OUTLIERS AND RUSSIAN DOLLS!

Hidden Drivers of Hyper Growth

The Case of the French Ink Jet Technology Cluster

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Work-in-progress paper.

ABSTRACT

This work-in-progress paper is considering a successful technology cluster in Europe.

It completes the conclusions drawn and presented last year on levers of performance in high-tech clusters.

We compare two groups of companies in similar ecosystems. All the companies surveyed - 20 startups in total - are manufacturing industrial devices in BtoB contexts.

Each of these innovative firms is analyzed independently in terms of performance over the five first years after its launch as a new venture. Belonging to the same cluster, the various companies surveyed are embedded in a set of relations. This network is shaping the background of the companies' development and defines the limits of a common ecosystem.

In this framework, we question the link between disruption and performance of firms (A. King and C. Tucci, 2011).

For SEAMINGLY equally disruptive high-tech firms do not perform on similar modes. Some of them are achieving outstanding performance. Why?

The following question is then providing the motivation for the present paper:

Are there hidden drivers of hyper growth?

- Our findings are twofold:

    - On one side, we establish that variations in apparently similar innovative contexts can be easily underestimated. Because it is easy to confuse technology layers (layers hiding beneath one another like Russian Dolls!).
    - On the other side, we show evidence of the impact of outliers on an entire ecosystem of actors and activities: The average and overall performance impact of outliers on their network.

So we again contribute to IMP themes like network's limits and similarities of actors. We debate from an untraditional prospective based on outliers' identification and on a better understanding of outstanding performance of firms.

Keywords: Performance - Outliers – Hyper growth – Innovation - Ecosystems.

INTRODUCTION

The case of the French ink jet technology cluster.

In the framework of clusters, if we refer to ordinary reasons for performance, 3 sets of criteria can be established as far as genealogy is involved:

- Reasons linked to entrepreneurial logic: The man in charge! (Vesper 1980; Low and MacMillan 1988; Cooper and Gimeno-Gascon 1992).
- The bond with the parent company, if any (Franco & Filson 2006; Klepper 2002; Klepper 2007).
- The way the venture positions itself among the cluster (alliances … Afuah and Tucci 2003; Garnsey et al. 2008; Ford et al. 2010).

On our side, we first studied performance in the 2 clusters by considering the dynamics of actors that had founded ink jet companies.

For this purpose, we conceived a taxonomy based on priority levers actioned by the entrepreneurs (cf. figure 1 below).

This taxonomy opposed Strategy vs Business Acumen on the one hand and Technology vs Wealth on the other.

Did they base their development mostly on Wealth? What would have highlighted the importance, for example, of seed money in performance? Did they suggest that they expected success to derive more from technological enhancements?

Did they have a precise plan before starting or did they for the most part count on their talent for business?

Each one of these issues was a long way from being independent of the others.

But all these questions are well covered by previous research. And nothing new was emerging from our clusters' inquiry.

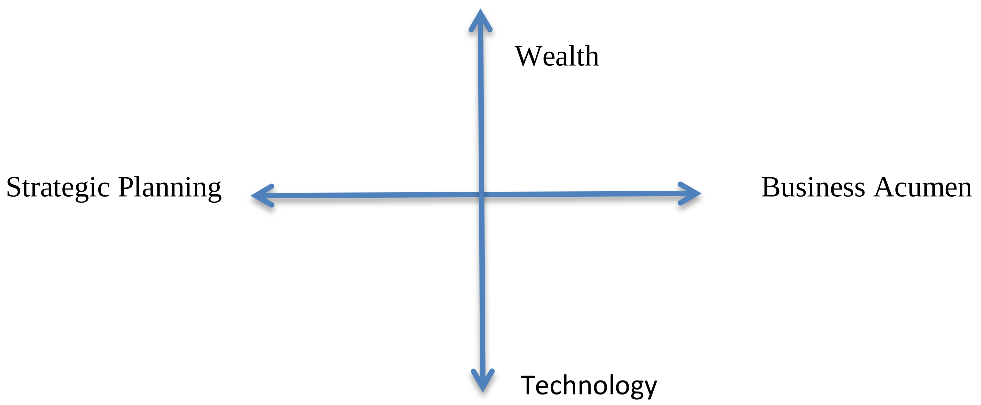


Figure 1: priority levers of performance

Similarly, we questioned the link between the initial reasons for spinning off and their consequences on the new ventures' performances.

It was this that led us to validate the results of previous research on the topic (Klepper 2001): the initial reasons for spinning off are short to explain the new venture's performance.

We also underlined, when comparing groups of companies, the importance of a good understanding of the technology concerned to make real differences appear.

The point was to highlight how one, among all the varieties of ink jet technologies, namely CIJ (Continuous Ink Jet), had specifically been a driver of success (performance) for companies.

So it is not surprising to notice, as far as CIJ is regarded, that the 2 dominant companies in the European ink jet clusters (Domino and Imaje) were competing head to head with each one gathering around 30 % of the world market!

LITERATURE REVIEW

Our work sits at the crossroads of a number of research avenues.
Namely, the studies that examine:

- The emergence of industrial clusters, particularly those that highlight the role of a « parent company ».
- Thematic similarity in innovation, especially technology innovation.
- The « predictors of new venture performance ».

As far as the emergence and development of clusters are concerned, there are numerous references both in the dynamics that support the development of technology clusters (Ford et al. 2011), and in the lineage and the relationships between companies in the same ecosystem (Garnsey 2009), or in the effects of geographical concentration (Owen-Smith and Powell 2004), and even in the performance of « children » from the same parent company in a cluster (Tucci, 2011).

And this list does not in any way do justice to the numerous studies that have flourished on the thematic of technology clusters and their development since Dosi's foundation articles (Technological Paradigms and Technological Trajectories, 1982) or Nelsons' (Institutions Supporting Technical Advance in Industry, 1981).

Nonetheless, these works on the seeding of an area - though highlighting the benefits of an agglomeration - did not emphasize the relative success of the anchor company and the spinoffs in this agglomeration.

In another area, the thematic similarity in innovation has led to reflection on hidden similarities (Gibbert et Hoegl 2011), false similarities in their uses (Von Hippel 2012), or even a collection of literature on « Dominant Design » (Christensen). But little has yet been written on the rather swift parallels drawn on innovation or technology that are **SEEMINGLY SIMILAR**!

Finally, the performance of the spinoffs in an industrial cluster emerging from a strong firm has been well defined (Klepper 2005), just like the trend of these spinoffs to outperform the other startups and to continue to exist more easily (Franco & Filson2006, Klepper 2007).

Likewise, and in a more general way, the study of factors encouraging the performance of new companies represents a significant area of current research into entrepreneurship and innovation.

However, these studies focus mainly on 3 performance outcome possibilities:

- failure
- marginal survival
- high growth

A framework that already existed twenty or so years ago in the works of Cooper (Cooper, Gimeno-Gascon & Woo 1994).

As for us, we wish to contribute to these theoretical inputs by showing how technological choices that are ON THE FACE OF IT similar can result in markedly different performance levels between companies in the same cluster.

In this paper, we would particularly like to bring the existence of outliers to the fore and the consequences of their presence in a cluster's overall performance.

These outliers inaugurate a new position on the scales for measuring new ventures 'performances: Hyper growth.

More generally, our research aims at contributing to both Industrial and Marketing theory and to Industrial Marketing practice.

From a theoretical perspective, we try to identify, understand and measure the impact of outlier organizations on their ecosystems.

Indeed, the basic strategy precepts confirm the advantage of differentiation as «standing out from the crowd».

But, by dint of benchmarking and innovation, most companies nevertheless end up by looking like their competitors!

This is why it becomes very interesting academically to seek inspiration from outliers, these actors with exceptional performances in their sector.

In practical terms we show that for innovation, marketing efficiency appears on specific technological levels. By working in innovative sectors like ink jet, we identify various technological layers, each one slotting into the other like a collection of Russian dolls. These variants of the same generic technology reveal a heterogeneity that explains the performance differences between companies in the same sector

We therefore wish to help managers identify the relevant levels of technological differentiation for the applications they are targeting.

This tooling completes the operational methods provided for managers and company leaders by the disruption theory.

This should make it possible to improve the quality of replies to questions such as: « What kinds of innovations will appeal to certain customers and which ones will not »?

This should also make it easier to understand and predict companies' exceptional performances, as well as their ordinary (average) or insufficient performances.

RESEARCH PROCESS

Methodology

The Rhône-Alpes region cluster of industrial ink jet turns out to be an interesting empirical context to study the comparative performances of startups during their first few years of activity.

First of all because these companies constitute a complete sample.

They belong to the same ecosystem. Not only are they geographically close to one another but they also have a common ancestry. In fact they all come from the same parent company.

A second set of reasons that explains the choice of this cluster stems from the development of ink jet technology.

Industrial ink jet technologies refer to printing techniques that make it possible to jet ink droplets onto various substrates.

While just two main technologies have developed since the 1980s, CIJ (Continuous Ink Jet) and DOD (Drop-On-Demand), numerous branches are enriching the technology tree with sub technologies.

Yet, the ink jet cluster in France, near Valence, draws on a number of variants of the two basic technologies which should lead to providing valuable insights.

Particularly insights into the performance differences according to the technological variants chosen by the companies.

From true industrial emergence to performance

In order to study the French ink jet actors, we first identified the companies that belonged to this famous cluster and that were originally from the same industrial group.

We then built up a database over a number of years that included information on the companies and their development, the technologies that were developed and also information on the companies' founders and directors.

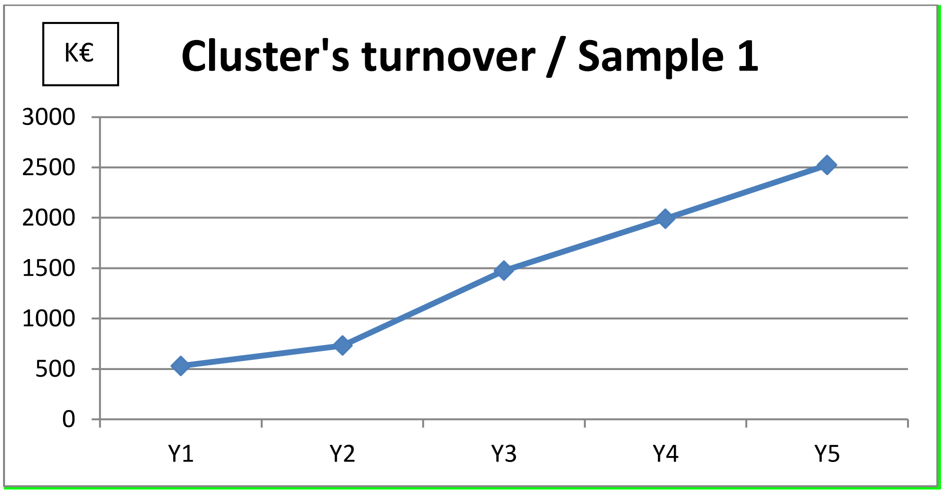
From the database that we created on the basis of this major European cluster, we analyzed the first 5 years of activity for the various companies in the cluster under the following headings:

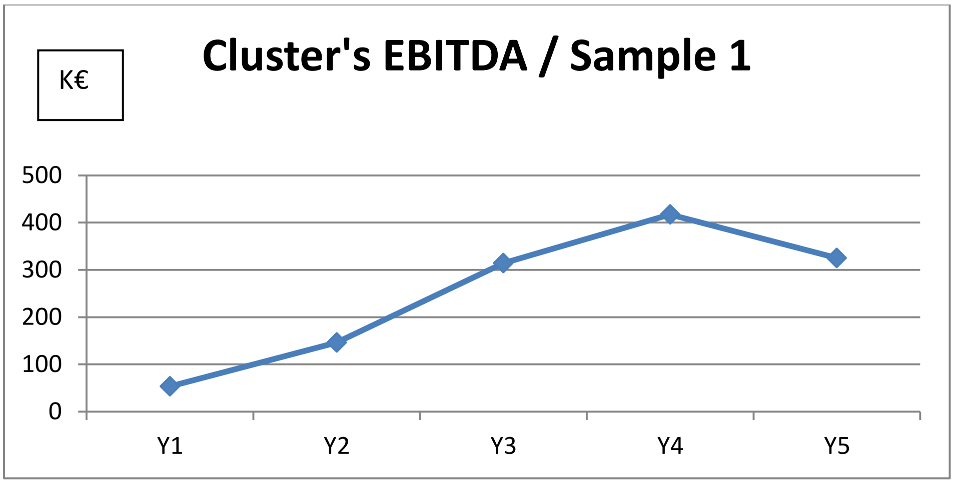
- The turnover for the first 5 years.
- The evolution of headcounts.
- The EBITDA over the same 5 years.

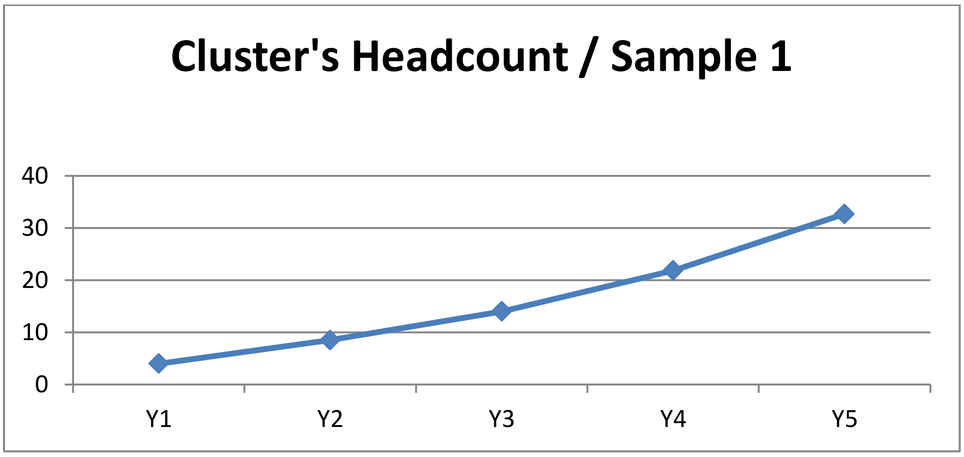
These elements are summarized in the following graphs.

1-Let's take a sample of companies belonging to the French Inkjet cluster

We obtain the following charts:







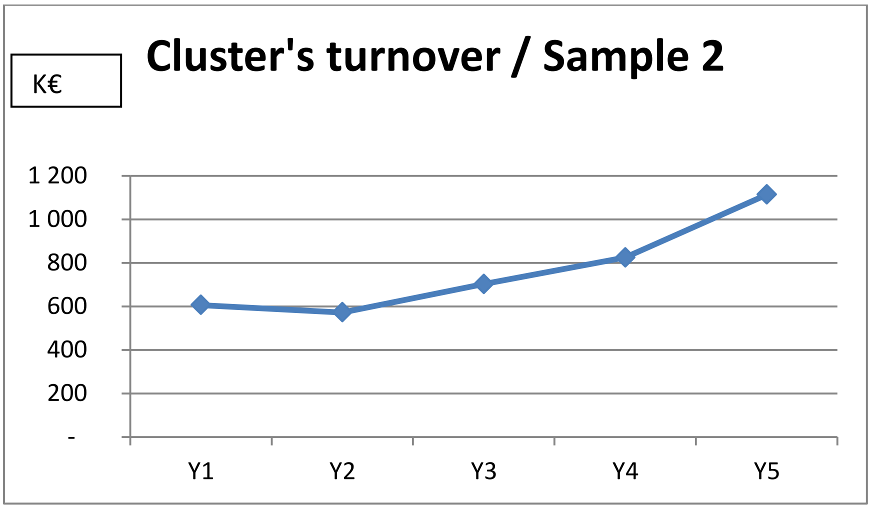
As can be seen from the above graphs, there really is performance!

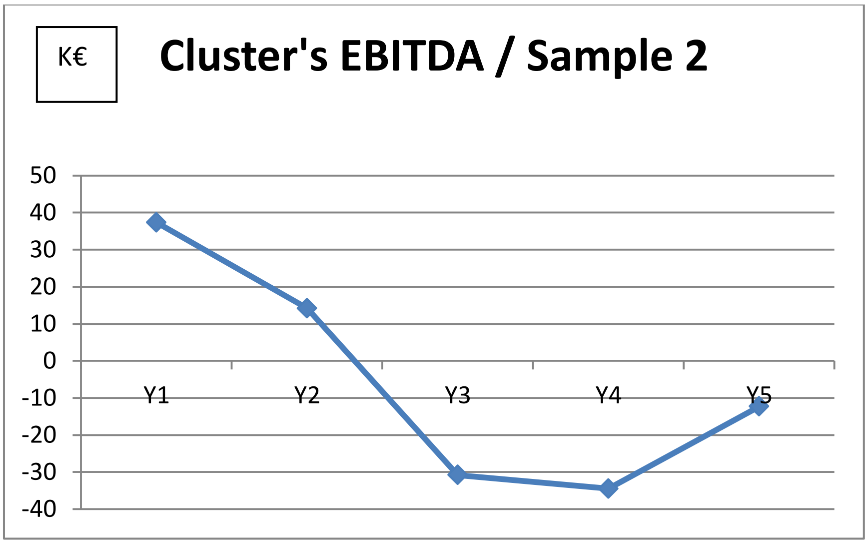
Both in terms of revenue and increase in headcounts as well as results.

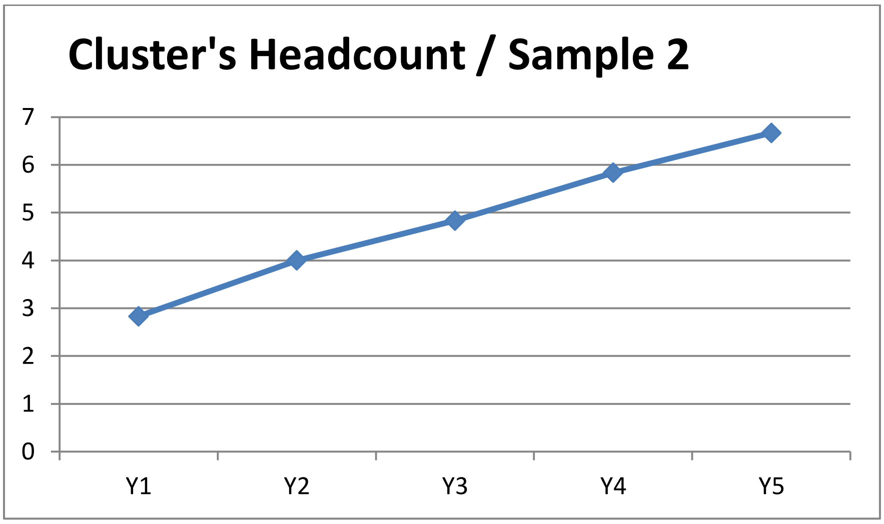
Now,

2-Let's take another sample of companies from the same cluster

We still evaluate the performance of firms from the same set of criteria and still consider the first 5 years after their launch:







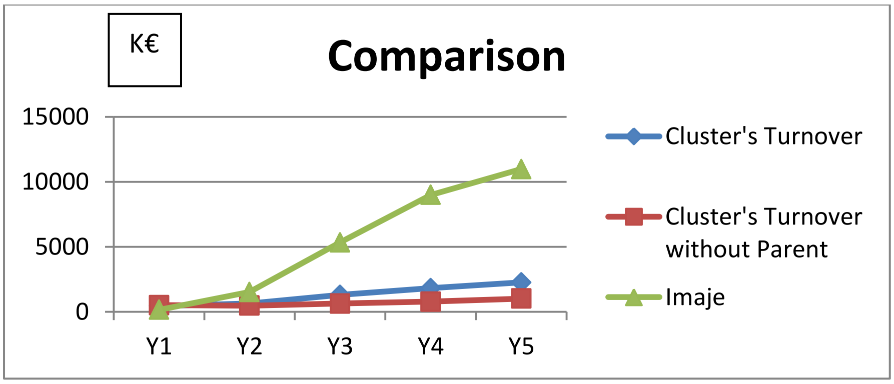
3- Let's compare the 2 series of curves

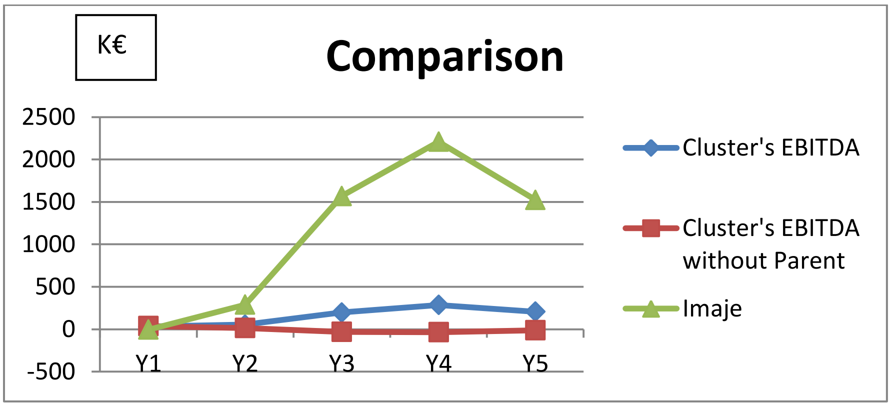
We are going to compare the 2 series of curves but we are going to do it by adding the results of the parent company to the comparison.

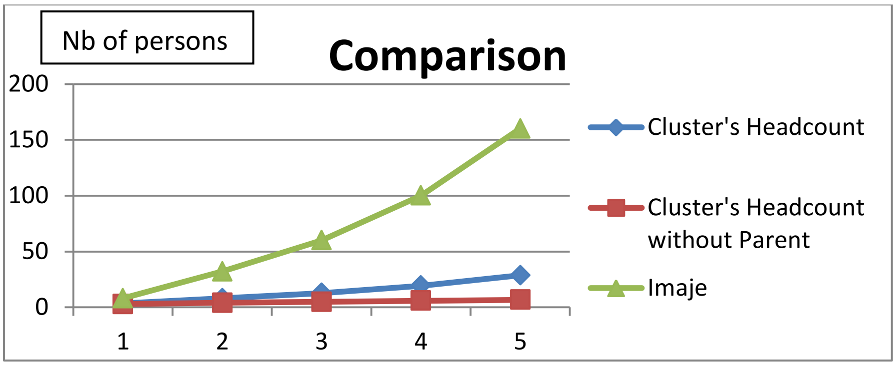
Reminder: all the companies in the cluster originated from the same parent company (Imaje S.A.).

We are therefore going to have 3 curves: the ones that correspond to the 2 samples and the one that corresponds to the parent company. The parent company is to be used as a reference in that it will provide the scale for the 3 dimensions that have been measured (turnover, headcount, EBITDA).

On the basis of the parent company (Valence cluster), we get the following:







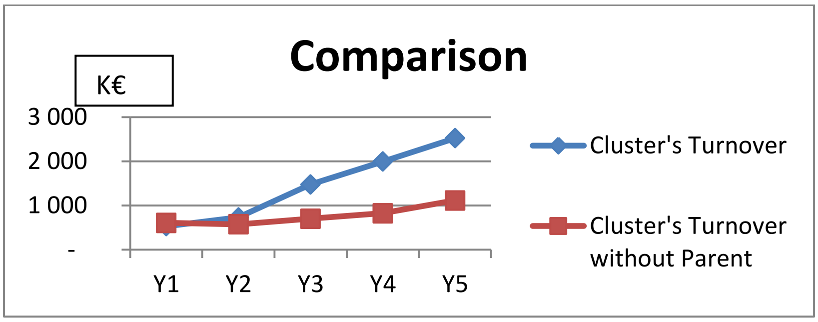
A priori there are similarities in the 2 samples.

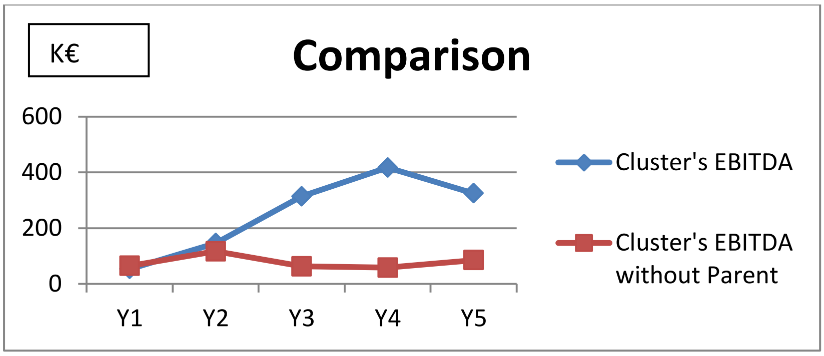
They clearly show that the parent company does not have the same rate of development as the 2 startup samples.

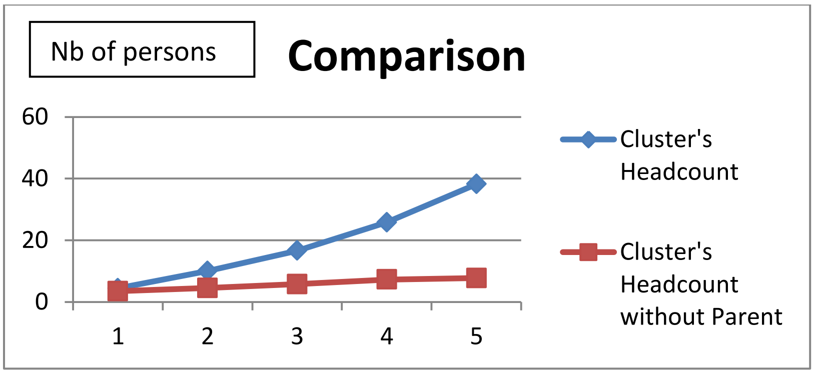
Let’s now take the 2 curves (averages) and compare them based on a reference other than the mother company.

We said that a priori there were strong similarities between the 2 samples,

but when looking at them much closer we find there are big DIFFERENCES :







Thus, by using 2 samples of companies from the same cluster and originating from the same parent company, we obtain considerable differences in terms of both Turnover and EBITDA as well as headcount evolution. And yet all the companies are viewed as innovating and positioned in the same industrial ink jet technology

Where do the differences come from?

The calculations were made in the same way by taking the first 5 years activity of the various companies considered in each sample.

The figures of the companies taken into account were recorded and processed for each one of the 5 years. This made it possible to obtain an average on an annual basis for the 3 performance criteria.

PRESENTATION OF FINDINGS

In the first comparison there was clearly an effect of scale that was distorting perception.

Indeed, when they are compared with a common reference, the 2 company samples from the same cluster appear to be very different.

In fact, by choosing the parent company as the reference for the first comparison, it's the choice of the company that has the greatest impact of all the companies in the sample that has been made.

In addition, if big differences appear in the 2 samples for all 3 criteria, the samples turn out to be much closer to each other than one would have expected!

Indeed, the composition of the 2 samples turn out to be practically the same!

The composition of the 2 company samples is the same … with just one exception.

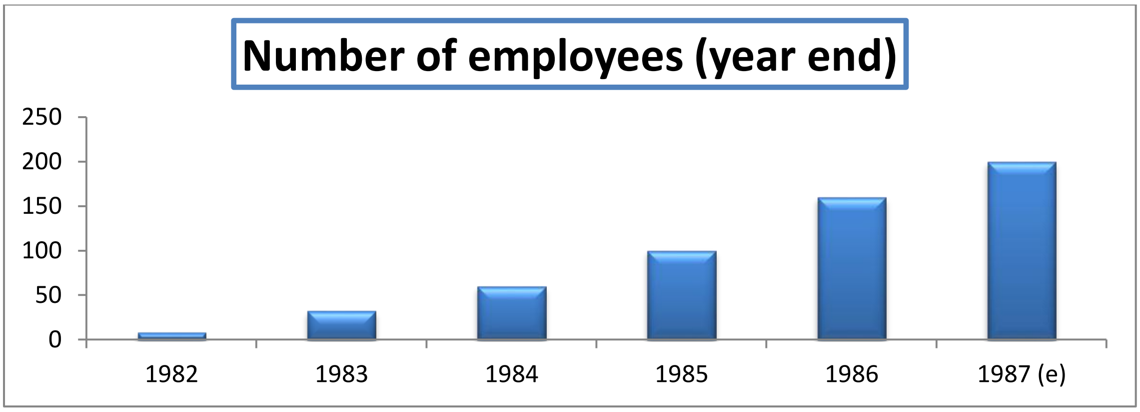
There is indeed just one company that belongs to one sample but not to the other.

The company included in the first sample but not in the second is clearly the parent company that was behind the cluster.

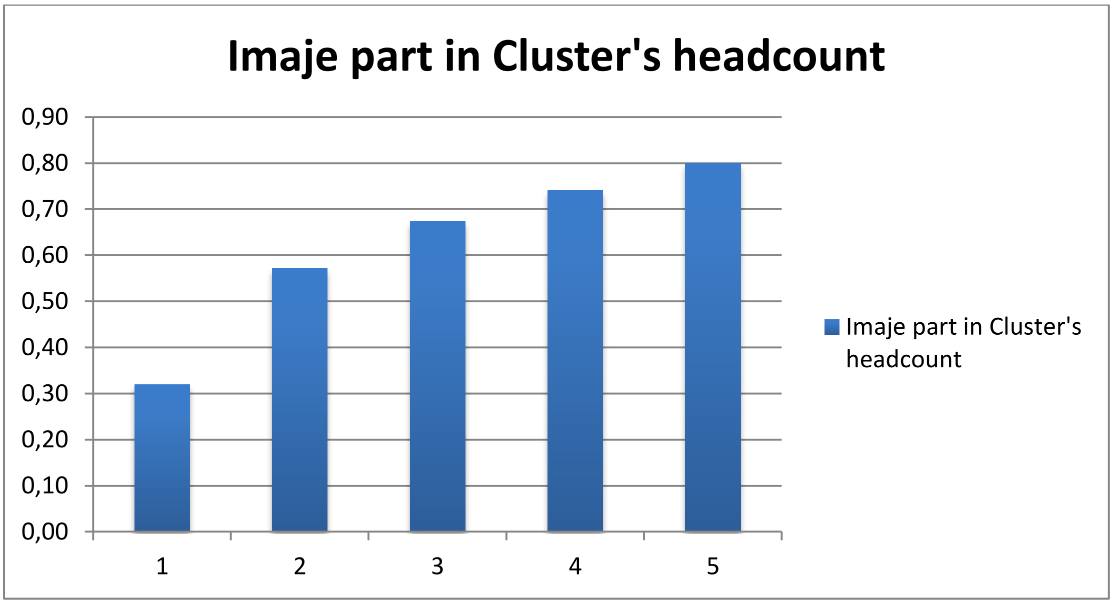
It therefore has a very strong impact on the overall result.

Let's zoom in on the performances of this one company (Imaje S.A.) belonging to the first sample and not to the second:

The performances, as we will demonstrate just below, are exceptional.



The importance of the exceptional clearly speaks for itself in the following table:



Imaje share in Cluster’s headcount

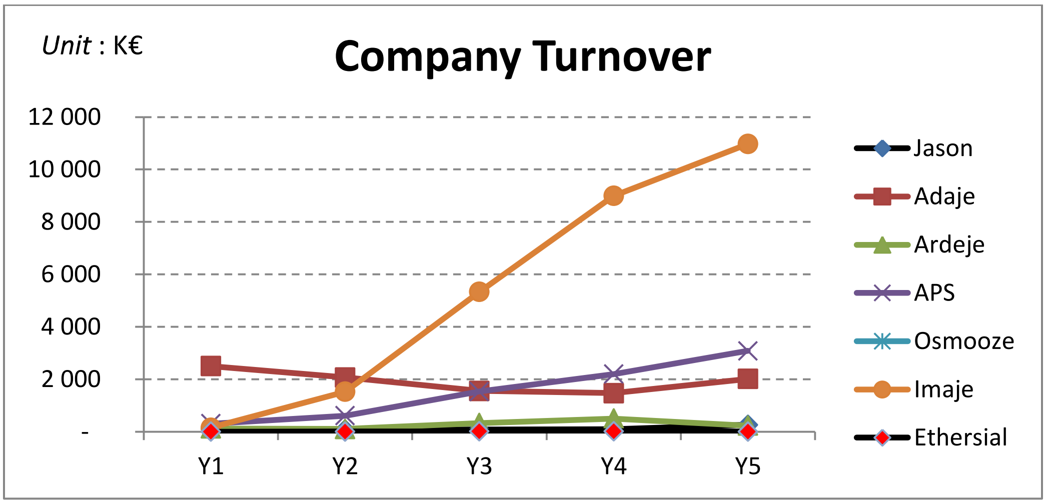
Just consider one number: Imaje’s share in terms of the cluster’s headcount is 80 % … And it’s going up!

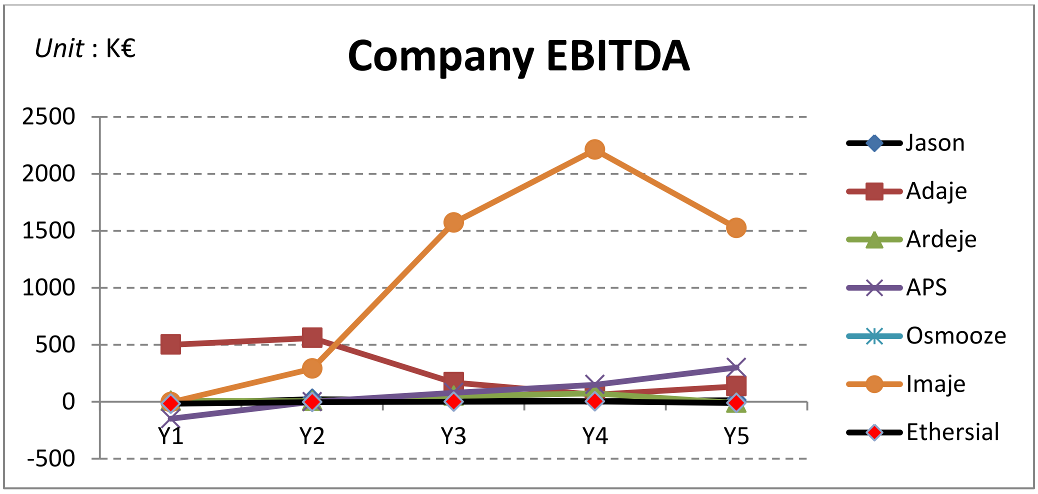
We have an example of « Superior Performance » (Porter, 1990) for a company combining strong market share and high value, thanks to an innovative technological solution.

So, we are no longer faced with « ordinary » differences between companies. The degree of difference shown warrants a specific identification for this unique performance level.

What we call Outstanding Performance (OP).

The OP is confirmed by detailing the results of the various companies in the cluster:


Unit : K€
Company Turnover
12 000
10 000
8 000
6 000
4 000
2 000
-
Y1
Y2
Y3
Y4
Y5
Jason
Adaje
Ardeje
APS
Osmooze
Imaje
Ethersial


Unit : K€
Company EBITDA
2500
2000
1500
1000
500
0
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Y1
Y2
Y3
Y4
Y5
Jason
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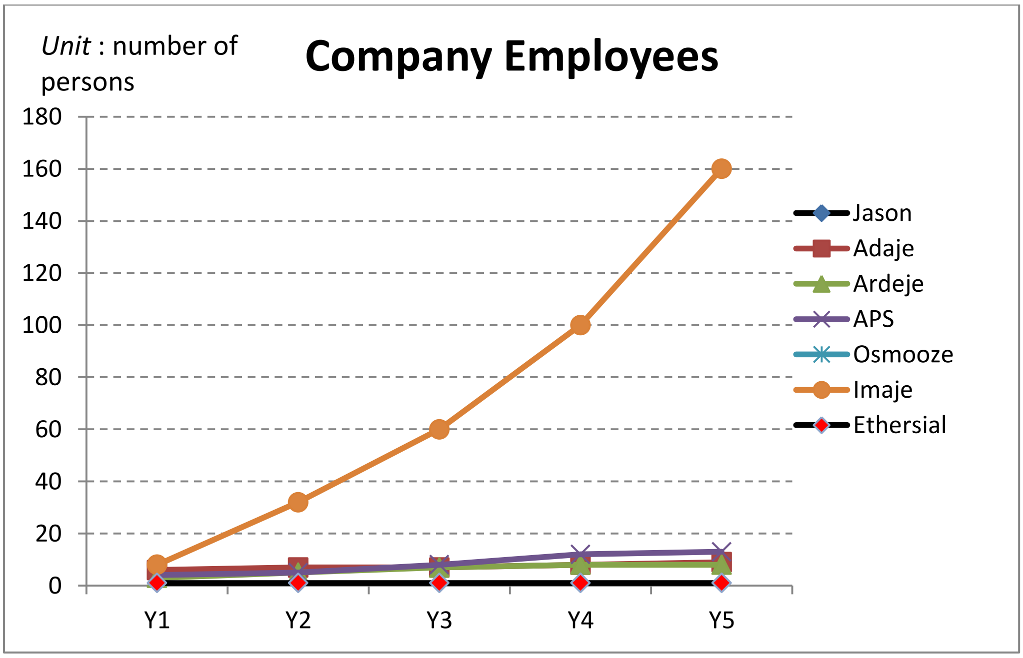
Ardeje
APS
Osmooze
Imaje
Ethersial


Unit : number of persons
Company Employees
180
160
140
120
100
80
60
40
20
0
Y1
Y2
Y3
Y4
Y5
Jason
Adaje
Ardeje
APS
Osmooze
Imaje
Ethersial

We therefore observe:

The presence of an outlier on the 3 dimensions measured and across all the other companies in the cluster.

The very strong impact of the exceptional on the average. Conversely, the average conceals the exceptional! (as we saw above).

Thus a sole outlier in the series leads to very different overall results.

Is exceptional performance linked to a higher level of disruption?

CONCLUSION

The evolutionary account of the spinoffs from the French ink jet cluster in the Rhone-Alps region reveals that:

Companies that, on the face of it, are quite similar can show very significant differences in their development rates right their first years of activity.

And yet these companies are positioned on the same technology, are in the same geographical area and originate from the same parent company.

In fact, by investigating the ink jet technological cluster, we have highlighted the presence of an outlier.

This means that beyond the usual classification of spinoff performances, we need to add an exceptional performance category.

This would add another rung to the performance classification scale that takes 3 levels into account: failure, marginal survival and high growth.

Indeed, the outlier in question has an impact through its results on the entire cluster that it belongs to and in a very significant way.

To the extent that its presence or not in the calculations makes the samples unrecognizable.

In our case the outlier turns out to be the parent company.

This led us to consider that the technologies developed by the spinoffs of this company could turn out to be less similar than they seemed at first sight. And this despite the fact that all the companies in the cluster, including the parent, base their development on the same generic technology represented by the industrial ink jet.

The highlighting of differences in the technological variants controlled by the cluster's industrial actors, including the parent company, is supporting this argument.

Nonetheless, more advanced investigations into technology layers used by the different companies will be needed to be able to reach a conclusion.

Indeed, it is easy to confuse technology layers, because these layers are very similar and hide underneath each other like Russian Dolls!

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