquisitions taking place within the same industry. (Andrade *et al.*, 2001)

These acquisitions also tend to cluster on some particular industries, such as banking and finance, broadcasting, communications, leisure and entertainment, insurance, health services, and distribution. Indeed, these seven industries account for more than half of the acquisitions activity (Mitchell and Mulherin, 1996). This clustering of takeovers activity is consistent with the idea that acquisitions are in fact a consequence to a particular industry shock.

Obviously, knowing why and when acquisitions occur does not provide us with an answer to what really interest companies: what are the short and long term consequences of such strategies? Who are the winners and losers when those decisions are taken?

According to Cartwright and Schoenberg (2006), the broad range of stakeholders involved when an acquisition occurs receives mixed performance in return. Obviously, the shareholders of the target firm generally benefit of both short and long term returns (Andrade *et al.*, 2001). On the other hand, value creation from the acquisition for shareholders of the bidding firm is not as clear as one might believe. Those often “experience share price underperformance in the month following acquisition” (Agrawal and Jaffe, 2000, cited by Cartwright and Schoenberg, 2006, p. 1). Acquisitions also usually result in a negative return during the few days following the announcement of a future acquisition (Andrade *et al.*, 2001).

Long term performance studies provide us with mixed results. This divergence in opinions can probably be explained by the fact that predicting precisely the post-acquisition returns is a difficult task, if not impossible. One could try to calculate the possible financial outcome, but it will only be an evaluation of what might happen. The precision of those researches is therefore arguable. According to Andrade *et al.* (2001), “the bottom line is that if long-term expected returns can only be roughly estimated, then estimates of long-term abnormal returns are necessarily imprecise” (Andrade *et al.*, 2001, p. 113).

Nevertheless, the majority of researchers agree on the fact that acquisitions usually have negative returns for the acquirer and even though “these post-outcome negative abnormal returns are unsettling because they are inconsistent with market efficiency” (Jensen and Ruback,

However, if the financially positive result of an acquisition is not easy to prove, it would be wrong to believe that shareholders from the target firm are the only who benefit from the decision. Indeed, in an efficient company, an acquisition will likely occur for the right reasons and if those reasons are not financial, some other results can be expected such as for instance a higher level of innovativeness.

### Acquisitions and Innovation

As perfectly stated by Hudson, “the development of new products, services and concepts is critical to a company’s growth and livelihood” (Hudson, 1994, p. 82). Innovation is the perfect way to gain and keep market shares, justify prices, distinguish from the competitors, and increase the company efficiency (ibid.). However, innovation is not easy. It requires a lot of time, efforts, and usually, large investments. It is consequently a hazardous endeavor. A perfect way for a company to minimize its risk is to obtain innovation through acquisitions. “Companies scan the environment for viable concepts (…) and then buy the concept” (ibid., p. 85). Through this strategy, companies acquire solutions that have previously been proven successful. They have at their disposal an innovation they can immediately use. This means a gain of time and a reduced risk. It can be said that the money paid by the company to acquire the other is basically a “risk premium”. The company indeed will pay more for the same income but at the same time, they will reduce the risk to see the innovation fail (ibid.).

Moreover, this is also a way to come up with some more particular innovations. Indeed, some kinds of innovations would have never been created by a large corporate R&D department due notably to a restricting company culture (Hudson, 1994). Innovation can either be a result of an acquisition, or a goal from the very beginning. Companies can indeed decide either to buy another company to acquire the existing knowledge from this company, or attract a company because it will motivate its own researchers in the future, bring fresh ideas, etc. As said by Puranam (2001) “entrepreneurial firms are acquired for the technology underlying specific products, as well as the expertise that enables the production of second and third generation variants of the product” (Puranam, 2001, p. 140). Acquiring firms indeed seek “dynamic capabilities for innovation” (ibid., p. 37). Companies therefore get access not only to a particular product but also to a complete innovation stream (ibid.).

Bierly and Chakrabarti (1996, cited by Prabhu et al., 2005) consider that acquisition is a perfect way to bring external knowledge into the firm. The main distinction between internal and external knowledge is that while internal knowledge will be based on the firm core competencies, external knowledge will give a chance to the company to expand its area of expertise and therefore its flexibility (Prabhu et al., 2005).

If firms may acquire others with the objective to extend their innovativeness, one may wonder whether these acquiring companies achieve this goal or not. Do acquisitions really influence positively the innovation within those companies or, on the contrary, is restricting the innovative initiatives? Many researches have been conducted to answer that question but the
results of those investigations diverge.

Faletra (2005) uses as examples some companies involved in an acquisition process, such as Netscape, to argue that acquisitions may kill the innovativeness of a company. He argues that if those companies had stayed independent, they would have remained innovative. Now those are restricted by the larger, and sometimes stricter, companies’ structure and culture, but also by the lack of financial capabilities and innovative propensity. Eventually, it all comes up to the acquiring company. If this company is willing to innovate, then the acquired companies will follow and help their new owner. On the opposite, if there is no motivation to innovate, the subdivisions will see their innovativeness decrease. To justify his reasoning, Faletra (2005) also explain the additional bureaucracy and politics resulting from the acquisitions. Some innovation-minded people that used to focus on research only have to take care of extra tasks that are slowing down the innovation process (Faletra, 2005). In a research focused on employees’ behavior after an acquisition, Skovvang Christensen (2006) also demonstrates that employees were less inclined to be innovative after an acquisition, notably because of their troubles adjusting to the large corporate culture (Skovvang Christensen, 2006).

Hitt et al. (1991) even go further and claim that acquisitions are nothing less than a poison pill for innovation. They indeed consider that firms see acquisitions as a substitute for innovations so once the acquisition is complete, there is a tendency to neglect the internal R&D afterwards.

Prabhu et al. (2005) however refute the idea that acquisitions may be a “poison pill” for innovation. They argue that “a successful innovation strategy requires a judicious combination of internal and external sources of knowledge” and “acquisitions provide a means to access external knowledge that can be difficult or even impossible to create through internal sources” (Prabhu et al., 2005, pp. 126-127).

Vermeulen (2005) also considers acquisition to positively influence the company. One of the purposes behind an acquisition is to “shock”, to revitalize the company. Acquisitions can help companies to “restore a sense of vitality to their business” (Vermeulen, 2005, p. 45). Even when it was not the end goal, the process of buying another business and integrating that new structure within the organization will shake things up and will encourage the company to refresh their culture and methods.

**METHODOLOGY**

**Research strategy and design**

This study adopts a quantitative approach to examine the relation between the acquisition and the firms’ innovative performance. Bryman and Bell (2007) indicate that quantitative research can be regarded as a research strategy which focuses on the quantification in the collection and analysis of data and that:

- Highlights the testing of theories and entails a deductive approach in terms of the relationship between theory and research;
- Combines the practices and norms of the natural scientific model;
- Embodies a view of social reality as an external, objective reality.
The research design is a longitudinal design, which is typically used to map changes in business and management research (Bryman and Bell, 2007). In this research the years before and after the acquisition needed to be observed. Furthermore, a longitudinal design may allow a causal inference because it focuses on the time order of variables (ibid.). This can help this research to examine the relation between acquisition and innovative performance.

In order to perform the research, the authors firstly went through the previously existing literature on the subject, to get a deeper understanding of what had been said, and studied before. Then, these previous studies were used to build the structure of the analysis, which was divided into three steps:

- First, the analysis of the R&D expenses made by the companies;
- Second, the analysis of the issued patents owned by the companies;
- Third, the analysis of the innovative performance of the companies.

**Sample and data collection**

The sample of this research consists of 13 companies that carried acquisition operations in the United States between 1998 and 2004. The United States were chosen as companies from this country are historically known as innovative but also as many acquisitions take place every year in the country. Many famous firms could be cited as example of those statements (e.g. Google, Microsoft, etc.). All the companies that were investigated were either publically known as being innovative, or working within an industry where innovation is highly important. Firms from 8 industries were used for this research. Various industries were used as a mean to get a broader and more general perspective on acquisitions. Indeed, the authors did not want to focus on a particular industry which may have misrepresented the results. However, in order to compare accurately those different industries and different time periods, the R&D investments of the companies were leveled with the R&D investments of their respective industries during the specified time period (Company minus Industry R&D investments).

Data was collected on both the acquiring and the acquired firms for the three years preceding the merger, and on the remaining company for the three years after the acquisition took place (seven-year time span). In order to get more accurate and objective results, it was required that all the companies chosen did not make any other acquisition during the three following years.

Empirical material was obtained from secondary data. Secondary data is the information that has been collected, either for commercial or research purposes, by other people (Bryman & Bell, 2007). Multiple sources of evidence essentially provide multiple measures of the same phenomenon, thus increasing validity (Yin, 1994).

Different kinds of data were needed for this research:

- The general information about the companies (structure, history, subsidiaries…) was found on their official websites.
- The R&D expenses made by the firm were found in the official annual reports released by the companies. Those reports were either found on the companies’ official websites, or on the US Securities and Exchange Commission website.
The R&D expenses made by the industry in which the companies were mainly operating were found in reports released by the Bureau of Economic Analysis (US Department of Commerce).

The issued patents of the companies were found on the website of the Patent and Trademark Office (US Department of Commerce).

**Measures**

Most of the data are required to measure the constructs (Casal and Fontela, 2007). Bryman and Bell (2007) point out three following reasons for the preoccupation with measurement in quantitative research:

- Measurement can help researchers understand greatly differences between people or organization in terms of the characteristic in question;
- Measurement provides researchers a consistent device or yardstick to make distinction;
- Measurement provides the basis for more precise estimates in terms of relationship between concepts.

In this article there are three indicators of measurement: the R&D expenses, the issued patents, and the company innovative performance. During the analysis, the data from the year of the acquisition was used as reference for each indicator. The evolution of the data before and after that year was a percentage that was based on that reference (year of the acquisition = 100%). Both for the R&D investments and the issued patents, the average of the evolution of the 13 companies for each year was then calculated.

**Methodological limitations**

This research is obviously limited by some elements though it is totally according to scientific analysis methodology. These elements mainly include:

- **Sample.** The sample of this research is made up of 13 companies from the United States. As a quantitative research it may seem too little. However, as mentioned before, the purpose of this paper is to prove that acquisitions have either a positive or a negative impact on innovation instead of providing statistical evidence. Furthermore, these companies needed to be accordant with certain requirements in our research. For instance, all the companies selected did not make any other acquisition during the three years following the investigated acquisition. This point largely increased the difficulty of this research. Indeed, most of the companies engaged in acquisition processes usually do not limit themselves to one acquisition; they tend to acquire more and more over the years. Due to time constraints and even more importantly limited resources, finding companies that would correspond to our requirements was not an easy task. Hence, in this paper the authors choose 13 companies as a sample in order to give some general trends, knowing perfectly that those trends could not be taken as indisputable statistical evidence.

- **Variables.** The R&D investments and issued patents are undoubtedly influenced by several variables such as firm size, industry, firm strategy, etc. In this paper it was impossible to avoid all those elements. Finding companies which exist in the same industry, have similar sizes and strategies was impossible and would have been irrelevant anyway. However, the authors
reduced these influence through the use of the industry R&D investments for instance.

*The year of acquisition.* All the companies that were used made acquisitions between 1998 and 2004. This choice was restricted by the limited availability of the resources: data regarding the years prior to 1998 was almost never obtainable for the authors. Moreover the industry R&D investments were only available until the year 2007 and since three years after the acquisition needed to be studied, acquisitions made after 2004 could not be used. Additionally, the authors deliberately studied different years of acquisition. Obviously, companies can be influenced by different external environments in different years; and this influence from the various external environments can be reduced through the use of different years of acquisition. The seven-year time span observed (three years before and after acquisition) also reduces the impact the environment could have on the research. Moreover the authors explore the trend of innovative performance after acquisition. Using different years of acquisition does not really influence this trend. A highly innovative firm is able to make some quick progress at any time, even though it is impossible to exclude some companies which have a long term strategy for their innovation.

**Empirical data**

In the table below, the authors presented the data collected during this research. For each company and each year, are indicated:

- The R&D investments of the company (in Millions)
- The evolution of the company R&D investments (in percent)
- The R&D investments of the industry in which the company mainly operates (in Millions)
- The evolution of the industry R&D investments (in percent)
- The evolution of the company R&D investments minus their respective industry R&D investments (in percent)
- The issued patents of the company
- The evolution of the company issued patents (in percent)

As mentioned above, the data for the three years preceding the acquisition is the combined data of the two companies involved in this acquisition. The data for the year of the acquisition and the three years after is the data of the remaining company. The evolution of the R&D investments and issued patents is based on the data of the year when the acquisition took place.

<table>
<thead>
<tr>
<th>Company name</th>
<th>Year of the A/M</th>
<th>Comp. R&amp;D</th>
<th>Evolution</th>
<th>Comp. - Ind.</th>
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<th>Patents</th>
<th>Comp. - Ind.</th>
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Table 1: R&D investments and issued patents before and after the acquisition
ANALYSIS

Research and development

In the figure above, the abscissa shows the three years before and after acquisition. The ordinate is an average of the evolution of firms R&D investments (in percent) minus their respective industry R&D investments (in percent). On one hand, this average number indicates that the average evolution of the firms R&D investments is higher or lower than the average industry R&D investments evolution. On the other hand, the percent number shows the change of firm R&D investments balanced by the industry R&D investments each year. The analysis of the data regarding the R&D expenditures of the companies alone shows that on average, the acquisitions induced an increase of those investments after the acquisitions took place. However, since these investments were also higher the year preceding the acquisition, it is obvious that the companies decreased their R&D effort the year of the acquisition. This can easily be explained by the funds that needed to be raised by the companies to make the acquisitions effective.

When the data is combined with the R&D expenses made in the industry, the Figure 2 shows that on average, the evolution of the companies’ R&D investments was higher than their competitors after the acquisition. Post-acquisition, the companies therefore invested more and faster than the other companies within the same industry and the gap was growing year after year. It can also be noticed that during the three years prior to the acquisition, these companies were already surpassing their competitors in term of R&D investments. However, the year of the acquisition, while their competitors were increasing their R&D effort, the companies were decreasing theirs.

It seems that companies are taking advantage of their new resources and are increasing their R&D effort after they acquired another company. However, comparatively to their competitors, this additional investment remains completely reasonable.
In this figure the ordinate is the average evolution of the firms issued patents (in percent), by which it can be found the changes before and after acquisition year in terms of patents. In the light of Figure 3, it can be said that the assimilation of acquisitions with a “poison pill” made by Hitt et al. (1991) is not entirely accurate. Indeed the results clearly show that, on average, the companies witnessed an increase in their issued patents after the acquisition. This fact is particularly true in the short term, the two first years after the acquisition. This is probably the result of the sharing of previously existing knowledge between the two companies and not the result of collaboration during the innovation process. It should be noted that the amount of patents began to decrease after the second year of acquisition. In other words, those companies can get a positive influence right after the acquisition, but those companies will usually fall back after the rise during the second year after the acquisition.

Moreover, it must be pointed out that innovation takes time. It might be that some of the patents gained during the first year following the acquisition are the results of the efforts made before the acquisition took place.

Figure 3 also highlights the fact that, on average, the companies were already on their way up when the acquisition took place. Indeed, the combination of the patents of the acquired and the acquiring company was positively evolving. The acquisition did not seem to perturb that evolution.

Looking a little bit closer, it can also be noticed that two companies are strongly influencing the rest of the pack: TriQuint and Nvidia, which respectively increased by more than 350% (from 7 to 27 patents) and 200% (from 8 to 16 patents) in the year following their acquisitions.
Innovative performance

![Performance (Output/Input)](image)

Figure 4: Evolution of the innovative performance before and after the acquisition (Year of reference = 100%)

Figure 4 reflects the innovative performance of the companies. Here, the patents of companies (average in percent) are regarded as output. Input is the R&D expenses of firm minus industry (average in percent). This can be summarized as:

\[
\text{Innovative performance} = \frac{\text{issued patents of companies}}{\text{R&D expenses}}
\]

By comparing the output (patents) and the input (R&D expenses), it is possible to get a better idea of the influence acquisitions will have on innovation. A quick look at the graph shows the positive influence the acquisition will have on a short term (after one year). This means that the company will be more efficient. Even though the companies increased on average their expenses in R&D, this was compensated by the greater evolution of the issued patents.

After the second year following the acquisition the company starts to lose the profit of the acquisition. The situation is still better than during the year of the acquisition, but is not so obvious. The companies invested more than the year following the acquisition, but had fewer patents issued.

The third year after the acquisition is even worse. The companies are losing all the benefits they might have gained by the acquisition. They keep on investing more, but the issued patents keep on decreasing. The performance of the companies is worse than during the year of the acquisition.

**CONCLUSION**

The results of the study do not really indicate clearly that acquisitions are either positively or negatively influencing the innovative performance within a company. While they seem to have positive short term returns in term of innovativeness, this positive influence does not last longer than two years, leaving the company is a worse situation that its original condition.
Since companies should nowadays always keep a long term perspective, and think ahead, they should not be satisfied with the mixed results provided by the acquisitions. On the one hand, companies can use the additional resources brought by the acquisition to continuously increase their efforts in R&D, but on the other hand, these firms do not increase their innovation accordingly in the long run. If the companies immediately benefit of the previously existing knowledge from the acquired company, it does not seem that they are making a good usage of it and cannot make it last.

All in all, if this research can neither indicate undoubtedly a positive influence nor a negative impact, it showed that assimilating acquisition to a “poison pill” for innovation (Hitt et al., 1991) is probably taking the metaphor one step too far.

**Further research**

This research leaves the door open for further investigations in the future. First of all, a study on a larger scale, involving a greater number of companies could validate the results obtained through this work, and would definitely provide a greater accuracy in the results. The year span also can be extended so as to study those companies which have a longer innovation plan.

Second of all, this research only focused on one aspect of innovation, the patents. As mentioned before, another effective way of evaluating innovation within a company is to analyze its products. A deeper analysis involving the products in addition to the patents would certainly provide a deeper insight on the subject.

Lastly, although the result of this paper gives some trends of innovative performance before and after acquisition, it still is influenced by several variables. Future researches can develop and reinforce the findings by increasing the control of firms’ size, sector, industry and strategy, or even studying one specific case.

**Managerial implications**

The managerial implications of this research are pretty simple: a manager should think twice before he or she considers acquiring another company. The advantages may be appealing on paper (economies of scale, combination of knowledge…), but the reality is different. If increasing the company innovation is the end-goal, this manager should probably consider alternative solutions implying a lower risk, such as outsourcing, partnerships, etc. An acquisition can potentially lead to an increased innovative performance, but it would require a very effective management of the various resources (financial, technical, human…) to obtain that progress.
REFERENCES


11, No.50, pp. 106.


**Electronic references**

