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Toward managing threats to SME growth via networks : an empirical study based on network and resource based view.

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This paper highlights elements like competitors, clients, personal contacts, and institutions that compose networks for different types of firms, and attempts to show how these elements combine to create networks. The objective of the paper is to see how different dedicated network configurations affect firm performance, taking into account both the performance measures stated in entrepreneurs' discourses and accounting measures mentioned in literature, such as turnover and number of employees.

Firm performance is a debated topic in management research and its importance stems from the fact that improved performance is a major goal for most firms. This is, however, a large concept and as such is hard to measure. In the literature dedicated to small firms, growth is seen as an important performance measure [Davidsson, Delmar and Wiklund, 2006]. We will analyze firm growth, as a measure of performance, by examining resources, networks and growth indicators. Black and Boal [1994] propose a framework for evaluating the competitive advantage of firms by taking into consideration factors that structure the resources inside a network. By contrast, our perspective takes into account precise resources and performance indicators in order to understand how networks participate in resource accumulation and renewal, which in turn, contribute to firm growth.

Our research takes into account the dynamic capabilities perspective, which recently, has moved toward entrepreneurship theory and thus, it is interesting to assess the importance of networks in the portion of the framework developed by Teece [2007] related to managing threats. This research question falls under the topic of social capital.

To sum up, this paper attempts to explain how networks can protect small firms from threats to their growth, by providing them with the needed resources.

I. General framework

Penrose [1959] stated that in an economy there are interstices that open possibilities of growth for small firms, and generally the interstices are expansion possibilities in specific markets or industries, possibilities that large firms ignore. Different perspectives on firm growth co-exist in literature. Growth strategies can be

constructed on the idea of gaining new customers in new markets [Eisenmann, 2006] or can revolve around offering new products on specific markets that are targeted for this purpose [Julien, 2001].

The most important element presented by Penrose is the vision of the firm as a collection of resources, and that the way managers use these resources drives firm progress toward growth. Her work lays the foundation the resource based-view (RBV) [Pettigrew, Thomas, Whittington, 2002] which is one of the main theories in strategic management today. As also stated by Augier and Teece [2007, p.1200] “*The manager/entrepreneur can bargain and negotiate and buy or sell or swap investments/assets, orchestrate internal assets (intrapreneurship), and transact with the owners of external assets (entrepreneurship)*”. In other words, the manager has the power to control the destiny of the firm, leading to either success or failure.

Firm management can be either an obstacle or an engine for growth. We chose Penrose’s approach for our empirical study because of its focus on entrepreneur’s views of their own firms. This is different from Hannan and Freeman’s [1989] approach that considers that the rational behind firm development is Darwinian, i.e. one of natural selection.

In the field of strategic management, Wernerfelt is the first author to support the resource based-view theory. For this author, resources and products are two sides of the same coin [Wernerfelt, 1984]. The resource based view (RBV) approach intends to explain why some firms are more profitable than others and how to put into practice differentiation strategies that make sense. In the context of the resource based view (RBV), firms are seen as different collections of physical assets, intangible assets and competences. According to this view, a firm will obtain and maintain a position in the market if it has the appropriate resources. Which resources are we talking about? Several resources have been mentioned as the source of sustainable competitive advantage and profitable growth in the history of the resource based view (RBV). These include: financial resources, human resources, assets, organizational resources, technological resources [Hofer and Schendel, 1978]; information, knowledge, competences, firm characteristics [Barney, 1991]; reputation [Grant, 1991]; complementary assets (resources that can be found in the firms’ environment and which are sometimes necessary to

complete the resource portfolio), institutional assets (regulation systems), the market (market structure as a strategic asset of the firm) [Teece, Pisano and Shuen, 1997]; and intangible resources [Sirmon, Hitt and Ireland, 2007]. These are the primary resources taken into account by the resource based-view.

As the resource based view (RBV) takes into account a very large number of resources which cannot all be measured by a single study, we decided to focus our attention on a few particular resources: finances, human resources and knowledge in their broad sense.

In 1997, Teece, Pisano and Shuen introduced the important concept of dynamic capabilities within the set of assets. This concept was, and still is, taken into serious consideration by academics because it refers to the firms' ability to integrate, build and reconfigure internal and external competences to respond to rapidly changing environments. According to Helfat, Finkelstein, Mitchell, Peteraf, Singh, Teece, and Winter [2007, p.4]: "*A dynamic capability is the capacity of an organization to purposefully create, extend, or modify its resource base*". Dynamic capabilities is a complex concept possessing microfoundations [Teece, 2007] based on several elements: distinct skills, processes, procedures, organizational structures, decision rules and disciplines. The role of dynamic capabilities is to create, deploy and protect the intangible assets that sustain long-term business performance.

In this light, it is important to keep in mind that "*enterprises with strong dynamic capabilities are intensely entrepreneurial. They not only adapt to business ecosystems, but also shape them through collaboration with other enterprises, entities and institutions*" [Teece, 2007, p. 1319].

Entrepreneurial ventures with strong dynamic capabilities are those ventures able to find in the immediate environment all they need in terms of resources, knowledge, and ideas. Networks facilitate access to those resources. Taking a slightly different point of view, Lee, Lee and Pennings [2001, p.635] state that, "*...social capital is only valuable when a firm is endowed with internal capabilities*". In our approach we have extended this concept and taken into account the internal and external resources available to a firm.

Firms are part of networks in the same way as people are part of networks. It is almost impossible to imagine a completely isolated human being, and it is also hard to

conceive of a firm that is fully isolated from other firms. According to Garnsey [1998], the firm is an open system, and, in order to understand growth, we must understand the network of interactions which construct its environment. Position within a network can be an asset in and of itself [Burt, 2001, cited by Chollet, 2005].

Generally, social capital is represented by an individual's portfolio of contacts. Resources are a consequence of the use of social capital by an individual, in our case an entrepreneur. A person's personal network is described by three dimensions: the network structure, the content of its relations, the attributes of its members. The personal network of each entrepreneur has a particular configuration [Chollet, 2005] and social capital can create a causal relation between this network and the acquisition of resources. Particularly, an entrepreneur's personal network is represented by all those individuals that the entrepreneur knows and with whom he keeps in contact. Social capital is a Meta resource *per se*, if we take into account the fact that entrepreneurs can obtain any resource that is made available thanks to social capital.

All actors have a position in a global structure. Those positions determine their place on the market and the advantages they will be able to garner from their resources. This in turn will determine their competitive advantages. If we follow this idea, different configurations of an entrepreneur's personal network will lead to different performance levels. In this case we must analyze the three different dimensions of personal network. The first aspect is the global structure of the network [Burt, 1992, cited by Chollet, 2005] or the number of connections in a network between the entrepreneur and the other actors of the network. This also refers to the connections between the other actors of the network. Next comes the content of the network [Granovetter, 1973] or the quality of the links between the actors in a network, strong ties vs. weak ties. Finally, we consider the attributes of the other actors in the network, and how they are characterized [Lin, Ensel and Vaughn, 1981, cited by Chollet, 2005]. What is important to outline regarding this classification is that a "good network" is a network where the other actors of the network have access to resources that are important for the entrepreneur. In this case we must not neglect the fact that the entrepreneur will also depend on these actors. Related to this perspective, Black and Boal [1994, p.131] point out that "*resources are made up of factor networks which have specific interfactor and inter-resource relationships*".

Network size and centrality delimit the amount of resources that can be reached by an actor. The presence of structural holes in the network makes access to a diversity of resources more challenging [Hoang and Antoncic, 2003]. Structural holes are created by the absence of ties between actors and these holes present information opportunities and bridging ties [McEvily and Zaheer, 1999]. They show how an actor exploits those opportunities to realize certain benefits. As we have already stated, firms occupy different network positions that link them to different actors, and thus they encounter different opportunities and constraints.

The presence of many weak ties in a network and the ability to mobilize financial resources from rich and powerful contacts helps entrepreneurs increase their revenues and profits, and thus the overall performance of the firm [Batjargal, 2003]. Starting from this point, the purpose of this paper is to further conceptualize and to determine which network structure is most appropriate for obtaining increased resources resulting in improved performance as measured by growth. We analyze all these elements by taking into account the model developed by Teece [2007] concerning the microfoundations of dynamic capabilities, focusing our attention primarily on resource mobilization and less on sensing and seizing of opportunities.

Thus, our main question is: *“How do dedicated network configurations help SMEs identify and obtain resources needed to foster their growth?”*

An ongoing subject of debate is whether to have more weak ties¹ or more strong ties² [Batjargal, 2003]. This is a fundamental question if we take into account the fact that thanks to network ties entrepreneurs identify opportunities, acquire needed resources and gain legitimacy [Elfring, Hulsink, 2007].

II. Methodology

The response to our research question has been pursued through a deep qualitative analysis.

¹ In large networks, a specific tie provides the only path between two points (bridge). All bridges are weak ties [Granovetter, 1973].

² “The strength of a tie is a combination of the amount of time (probably linear), the emotional intensity, the intimacy (mutual confiding) and the reciprocal services which characterize the tie.” [Granovetter, 1973, p. 1361]

Our first aim was to try to identify the elements considered as resources by entrepreneurs from various sectors. Our second aim was to understand the role played by certain specific resources during the creation and development of companies and identify the sort of network that helps in the procurement of these resources.

This analysis was computer aided. We choose to use N Vivo software in order to increase our data analysis capabilities but not to systematize the analysis. After explaining why we used this software, as well as how it was used, we will discuss the methodological core of our research. We will first detail the preliminary analysis that was undertaken in order to clarify the object of our study and its corresponding results. In the second part we will explain how we deepened our understanding of entrepreneurial discourses by comparing elements obtained in the first round of our analysis.

II.1. Utilization of the NVivo software

N Vivo software emerged from the fusion of an earlier version of N Vivo and Nud*Ist. This software is used to perform thematic analysis. It is a tool that helps users select, store and cross qualitative references but the analytical part of this work remains the user's responsibility. Help provided by the software is related to storage capacity meaning that the software gives the opportunity to instantly recall data following specific queries made by the user.

Developers of the software first created this tool to help academics dealing with huge amounts of data and following a grounded theory process. The use of this software has been extended to processing qualitative data.

N vivo is software that helps regroup large amounts of data under codes chosen by the user. The advantage of this method is that compilation and use of so much qualitative data for a complex analysis demanding to cross several factors is virtually impossible.

Software use requires uploading the source document into the device. This document can take various forms including text, image, sound, video, and worksheets. There is a set of characteristics that corresponds to each document and helps to identify the document. This set of characteristics can also be used as a filter for the analysis. It is

possible, for example, to identify a set of interviews as a function of the position of the interviewee within the firm, their age, responsibility in the firm, gender, or whatever other characteristics might be useful once the user is running the data.

The researcher pays particular attention to this source material by reading, watching or listening to it and the results of this observation serve as the basis for the analysis. Each time that there is a portion of the source that evokes an idea that is useful in the context of the research, the user selects this part of the source material, creates a code that will match this idea and links the selected text to the code. In the context of N Vivo, a code is called a node.

The user repeats this action as long as it leads to the creation of new nodes relevant in the context of the work being carried out. At some point in the process “data saturation” will be reached. This concept corresponds to the instant in the coding process when reading an additional source does not lead to the creation of new nodes.

II.2. The analysis process

Our research involves 17 companies located in the Rhone-Alpes Region in France. The interviews were conducted between July 2008 and October 2008. Most of the firms are newly created and their reliance on networks in order to have access to resources is very strong. A large number of these firms are innovative, and since a study on tie formation in innovative firms was done by Elfring and Hulsink in 2007, we chose to focus our analysis on global network structure in these companies and its affect on performance.

This qualitative study was carried out by interviewing a population of entrepreneurs for approximately one hour each. Themes ranging from firm structure and marketing aspects to internal and external resources and networks were tackled during interviews based on a semi-structured thematic guide.

The group under analysis is composed of various firms belonging to different sectors. Globally these companies are small to medium in size. The table below highlights the distribution of the sample.

Documentation used for the analysis are written notes obtained during the interviews: the companies CEOs did not allow us to record interviews as the information divulged during the conversations is partly confidential.

Sector	Number of companies	Creation date	Number of employees	Person interviewed
Hardware/software	6	Ranging from 2000 and 2007	0 to 50	Founder associate
Robotics	2	2001 and 2007	0 to 50	Founder associate
Electricity and construction (mother company)	2	1939 and 1976	11 to >50	Board member
E-marketing	2	2004 and 2006	6 to 50	Founder associate
Biotechnology	1	2007	<5	Founder associate
Logistics	1	2002	<5	Founder associate
Textile (mother company)	1	1950	>50	Founder associate
Consulting	1	2007	11 to 50	Founder associate
Micro nano tech	1	2005	11 to 50	Founder associate

Table 1: cases broken down by sector.

The analysis of interviews was carried out thanks to N Vivo processing. N Vivo was utilized to code interviews following an objective in terms of node creation. We also used the software to process queries that permitted us to cross or associate various references of text coded under a specific node. These two different phases of analysis led to two different kinds of results. The coding phase permitted identification of assets (resources) that are recognized as being necessary for firm growth, as well as identification of parts of discourses that are related to growth, aims, difficulties and other related nodes such as entrepreneur's history, organizational structure, Intellectual property, etc. The coding is an open process and each part of the discourses that interested us led to the creation a new node.

The second phase of the analysis was directed toward associating different nodes, like entrepreneur aims and difficulties encountered, to other important nodes. In our opinion, important nodes are those that include the largest number of coded discourse extracts. This second part will be described subsequently. Let's first describe, however, the primary phase of analysis and the results stemming from this phase.

Reading documents is the primary source of node creation and led to the creation of 24 nodes. Node creation resulting from the reading of a given document then triggered the search for this same node in other documents read subsequently. This method assures that the number of occurrences related to a node is coherent regarding the evolution of the reading.

Concerning the creation of the specific node entitled "resources", we were looking for clues related to things that help companies develop their business. These elements could take either a positive or negative form; their inclusion depended on the resulting business evolution from the point of view of the entrepreneur. Once we had a node titled "resource" that contained all the elements related to this topic, we examined the node contents in order to find a logic that could help structure the node internally. Two actions helped us achieve this goal. The first was to refine the coding by creating new nodes related to the kind of resource we were concerned with. The second action was to write a memo³ that summarized trends stemming from the analysis.

II.3. First results stemming from nodes emerging after coding: resources and networks of small companies

The analysis conducted for this study showed that most entrepreneurs take network into consideration as a resource for their company's growth. This result appears through the five main classes of resources that emerged.

The First group is related to **financial resources**. Financial resources are those resources that are represented by large investment, the amount of money available to the

³ A memo is a text document linked to a node or other component of the analysis provided by N Vivo where the user can record ideas related to running analysis. Writing memos is a good way to track the analysis process.

firm or access to financial resources such as love money, venture capital or even government institutional assistance in fund raising.

Networks to access financial resources are those containing CEOs or associates, who help in connecting with venture capital and banks. This network is particularly active in high tech firms when CEOs or associates have had previous experience in large firms. State organizations can also contribute to financial resources in the form of direct funds to companies or through help via incubators. Contests organized by various institutions improve the reputation of the winning company which then makes gathering further funding or resources potentially easier. Companies measure these opportunities thanks to their project development and growth.

In traditional sectors, companies rely on banks and their self-financing capacity (equity finance) to obtain financing.

A **solid team** is also recognized as being an important resource. For our purposes this term includes the stability and strength of a team in terms of knowledge, know-how and collective motivation toward set goals, as well as the incentive to foster project development and the cohesion of its members.

Having a solid team is particularly important for the youngest companies in our sample. The creation of a solid team through hiring is often accomplished by partnering with schools and universities as well as by implementing ventures with research centres working in common areas of interest. This choice is motivated since companies want to increase their knowledge base, as well as to take advantage of motivated team and flexible management.

The node **Projects** is related to important works-in progress within the companies. It appears that project development is extremely important from the entrepreneur's point of view since it reflects the activity of the firm and sometimes leads to extra knowledge, financing or enhanced reputation.

The projects developed by the firms in our sample have diverse origins including partnerships with state organizations, competitors and customers. The co-opetition mode is highly valued by high tech sector companies, in contrast to more-traditional-sector companies that value co-development with customers. This type of project development

is motivated by the opportunity to develop and integrate knowledge as well as to increase product quality and firm reputation.

R&D is perceived as being a resource by respondent. Knowledge, creative problem solving, percentage of human resources or turnover attributed to research projects and intellectual property (IP) development were all coded as part of the firms' R&D .

R&D is a form of knowledge and signals firm activity to potential investors. It is an important resource for companies in our sample, even those in very traditional sectors since it represents the future of the company. The primary network in this area finds its source in universities, schools and research centers. For high tech companies the challenge lies in integrating knowledge and increasing reputation in order to register patents. For more traditional firms, increasing or maintaining turnover is of prime importance.

The last group of company resources underscored by interviewees were elements related to **Marketing**. Coding was carried out by selecting information related to sales levels, importance of sales people, internationalization activities, sales development projects, and product range.

Marketing has been mentioned as being particularly important for small companies, especially the role of the sales person, because it is a long-term investment and it helps increase company reputation. Depending on the sector, performance related to marketing ranges from sales growth to internationalisation of the company.

The table below sums up these results.

Resource	Networks	Structuring elements	Performance
Finances	CEO / Associates State organisations	<ul style="list-style-type: none"> • Reputation • Investment • Financing 	<ul style="list-style-type: none"> • Project development • Growth
Solid Team	Research centres Universities/schools	<ul style="list-style-type: none"> • Knowledge integration • Management 	<ul style="list-style-type: none"> • Employee growth • Motivation • Project development
Projects	Competitors	<ul style="list-style-type: none"> • Reputation 	<ul style="list-style-type: none"> • Recognition by the

	(co-competition) Customers	<ul style="list-style-type: none"> • Quality • Knowledge integration 	community <ul style="list-style-type: none"> • Turnover growth
R&D	University / schools Research centres	<ul style="list-style-type: none"> • Knowledge integration • Reputation 	<ul style="list-style-type: none"> • Patent registration • Turnover
Marketing	Professional networks	<ul style="list-style-type: none"> • Sales • Reputation 	<ul style="list-style-type: none"> • Number of clients • Internationalisation

Table 2: results summary

II.4. Further explanations

We also wanted to explore how networks contribute to managing threats to SME growth. To do so we decided to deepen the analysis of entrepreneurial discourses. During this phase of the analysis we compared nodes that were identified as being related to firm development (growth, goals and pitfalls) and other nodes representing other themes. In order to limit this analytical phase we decided to retain only nodes presenting the highest frequency of references, which in the case of this study is more than 25 references (discourse extracts).

This choice led us to retain the following nodes for analysis:

- **Network:** this node contains parts of discourses related to networking and partnering.
- **Resources:** this node contains elements of the discourse that are related to elements of the company, assets that seems important to entrepreneur's beliefs.
- **Motivation:** this node is related to what makes the company move forward. It can be related to employee motivation, entrepreneur motivation or more largely, overall motivation of the organization.
- **Organizational structure:** This node contains discourse related to how the firm is organized. This can be about employee incentives as well as the shareholder's place within the firm or team configuration.
- **Entrepreneur's history:** This node takes into consideration the parts of the discourse related to the entrepreneur's past experience before creating the firm. Sometimes it even includes the occupation of the entrepreneur's parents.

- **Capital structure and governance issues:** This refers to discourse related to how the capital has been constituted, where it comes from, what are the elements that helped to find and receive funding.

Our selection can be represented by the following table:

	A : Growth & development	B : Aims	C : Pitfalls
1 : Entrepreneur's history	18	16	17
2 : Motivation	18	17	16
3 : Network	18	17	17
4 : Resources	18	17	16
5 : Capital structure	18	17	17
6 : Organizational Structure	18	17	15

Table 3: Set of discourse extracts found with boolean operator OR

Table 3 represents sets of discourse extracts that associate nodes presented in rows and in columns. This kind of association allows one to highlight what interviewees said about two different themes chosen for our analysis. This selection is an inclusive one and permits a more detailed analysis.

An inclusive analysis to deepen our understanding of our sample of firms.

To clarify the information in the above table, let us look at the column entitled “growth & development”. The numbers represent the number of sources where extracts were found. The first column shows that there are 18 sources where both growth & development and entrepreneur’s history were coded. This number is higher than the number of respondents since a memo created during the analysis was also coded under the node “growth & development”.

The analysis stemming from this first selection of themes is obviously inclusive since it takes into account that which has been coded under two different themes. We reported in a table those items related to each theme and began a manual analysis in order to show what was recognized as being of greatest importance for entrepreneurs.

Marketing

It appears that in our sample, the most important part of the network is the one related to customers. Eleven of 17 interviewees mentioned this issue. It appears that the client network variable is quite important for a number of reasons:

- 1) Market access: having a relevant network of clients is a good indicator for market penetration. It is interesting to note that two of the interviewees from the high tech sector (hardware/ software and robotics) who did not refer to customer network evoked that for them client relationships represent a pitfall. This may either be due to the difficulty of securing a first customer or owing to the difficulty of maintaining a good reputation. Paradoxically, this omission reveals that network is perceived as important.
- 2) Reputation: customer network can serve to enhance firm reputation, particularly when the company has large firms within their customer portfolio. This seems particularly pertinent because many of the firms interviewed extend their business through word of mouth.
- 3) Business security: having only big firms as clients is somewhat risky and as a result entrepreneurs tend to diversify their portfolio.

Seven out of the 11 companies that highlighted the importance of the customer network are companies that were created in 2005 or before. It means that these specific companies have had time to develop their client network. The four other companies highlighting this aspect are younger, but they have a sufficiently significant customer network or perceive the importance of this for several other reasons. One company is a spinoff of a famous public laboratory and has benefited from the network of the parent firm. Another one works with partners to extend its customer network. The two others are software companies and benefit from the help of a dedicated network and are also part of regional clusters.

Generally speaking, this network is further developed by hiring sales people with a great deal of experience and who bring with them a large personal and professional network. Entrepreneurs also rely on their own networks, as for instance, in the case where they previously worked for large companies.

To sum up, having a relevant customer network is a source of growth through increased market access, it helps increase company reputation, and it enhances a firm's ability to manage threats.

Of the eleven companies that highlight the role of customer networks, eight indicate that it's a good performance indicator and/or have goals oriented toward this issue. More precisely, five companies have customer-oriented goals either in terms of better addressing customer needs or in terms of increasing their customer portfolio.

The analysis of resources that foster firm growth first showed that marketing was critical for small companies. This specific point can be linked to the customer network issue raised in the second round of analysis. The Marketing resource is needed in order to develop this critical network that is perceived as being a component of firm growth.

Financial resources

Seven firms from our sample still hold a large majority of their firms' capital. Three of the seven are young and part of the software/hardware industry; the four remaining firms belong to more traditional areas.

There are eight companies that have opened their capital: four of them were young high-tech firms embedded in institutional networks, either state organizations dedicated to help innovative firms or scientific networks. Three others are innovative firms that relied on personal networks to obtain the needed funds; their CEOs had previously held top management positions in big firms and used their networks to obtain financing. One company has a cooperative structure (SCOP⁴) and is, therefore, not part of either group since it relies on employee participation to finance its development.

Two companies from the sample were excluded since they wished to open their capital but had no means to achieve this goal at the time of the interviews; we have no current information on their progress.

These results indicate that entrepreneurs who have maintained majority control in their company's capital are equally distributed between traditional firms and young innovative firms. Those companies that have diversified their capital are mainly high-tech firms managing to raise capital through institutional networks. More traditional yet

⁴ Société Coopérative de Production, a legal structure where coop members are co-owners of the venture

innovative firms have to rely on strong personal networks to obtain funds leading to increased wealth.

Solid Team

First results highlight that entrepreneurs recognize a solid team as being an advantage for growth. It appears that there are two main ways to foster a solid team: recruitment of people consistent with company needs and, from an HR standpoint, providing incentives implemented to motivate people.

Nine of our sample cases mentioned the use of networks for recruiting purposes. Personal networks, the entrepreneur's or the employee's, figure as the principal means of hiring new staff. Institutional networks are also highlighted by interviewees as being useful resources. These can include networks stemming from an institutional organization, a public research center associated with the company, clusters, and/or incubators. One sample company that develops free software has a very specific business model; one of their wealth indicators is their level of recognition by the user community. Interviewees indicate that this company relies on their users community to hire employees who are competent to develop their activities.

Ten companies provide diverse answers concerning motivational issues for employees. The tool most widely mentioned in our sample is the distribution of stock options to employees. Other tools are related to working conditions: timetable flexibility, disponibility, communication, health plan, MBO...

Research and development

At first glance, interviewees highlighted Research and Development as a constituent of firm growth and it took on even greater importance after deeper analysis. We found that several elements including intellectual property (IP) (being understood as knowledge), research and development, as well as trademarks and patents, reinforce firm wealth.

Intellectual property (as defined above) was mentioned by 13 companies as a resource. It took the form of research and development (expressed in time, % of turnover % of total wage bill), patents and trademarks, or specific knowledge.

Cluster networks, public research centers and educational networks support increased IP within a firm. Clusters help implement specific partnerships leading to new IP that would remain unattainable for a firm by itself. Partnering with public research centers is a way to get specific resources that a small firm could not develop on its own; high-tech firms frequently develop this kind of network. New knowledge development is made possible by creating ties with educational structures. Interviewees evoked this as being relevant for both innovative firms as well as for more traditional ones.

Projects

Our last class of resources is projects develop by the firms. This class is actually fostered by the other previously mentioned resources. It means that projects are actionable resources, in the sense that they are valuable to the company if the latter already possess finance, IP, consistent HR and marketing.

The figure below sums up these results.

NOTE: I would suggest placing your “chart” at the top of the image in the right hand corner instead of at the bottom right hand corner. The reader will look at the key prior to reading the figure instead of afterward which is currently the case.

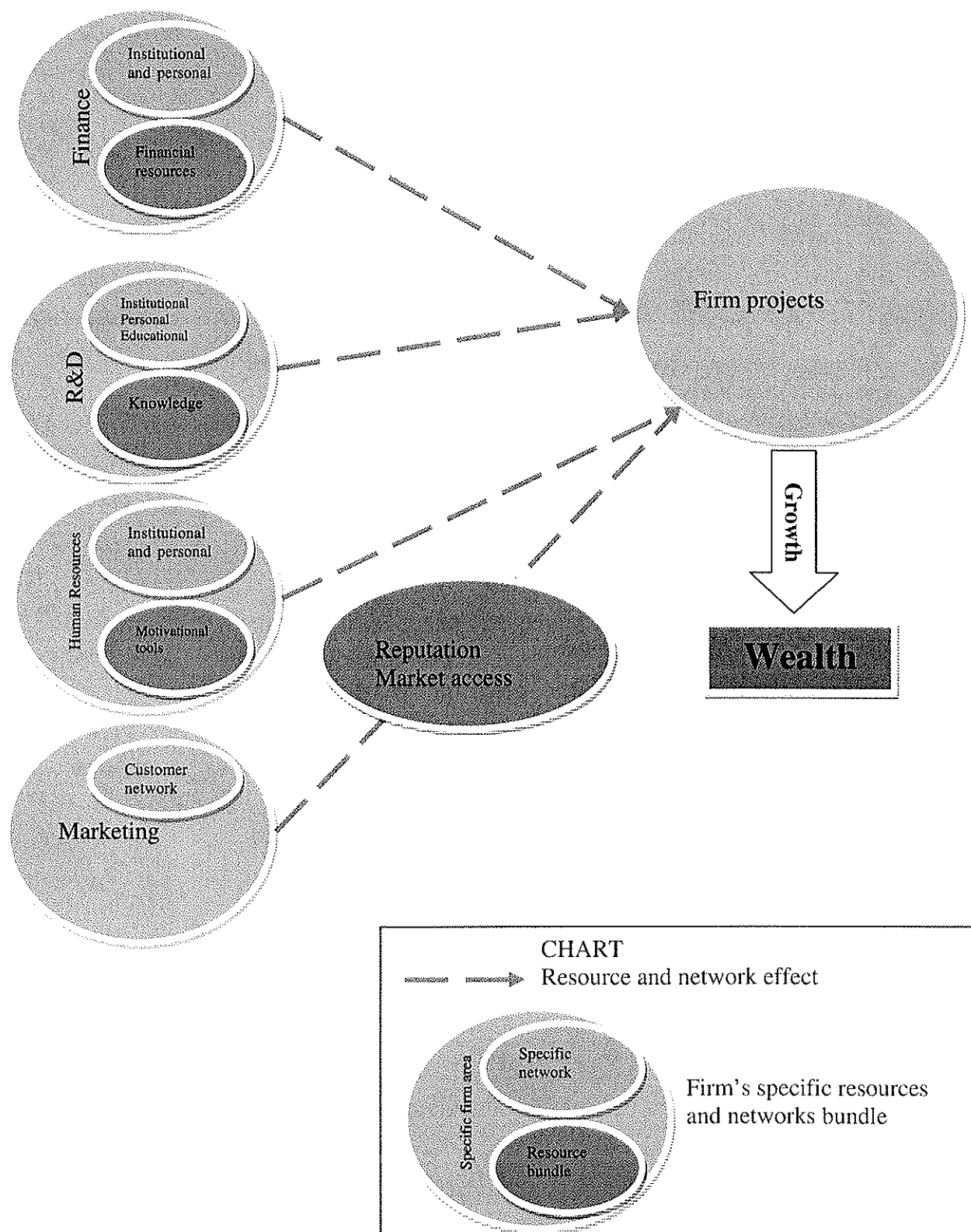


Figure 1: representation of resources and network action on companies' growth of our sample.

III. Performance indicators assigned to qualitative results

In the first part of the paper we designed the framework of our research. In the second part we talked about the resource/network association. This part of the paper will deal with the issue of growth indicators. For this purpose we decided to add a fifth column to the second table, which will include performance indicators chosen to measure firm performance (in our case, growth). This method will be used as a tool to operationalize Teece's proposal.

The choice of this method was inspired by an article written by Boissin and Trometter [2003], who exploited this type of quantitative data in order to analyze the growth strategies and the governance context of a sample of French biotechnology firms. In their research, the two authors used both qualitative data from interviews and quantitative data from financial accounting. The main quantitative data used in their analysis involved indicators such as: turnover, operating results, sales, capital, debts, number of employees, patent volume and company creation date. They used both quantitative and qualitative data in order to differentiate several types of growth strategies and to assign appropriate growth indicators to each one. The authors found that private investors fostered firm growth by dedicating their money to these promising firms; thus capital was one of the growth indicators. We call these companies promising firms because in certain cases, important discoveries (in terms of research) led to quotations on financial markets or very high increases of share values.

We decided to choose some of these indicators in order to measure the performance of those firms. Our choices are listed in the table below.

Resource	Networks	Structuring elements	Performance	Performance Indicators
Finances	CEO / Associates State organisations	Reputation Investment Financing	Project development Growth	Capital Debts [Boissin, Trometter, 2003]
Solid Team	Research centers Universities/schools	Knowledge integration Management	Employee growth motivation Project	Number of employees Staff costs

			development	[Boissin, Trometter, 2003]
Projects	Competitors (co-opetition) Customers	Reputation Quality Knowledge integration	Recognition by the community Turnover growth	Turnover (analysis on a 3 years base) [Boissin, Trometter, 2003] Number of projects
R&D	University / schools Research centres	Knowledge integration Reputation	Patent registration Turnover	Intangible assets [Boissin, Trometter, 2003]
Sales persons	Professional networks	Sales Reputation	Number of clients Internationalisation	Sales growth [Davidsson, Delmar, Wiklund, 2006]

Table 5. Results and performance indicators summary

Data gathered for this step of our research comes from companies' public data that we found on the website of a French national economic journal⁵. This available data allowed us to integrate the following indicators: capital, debt, number of employees, staff costs, turnover, intangible assets (concerning number of patents) and sales growth. The chosen time range is the last three years of accounts as published on the journal's website. We made this choice due to the fact that those companies being analyzed have different creation dates. For the companies created in 2007 and 2006 there were only 1 or 2 years of data available. This was the case for 5 firms. For the rest of the 12 firms we had complete information for the three-year period.

For the majority of firms we observed a positive financial situation. We only had one case, a software development company, where the accounts were inconsistent with the general trend of the firm. When we first looked at the accounts, we noticed that even though the results were negative, the firm registered profits. Upon deeper examination we found that the company had benefited from massive governmental funding⁶, hence the healthy financial results.

Regarding the performance indicators listed above, we will further detail the choice and the relevance of these indicators.

⁵ The journal mentioned here is Les Echos ; the website : www.lesechos.fr

⁶ This firm benefited from a financial aid given to young innovative firms in France (founded as a result of public research), the so-called "Crédit Impôt Recherche".

Finances

The performance indicators chosen to evaluate finances were capital and debt. This choice was based on the fact that for young innovative firms (representing our sample) the amount of capital can determine if a firm is successful or not. According to Boissin and Trometter's [2003] analysis, in cases where there is a significant amount of capital, the firm is considered successful because this large amount of capital is due to private investors.

For the other indicator, debt, the sample of firms must include firms with an activity that can produce positive and constant results (generally, traditional firms). In fact, debts include bank or other types of loans. In this case, the firm must produce credible and generally accepted proof for the continued success of its activity. Our firm sample includes both innovative and traditional firms, so in this case, both indicators must be taken into account (for innovative firms, capital, and for traditional firms, debt). For all the analyzed firms, these were proven to be pertinent indicators. We based our analysis both on the entrepreneur's discourse and the accounting data.

After analyzing the two types of data, our conclusions can be summed up as follows: *The inflow of financial resources to a firm is facilitated by CEO/Associates and state organisation. In the case where the firm has a good reputation, previous investments and financing contribute to the overall performance of the firm and to general project development and growth; these are measured using the capital and debts.*

Solid team

For the second type of resource, the solid team, we analyzed both the number of employees and staff costs. We found that in the case of young innovative firms, the discourse was focused on the importance of qualified and highly motivated employees. This is absolutely normal if we take into account the fact that those firms have a small number of employees, and that all their projects rely on the team members.

The data revealed significant staff costs in the case of young innovative firms. For more traditional firms, the discourse was generally centered on the importance of highly productive employees and on other types of financial incentives. The number of employees is larger than in the case of young innovative firms, but the staff costs are

similar or smaller. This is a normal situation if we take into account the fact that those traditional firms rely on equipment and highly standardized production processes. There are few highly qualified employees. Thus, for innovative firms, staff cost is a more pertinent performance indicator, while in the case of traditional firms, the higher number of employees seems to be more appropriate.

In this case, generally, a young firm builds a solid team via relationships with research centers, universities and schools, using knowledge integration and management, paying attention to staff growth, employee motivation and project development. Successful team building can be measured using the number of employees and staff costs.

Projects

In the case of Projects, the third type of resource, it is important to specify the case of a young innovative firm. This is a software development company with the particularity of having employees recruited via software forums. For them, their reputation in a community is the most important predictor of success. This way the clients are chosen regarding their knowledge of the field and the ability to develop projects. The chosen performance indicator was the turnover growth (on a 3 year basis).

The results showed that growth in turnover occurs mainly for traditional firms, while in the case of innovative firms, the number of projects and their importance (for example projects in collaboration with important actors) must complete the turnover indicator.

Thus, the conclusions that can be drawn in this case are the following: *In a young and innovative firm, the projects are developed by collaborating with the competitors (co-opetition) and customers; the competitors and the customers will choose the firm by reputation, quality and knowledge integration, which, in turn, leads to recognition by the community and turnover growth; turnover growth and number of projects are used to measure the impact of this resource.*

R&D

In the case of a resource such as R&D, the results are clear for both innovative and traditional firms. For young innovative firms, this resource is highly valued and

developed, because it lies is a core competence of the firm. For the more traditional firms, this resource is an additional one, used only occasionally, to develop new products after a period of time. We decided to measure performance in this case using the growth registered in the value of intangible assets for a 3 year period. This is an appropriate indicator that is used by taking into account the firm's type of activity. In this case, our conclusion can be summed up as following: *Generally, in a firm, R&D is developed in collaboration with research centers, schools and universities, using knowledge integration and reputation (as triggers), thus leading to patent registration and the growth of intangible assets (as performance indicator).*

Sales people

The analysis of the performance indicator chosen for the fifth and last resource, the sales people, reveals some interesting results. This is a resource that showed no differences between innovative young firms and traditional ones. The marketing sales people are very important for both types of firms. They are recruited using professional networks, based on the experience of the recruited individual. Most important, the link between the sales person and other networks is highly valued by the entrepreneur. This can lead to sales growth and internationalisation.

The chosen performance indicator, sales growth (which is a preferred performance indicator in the literature)⁷ proved to be a good choice for all firms. However, in the case of innovative firms this must analyzed with more caution, and requires taking into account the other indicators mentioned above. Thus, in this case, the conclusions that can be drawn can be summed up as follows: *In a firm, the sales people are recruited using the entrepreneur's professional networks, triggering their sales reputation; this leads to sales growth and increased numbers of clients, and in some cases internationalization, all these being measured by sales growth.*

As we have seen, the performance indicators must be used with caution. It is rare for the same growth indicator to reveal pertinent results for both innovative and traditional firms.

For example the study of Davidsson, Delmar and Wiklund [2006].

Links to the theory

Teece [2007] proposes an integrative framework to comprehend dynamic capabilities through identifying opportunities and managing threats toward business performance. Our contribution is related to the third part of the model related to managing threats and transforming businesses. At the core of this framework lays the alignment of tangible and intangible assets (p 1240). It is important to specify that our analysis helps to better understand how firms (both innovative and traditional) view the value of five different sorts of assets they may or may not possess. This way they can identify opportunities and manage threats related to lack of strategic resources.

The resources embodied by a solid team, R&D, and projects provide support for the knowledge management side of Teece's framework. It allows the development of tangible and intangible assets through project and patent development. It is also a means of enhancing reputation.

Finally finance is viewed as a Meta competence that impedes or fosters further growth for the company. This resource is one of the four dimensions proposed by Teece.

These results are consistent with Teece's framework (the third part as we specified in the beginning of the article).

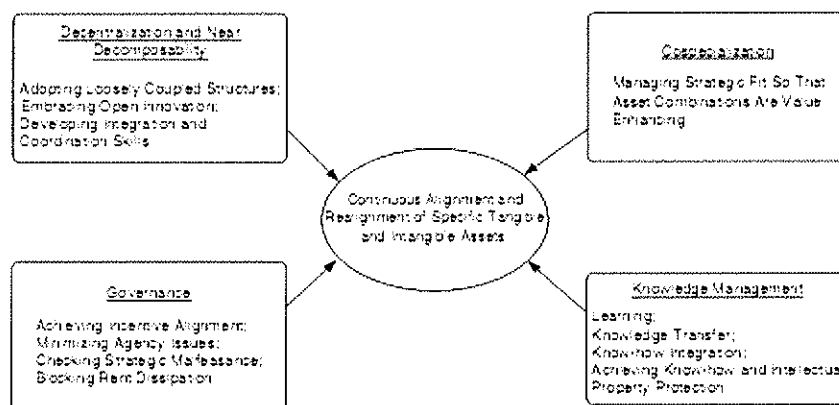


Figure 2. Combination, reconfiguration and asset protection skills (Teece, 2007, p.1340)

In our case co specialization refers to projects and marketing, governance refers to financial resources, knowledge management refers to intellectual property (R&D) and human resources to a solid team.

Decentralization and near decomposability (from the framework developed by Teece) do not apply in our case because our sample included only small firms, where structures are less centralized.

We will now move forward to a deeper analysis thanks to another use of N Vivo software coupled with manual analysis.

These first results provide ideas about ways to operationalize Teece's proposal through associations of resource / network and related performance indicators. It can provide insight for developing firms as it can assist them in their reflections concerning growth and how to achieve it.

Conclusions

Networks are vital for SME growth and development. The resources available through networks foster further development and secure this growth. Our research revealed that customer networks, institutional networks, entrepreneurs' personal and professional networks as well as employees' personal networks provide the components required in the creation of an important resource base that is composed of finances, a solid team, intellectual property, marketing and projects. Particularly, effective sales people and a solid team associated with flexible management and incentives is a way to foster decentralization by providing the needed means of coordination.

Another aspect that has to be mentioned here is the fact that in the case of two different types of resources, our analysis revealed the same type of network configuration. We are referring to the solid team and R&D. The input of those resources is facilitated in both cases by research centers and universities/schools.

Our study has a few limits such as the fact that the firm sample used in this study focused only on SME's located in southeastern France. Furthermore the fact that those firms have very different types of activities can be considered as a limit to our study. Further studies need to be conducted on firms from a single industry and from different

parts of the same country. It would be also highly interesting to further study the detailed configuration of these dedicated networks (the distribution of elements making up the networks) leading to strategic resource accumulation and renewal.

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